此文件在 2025年 2月 7日 收到，城市規劃委員會只會在收到所有必要的資料及文件後才正式確認收到申請的日期。

This document is received on - 7 FEB 2025. The Town Planning Board will formally acknowledge the date of receipt of the application only upon receipt of all the required information and documents.

Form No. S12A
表格第 S12A 號

APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP. 131)

根據《城市規劃條例》(第131章)第12A條遞交的修訂圖則申請

Applicant who would like to publish the notice of application in local newspapers to meet one of the Town Planning Board's requirements of taking reasonable steps to obtain consent of or give notification to the current land owner, please refer to the following link regarding publishing the notice in the designated newspapers: https://www.tpb.gov.hk/en/plan_application/apply.html

申請人如欲在本地報章刊登申請通知，以採取城市規劃委員會就取得現行土地擁有人的同意或通知現行土地擁有人所指定的其中一項合理步驟，請瀏覽以下網址有關在指定的報章刊登通知：https://www.tpb.gov.hk/tc/plan_application/apply.html

General Note and Annotation for the Form
填寫表格的一般指引及註解

\# "Current land owner" means any person whose name is registered in the Land Registry as that of an owner of the land to which the application relates, as at 6 weeks before the application is made
「現行土地擁有人」指在提出申請前六星期，其姓名或名稱已在土地註冊處註冊為該申請所關乎的土地的擁有人的人

& Please attach documentary proof 請夾附證明文件

^ Please insert number where appropriate 請在適當地方註明編號

Please fill "NA" for inapplicable item 請在不適用的項目填寫「不適用」

Please use separate sheets if the space provided is insufficient 如所提供的空間不足，請另頁說明

Please insert a「✔」at the appropriate box 請在適當的方格內上加上「✔」號

2500281 5/2 By hand

Form No. S12A 表格第 S12A 號

For Official Use Only 請勿填寫此欄	Application No. 申請編號	Y/YL-MP/9
	Date Received 收到日期	- 7 FEB 2025

1. The completed form and supporting documents (if any) should be sent to the Secretary, Town Planning Board (the Board), 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong.
申請人須把填妥的申請表格及其他支持申請的文件 (倘有)，送交香港北角渣華道 333 號北角政府合署 15 樓城市規劃委員會(下稱「委員會」)秘書收。

2. Please read the "Guidance Notes" carefully before you fill in this form. The document can be downloaded from the Board's website at http://www.tpb.gov.hk/. It can also be obtained from the Secretariat of the Board at 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong (Tel: 2231 4810 or 2231 4835), and the Planning Enquiry Counters of the Planning Department (Hotline: 2231 5000) (17/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong and 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin, New Territories).
請先細閱《申請須知》的資料單張，然後填寫此表格。該份文件可從委員會的網頁下載 (網址： http://www.tpb.gov.hk/)，亦可向委員會秘書處 (香港北角渣華道 333 號北角政府合署 15 樓 – 電話：2231 4810 或 2231 4835)及規劃署的規劃資料查詢處(熱線：2231 5000) (香港北角渣華道 333 號北角政府合署 17 樓及新界沙田上禾輋路 1 號沙田政府合署 14 樓)索取。

3. This form can be downloaded from the Board's website, and obtained from the Secretariat of the Board and the Planning Enquiry Counters of the Planning Department. The form should be typed or completed in block letters. The processing of the application may be refused if the required information or the required copies are incomplete.
此表格可從委員會的網頁下載，亦可向委員會秘書處及規劃署的規劃資料查詢處索取。申請人須以打印方式或以正楷填寫表格。如果申請人所提交的資料或文件副本不齊全，委員會可拒絕處理有關申請。

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1. Name of Applicant 申請人姓名/名稱

(☐ Mr. 先生 / ☐ Mrs. 夫人 / ☐ Miss 小姐 / ☐ Ms. 女士 / ☑ Company 公司 / ☐ Organisation 機構)

Profit Point Enterprises Limited

2. Name of Authorised Agent (if applicable) 獲授權代理人姓名/名稱（如適用）

(☐ Mr. 先生 / ☐ Mrs. 夫人 / ☐ Miss 小姐 / ☐ Ms. 女士 / ☑ Company 公司 / ☐ Organisation 機構)

Masterplan Limited

3. Application Site 申請地點

(a)	Whether the application directly relates to any specific site? 申請是否直接與某地點有關？	Yes 是 ☑ No 否 ☐ （Please proceed to Part 4 請跳到第 4 部分填寫）
(b)	Full address/ location/ demarcation district and lot number (if applicable) 詳細地址／地點／丈量約份及地段號碼（如適用）	Section A of Lot 50 in D.D. 101 Lot 77 in D.D. 101
(c)	Site Area 申請地點面積	207,408 sq.m 平方米 ☑ About 約

(d) Area of Government land included (if any) 所包括的政府土地面積 (倘有)	nil ..... sq.m 平方米 ☐ About 約
(e) Current use(s) 現時用途	Vacant site in residential portion, and completed wetland restoration area in the wetland portion of the comprehensive development zone. (If there are any Government, institution or community facilities, please illustrate on plan and specify the use and gross floor area) (如有任何政府、機構或社區設施，請在圖則上顯示，並註明用途及總樓面面積)

4. Eligibility of Applicant 申請人資格

The applicant 申請人 –

☑ (a) is a person whose name is registered in the Land Registry as that of the sole owner or one of the owners of any non-Government land within the application site, when this application is made[&] (if the applicant is the sole owner, there is no need to fill in Part 5).
(a) 是一名人士，其姓名或名稱於提出申請時已在土地註冊處註冊，該註冊顯示申請人為申請地點內任何非政府土地的唯一或其中一名擁有人[&](如申請人為唯一擁有人，不用填寫第 5 部分)。

☐ (b) is a person who has obtained consent to this application from at least one owner as defined in (a) above[&].
(b) 是一名人士，已獲得最少一名上述 (a) 所界定的擁有人同意這宗申請[&]。

☐ (c) is a person who has obtained consent to this application from the Director of Lands in relation to any government land within the application site[&].
(c) 是一名人士，就這宗申請地點內的任何政府土地，已獲得地政總署署長同意這宗申請[&]。

☐ (d) is a public officer.
(d) 是公職人員。

☐ (e) is a public body as defined by section 2 of the Prevention of Bribery Ordinance (Cap. 201).
(e) 是《防止賄賂條例》(第 201 章)第 2 條所界定的公共機構。

5. Statement on Consent from/Notification to "Current Land Owner"[#] 就「現行土地擁有人」[#]的同意/通知土地擁有人的陳述

(a) According to the record(s) of the Land Registry as at ..... (DD/MM/YYYY), this application involves a total of ..... "current land owner(s) "[#].
根據土地註冊處截至 ..... 年 ..... 月 ..... 日的記錄，這宗申請共牽涉 ..... 名「現行土地擁有人」[#]。

(b) The applicant 申請人 –
☐ has obtained consent(s) of ..... "current land owner(s)"[#].
已取得 ..... 名「現行土地擁有人」[#]的同意。

Details of consent of "current land owner(s)"[#] obtained 取得「現行土地擁有人」[#]同意的詳情		
No. of 'Current Land Owner(s)' 「現行土地擁有人」數目	Lot number/address of premises as shown in the record of the Land Registry where consent(s) has/have been obtained 根據土地註冊處記錄已獲得同意的地段號碼／處所地址	Date of consent obtained (DD/MM/YYYY) 取得同意的日期 (日/月/年)

(Please use separate sheets if the space of any box above is insufficient. 如上列任何方格的空間不足，請另頁說明)

☐ has notified ..... "current land owner(s)"#
已通知 ..... 名「現行土地擁有人」#。

Details of the "current land owner(s)" # notified 已獲通知「現行土地擁有人」#的詳細資料		
No. of 'Current Land Owner(s)' 「現行土地擁有人」數目	Lot number/address of premises as shown in the record of the Land Registry where notification(s) has/have been given 根據土地註冊處記錄已發出通知的地段號碼／處所地址	Date of notification given (DD/MM/YYYY) 通知日期(日/月/年)

(Please use separate sheets if the space of any box above is insufficient. 如上列任何方格的空間不足，請另頁說明)

☐ has taken reasonable steps to obtain consent of or give notification to "current land owner(s):
已採取合理步驟以取得「現行土地擁有人的同意或向該人發給通知。詳情如下：

Reasonable Steps to Obtain Consent of "Current Land Owner(s)"# 取得「現行土地擁有人」# 的同意所採取的合理步驟

☐ sent request for consent to the "current land owner(s)"& on _____ (DD/MM/YYYY)
於_____(日/月/年)向每一名「現行土地擁有人」#郵遞要求同意書&

Reasonable Steps to Give Notification to "Current Land Owner(s)"# 向「現行土地擁有人」# 發出通知所採取的合理步驟

☐ published notices in local newspapers& on _____ (DD/MM/YYYY)
於_____(日/月/年)在指定報章就申請刊登一次通知&

☐ posted notice in a prominent position on or near application site/premises& on _____ (DD/MM/YYYY)
於_____(日/月/年)在申請地點／申請處所或附近的顯明位置貼出關於該申請的通知&

☐ sent notice to relevant owners' corporation(s)/owners' committee(s)/mutual aid committee(s)/management office(s) or rural committee& on _____ (DD/MM/YYYY)
於_____(日/月/年)把通知寄往相關的業主立案法團/業主委員會/互助委員會或管理處，或有關的鄉事委員會&

Others 其他

☐ others (please specify)
其他（請指明）

_____

_____

_____

_____

Note: May insert more than one「✔」.
Information should be provided on the basis of each and every lot (if applicable) and premises (if any) in respect of the application.
註: 可在多於一個方格內加上「✔」號
申請人須就申請涉及的每一地段（倘適用）及處所（倘有）分別提供資料

6. Plan Proposed to be Amended 擬議修訂的圖則	
(a) Name and number of the related statutory plan(s) 有關法定圖則的名稱及編號	Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8
(b) Land use zone(s) involved (if applicable) 涉及的土地用途地帶(如適用)	Other Specified Uses annotated "Comprehensive Development to include Wetland Restoration Area"

7. Proposed Amendments 擬議修訂

(a) Propose to rezone the application site to the following zone(s)/use(s) (May insert more than one「✔」) (Please illustrate the details on plan)
建議將申請地點的用途地帶改劃作下列地帶 / 用途 (可在多於一個方格內加上「✔」號) (請在圖則顯示詳情)

☐ Comprehensive Development Area [ ]
綜合發展區 [ ]

☐ Residential (Group ☐A/☐B/☐C/☐D/☐E) [ ]
住宅 (☐甲類 / ☐乙類 / ☐丙類 / ☐丁類 / ☐戊類) [ ]

☐ Agriculture [ ] 農業 [ ]

☐ Industrial (Group D) [ ] 工業（丁類）[ ]

☐ Government, Institution or Community [ ]
政府、機構或社區 [ ]

☐ Recreation [ ] 康樂 [ ]

☐ Country Park [ ] 郊野公園 [ ]

☐ Conservation Area [ ] 自然保育區 [ ]

☐ Commercial [ ] 商業 [ ]

☐ Village Type Development [ ]
鄉村式發展 [ ]

☐ Industrial [ ] 工業 [ ]

☐ Open Storage [ ] 露天貯物 [ ]

☐ Open Space [ ] 休憩用地 [ ]

☐ Green Belt [ ] 綠化地帶 [ ]

☐ Coastal Protection Area [ ]
海岸保護區 [ ]

☐ Site of Special Scientific Interest [ ]
具特殊科學價值地點 [ ]

☐ Other Specified Uses (☐Business/☐Industrial Estate/☐Mixed Use/☐Rural Use/☐Petrol Filling Station/☐Others (please specify_____)) [ ]
其他指定用途 (☐商貿 / ☐工業邨 / ☐混合用途 / ☐鄉郊用途 / ☐加油站 / ☐ 其他 (請註明：_____)) [ ]

☐ Road 道路

☐ Others (please specify_____)
其他 (請註明：_____)

Please insert subzone in [ ] as appropriate.
請於[ ]內註明次區，如適用。

(b) Propose to amend the Notes of the Plan(s) 建議修訂圖則的《註釋》

☐ Covering Notes 《註釋》說明頁

☑ Notes of the zone applicable to the Site 適用於申請地點土地用途地帶的《註釋》

Details of the proposed amendment(s) to the Notes of the Plan, where appropriate, are as follows:
(Please use separate sheets if the space below is insufficient)
建議修訂圖則的《註釋》的詳情，如適用：
(如下列空間不足，請另頁說明)

To increase the plot ratio from 0.4 to 1.3, and to increase the maximum building height of 6 storeys to not more than 10 storeys (excluding 1 storey of basement), and not exceeding +42mPD

☐ Proposed Notes of Schedule of Uses of the zone attached
夾附對《 註釋 》的擬議修訂

8. Details of Proposed Amendment (if any) 擬議修訂詳情 (倘有)

☑ Particulars of development are included in the **Appendix**.
附錄包括一個擬議發展的細節。

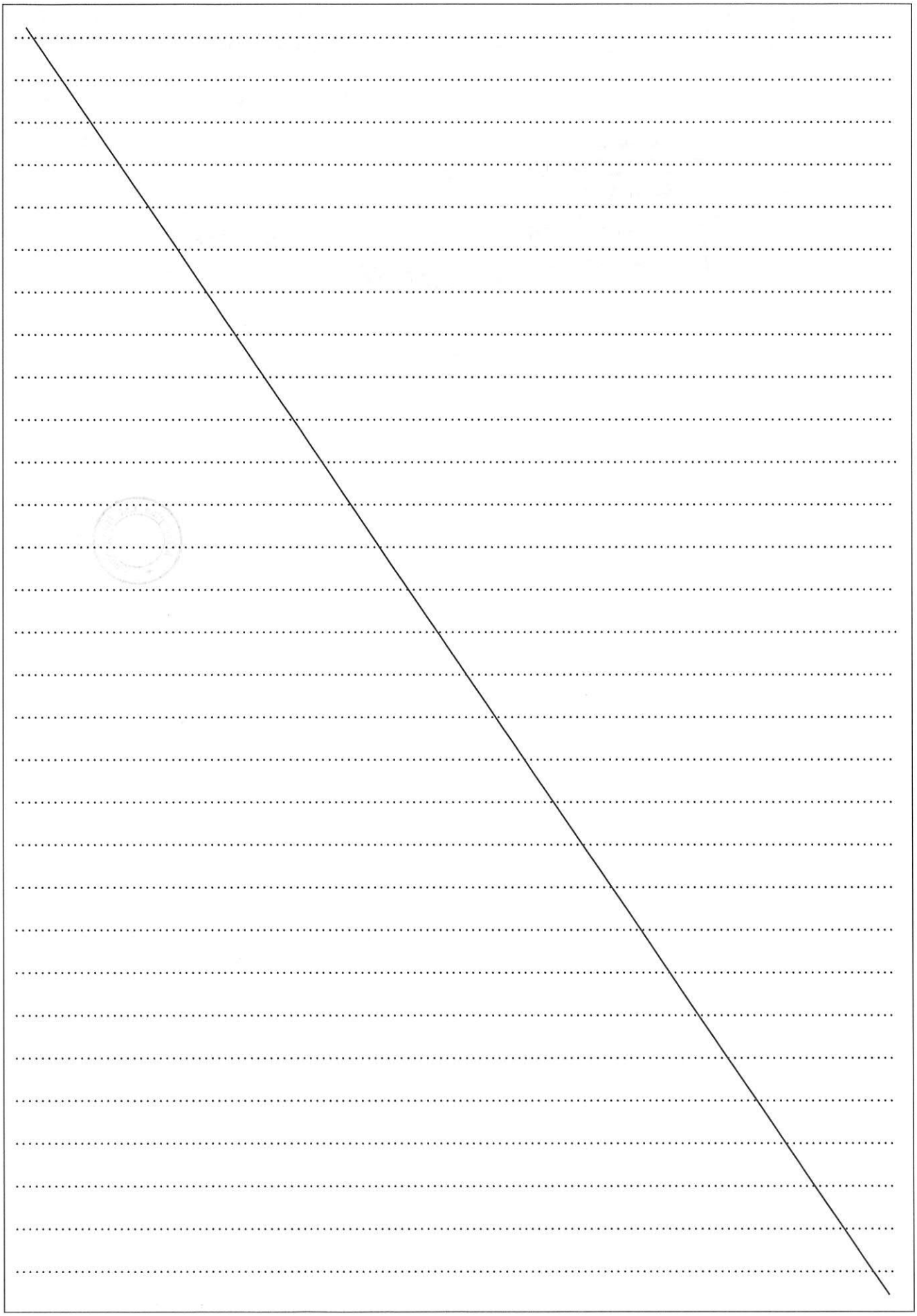
☐ No specific development proposal is included in this application.
這宗申請並不包括任何指定的擬議發展計劃。

9. Justifications 理由

The applicant is invited to provide justifications in support of the application. Use separate sheets if necessary.
現請申請人提供申請理由及支持其申請的資料。如有需要請另頁說明。

Please refer to the Planning Statement.

Parts 7 (Cont'd), 8 and 9 第 7 (續)、第 8 及第 9 部分



Part 9 (Cont'd) 第 9 部分(續)

10. Declaration 聲明

I hereby declare that the particulars given in this application are correct and true to the best of my knowledge and belief.
本人謹此聲明，本人就這宗申請提交的資料，據本人所知及所信，均屬真實無誤。

I hereby grant a permission to the Board to copy all the materials submitted in this application and/or to upload such materials to the Board's website for browsing and downloading by the public free-of-charge at the Board's discretion.
本人現准許委員會酌情將本人就此申請所提交的所有資料複製及/或上載至委員會網站，供公眾免費瀏覽或下載。

Signature 簽署 for and on behalf of MASTERPLAN LIMITED 領賢規劃顧問有限公司 ☐ Applicant 申請人 / ☑ Authorised Agent 獲授權代理人

Benson Poon

Authorised Signature(s)

Name in Block Letters 姓名（請以正楷填寫） BENSON POON

DIRECTOR

Position (if applicable) 職位 （如適用）

Professional Qualification(s) 專業資格 ☑ Member 會員 / ☐ Fellow of 資深會員

☑ HKIP 香港規劃師學會 / ☐ HKIA 香港建築師學會 /
☐ HKIS 香港測量師學會 / ☐ HKIE 香港工程師學會 /
☐ HKILA 香港園境師學會/ ☐ HKIUD 香港城市設計學會

RPP 362 ☑ RPP 註冊專業規劃師

Others 其他 .....

on behalf of 代表 Masterplan Limited

☑ Company 公司 / ☐ Organisation Name and Chop (if applicable) 機構名稱及蓋章（如適用）

Masterplan Ltd Hong Kong

Date 日期 28/01/2025 (DD/MM/YYYY 日/月/年)

Remark 備註

The materials submitted in this application and the Board's decision on the application would be disclosed to the public. Such materials would also be uploaded to the Board's website for browsing and free downloading by the public where the Board considers appropriate.
委員會會向公眾披露申請人所遞交的申請資料和委員會對申請所作的決定。在委員會認為合適的情況下，有關申請資料亦會上載至委員會網頁供公眾免費瀏覽及下載。

Warning 警告

Any person who knowingly or wilfully makes any statement or furnish any information in connection with this application, which is false in any material particular, shall be liable to an offence under the Crimes Ordinance.
任何人在明知或故意的情況下，就這宗申請提出在任何要項上是虛假的陳述或資料，即屬違反《刑事罪行條例》。

Statement on Personal Data 個人資料的聲明

1. The personal data submitted to the Board in this application will be used by the Secretary of the Board and Government departments for the following purposes:
委員會就這宗申請所收到的個人資料會交給委員會秘書及政府部門，以根據《城市規劃條例》及相關的城市規劃委員會規劃指引的規定作以下用途：

   (a) the processing of this application which includes making available the name of the applicant for public inspection when making available this application for public inspection; and
   處理這宗申請，包括公布這宗申請供公眾查閱，同時公布申請人的姓名供公眾查閱；以及
   (b) facilitating communication between the applicant and the Secretary of the Board/Government departments.
   方便申請人與委員會秘書及政府部門之間進行聯絡。

2. The personal data provided by the applicant in this application may also be disclosed to other persons for the purposes mentioned in paragraph 1 above.
申請人就這宗申請提供的個人資料，或亦會向其他人士披露，以作上述第 1 段提及的用途。

3. An applicant has a right of access and correction with respect to his/her personal data as provided under the Personal Data (Privacy) Ordinance (Cap. 486). Request for personal data access and correction should be addressed to the Secretary of the Board at 15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong.
根據《個人資料(私隱)條例》(第 486 章)的規定，申請人有權查閱及更正其個人資料。如欲查閱及更正個人資料，應向委員會秘書提出有關要求，其地址為香港北角渣華道 333 號北角政府合署 15 樓。

APPLICATION FOR AMENDMENT OF PLAN UNDER SECTION 12A OF THE TOWN PLANNING ORDINANCE (CAP. 131)
根據城市規劃條例(第 131 章)第 12A 條遞交的修訂圖則申請

Development Proposal (only for indicative purpose)
擬議發展的發展計劃（只作指示用途）

1. Development Proposal 擬議發展計劃

- ☑ Proposed Gross floor area (GFA) 擬議總樓面面積 — 269,647 sq.m. 平方米 — ☑ About 約
- ☑ Proposed plot ratio 擬議地積比率 — 1.3 — ☑ About 約
- ☑ Proposed site coverage 擬議上蓋面積 — 25 (not more than) % — ☐ About 約
- ☑ Proposed number of blocks 擬議座數 — ……
- ☑ Proposed number of storeys of each block 每座建築物的擬議層數 — …… storeys 層
  - ☐ include 包括 ….. storeys of basements 層地庫
  - ☑ exclude 不包括 1 storeys of basements 層地庫
- ☑ Proposed building height of each block 每座建築物的擬議高度 (about)

3-storey House	+21 mPD	128 nos.
6-storey Residential Tower	+28 mPD	12 nos.
8-storey Residential Tower	+35 mPD	15 nos.
10-storey Residential Tower	+42 mPD	20 nos.
2-storey Clubhouse	+16 mPD	4 nos.
4-storey RCHE cum E&M Building	+25 mPD	1 no.
1-storey E&M Building	+12 mPD	1 no.

- ☑ Domestic part 住用部分
  - GFA 總樓面面積 — 265,847 sq.m. 平方米 — ☑ About 約
  - number of units 單位數目 — 3,571
  - average unit size 單位平均面積 — 74.5 sq.m. 平方米 — ☑ About 約
  - estimated number of residents 估計住客數目 — 9,998
- ☑ Non-domestic part 非住用部分 — GFA 總樓面面積
  - ☐ hotel 酒店 — 3,800 sq.m.平方米 — ☑ About 約 / …… sq.m.平方米 — ☐ About 約 (please specify the number of rooms 請註明房間數目: ……)
  - ☐ office 辦公室 — …… sq.m.平方米 — ☐ About 約
  - ☐ shop and services/eating place 商店及服務行業/食肆 — …… sq.m.平方米 — ☐ About 約
  - ☑ Government, institution or community facilities 政府、機構或社區設施 — (please specify the use(s) and concerned land area(s)/GFA(s)) (請註明用途及有關的地面面積/總樓面面積) 100-place Residential Care Home for the Elderly
  - ☐ other(s)其他 — (please specify the use(s) and concerned land area(s)/GFA(s)) (請註明用途及有關的地面面積/總樓面面積) ……
- ☑ Open space 休憩用地 — (please specify land area(s)) (請註明面積)
  - ☑ private open space 私人休憩用地 — 9,998 sq.m.平方米 — ☑ Not less than 不少於
  - ☐ public open space 公共休憩用地 — …… sq.m.平方米 — ☐ Not less than 不少於

☑ Transport-related facilities 與運輸有關的設施

☑ parking spaces 停車位 (please specify type(s) and number(s)) (請註明種類及數目)

Private Car Parking Spaces 私家車車位	2,134
Motorcycle Parking Spaces 電單車車位	212
Light Goods Vehicle Parking Spaces 輕型貨車泊車位	
Medium Goods Vehicle Parking Spaces 中型貨車泊車位	
Heavy Goods Vehicle Parking Spaces 重型貨車泊車位	
Others (Please Specify) 其他 (請列明)	Visitors' Parking Spaces (including 1 for disabled): 235 Accessible Parking Spaces: 27 Bicycle Parking Spaces: 173 Ancillary Private Car Parking Spaces: 1

☑ loading/unloading spaces 上落客貨車位 (please specify type(s) and number(s)) (請註明種類及數目)

Taxi Spaces 的士車位	1
Coach Spaces 旅遊巴車位	
Light Goods Vehicle Spaces 輕型貨車車位	1
Medium Goods Vehicle Spaces 中型貨車車位	
Heavy Goods Vehicle Spaces 重型貨車車位	47
Others (Please Specify) 其他 (請列明)	

☐ other transport-related facilities 其他與運輸有關的設施 (please specify type(s) and number(s)) (請註明種類及數目)

Use(s) of different floors (if applicable) 各樓層的用途(如適用)

[Block number] [座數]	[Floor(s)] [層數]	[Proposed use(s)] [擬議用途]
1	4	Residential Care Home for the Elderly, E&M
128	3 + basement	Residential dwelling house
12	6 + basement	Residential units
15	8 + basement	Residential units
20	10 +basement	Residential units
4	2 + basement	Residential Clubhouse
1	1+basement	E&M, Temporary Sewerage Treatment Plant

Proposed use(s) of uncovered area (if any) 露天地方(倘有)的擬議用途

Wetland Restoration Area, internal roads/driveways, communal open spaces, private gardens

Any vehicular access to the site? 是否有車路通往地盤?

Yes 是

☐ There is an existing access. (please indicate the street name, where appropriate)
有一條現有車路。(請註明道路名稱(如適用))

☑ There is a proposed access. (please illustrate on plan and specify the width)
有一條擬議車路。(請在圖則顯示，並註明車路的闊度)

No 否 ☐

For Development involving columbarium use, please complete the table in the Annex to this Appendix.
如發展涉及靈灰安置所用途，請填妥於此附件後附錄的表格。

2. Impacts of Development Proposal 擬議發展計劃的影響

If necessary, please use separate sheets to indicate the proposed measures to minimise possible adverse impacts or give justifications/reasons for not providing such measures
如需要的話，請另頁註明可盡量減少可能出現不良影響的措施，否則請提供理據/理由。

Does the development proposal involve alteration of existing building? 擬議發展計劃是否包括現有建築物的改動?	Yes 是	☐ Please provide details 請提供詳情 ....
	No 否	☑
Does the development proposal involve the operation on the right? 擬議發展是否涉及右列的工程?	Yes 是	☑ (Please indicate on site plan the boundary of concerned land/pond(s), and particulars of stream diversion, the extent of filling of land/pond(s) and/or excavation of land) (請用地盤平面圖顯示有關土地／池塘界線，以及河道改道、填塘、填土及／或挖土的細節及/或範圍) ☐ Diversion of stream 河道改道 ☐ Filling of pond 填塘 Area of filling 填塘面積 ..... sq.m 平方米 ☐About 約 Depth of filling 填塘深度 ..... m 米 ☐About 約 ☑ Filling of land 填土 Area of filling 填土面積 48,500 sq.m 平方米 ☑About 約 Depth of filling 填土厚度 1 - 4 m 米 ☑About 約 ☑ Excavation of land 挖土 Area of excavation 挖土面積 104,110 sq.m 平方米 ☑About 約 Depth of excavation 挖土深度 4 - 12 m 米 ☑About 約
	No 否	☐

Would the development proposal cause any adverse impacts?
擬議發展計劃會否造成不良影響？

On environment 對環境	Yes 會 ☐	No 不會 ☑
On traffic 對交通	Yes 會 ☐	No 不會 ☑
On water supply 對供水	Yes 會 ☐	No 不會 ☑
On drainage 對排水	Yes 會 ☐	No 不會 ☑
On slopes 對斜坡	Yes 會 ☐	No 不會 ☑
Affected by slopes 受斜坡影響	Yes 會 ☐	No 不會 ☑
Landscape Impact 構成景觀影響	Yes 會 ☐	No 不會 ☑
Tree Felling 砍伐樹木	Yes 會 ☐	No 不會 ☑
Visual Impact 構成視覺影響	Yes 會 ☐	No 不會 ☑
Others (Please Specify) 其他 (請列明)	Yes 會 ☐	No 不會 ☑

Please state measure(s) to minimise the impact(s). For tree felling, please state the number, diameter at breast height and species of the affected trees (if possible)
請註明盡量減少影響的措施。如涉及砍伐樹木，請說明受影響樹木的數目、及胸高度的樹幹直徑及品種(倘可)

Please refer to the Planning Statement.

For Developments involving Columbarium Use, please also complete the following:
如發展涉及靈灰安置所用途，請另外填妥以下資料

Ash interment capacity 骨灰安放容量@

Maximum number of sets of ashes that may be interred in the niches
在龕位內最多可安放骨灰的數量 _____

Maximum number of sets of ashes that may be interred other than in niches
在非龕位的範圍內最多可安放骨灰的數量 _____

Total number of niches 龕位總數 _____

Total number of single niches
單人龕位總數 _____

Number of single niches (sold and occupied)
單人龕位數目 (已售並佔用) _____

Number of single niches (sold but unoccupied)
單人龕位數目 (已售但未佔用) _____

Number of single niches (residual for sale)
單人龕位數目 (待售) _____

Total number of double niches
雙人龕位總數 _____

Number of double niches (sold and fully occupied)
雙人龕位數目 (已售並全部佔用) _____

Number of double niches (sold and partially occupied)
雙人龕位數目 (已售並部分佔用) _____

Number of double niches (sold but unoccupied)
雙人龕位數目 (已售但未佔用) _____

Number of double niches (residual for sale)
雙人龕位數目 (待售) _____

Total no. of niches other than single or double niches (please specify type)
除單人及雙人龕位外的其他龕位總數 (請列明類別) _____

Number. of niches (sold and fully occupied)
龕位數目 (已售並全部佔用) _____

Number of niches (sold and partially occupied)
龕位數目 (已售並部分佔用) _____

Number of niches (sold but unoccupied)
龕位數目 (已售但未佔用) _____

Number of niches (residual for sale)
龕位數目 (待售) _____

Proposed operating hours 擬議營運時間 _____

_____

@ Ash interment capacity in relation to a columbarium means –
就靈灰安置所而言，骨灰安放容量指：
- the maximum number of containers of ashes that may be interred in each niche in the columbarium;
每個龕位內可安放的骨灰容器的最高數目;
- the maximum number of sets of ashes that may be interred other than in niches in any area in the columbarium; and
在該靈灰安置所並非龕位的範圍內，總共最多可安放多少份骨灰；以及
- the total number of sets of ashes that may be interred in the columbarium.
在該骨灰安置所內，總共最多可安放多少份骨灰。

Gist of Application 申請摘要

(Please provide details in both English and Chinese as far as possible. This part will be circulated to relevant consultees, uploaded to the Town Planning Board's Website for browsing and free downloading by the public and available at the Planning Enquiry Counters of the Planning Department for general information.)
(請盡量以英文及中文填寫。此部分將會發送予相關諮詢人士、上載至城市規劃委員會網頁供公眾免費瀏覽及下載及於規劃署規劃資料查詢處供一般參閱。)

Application No. 申請編號	(For Official Use Only) (請勿填寫此欄)
Location/address 位置／地址	Section A of Lot 50 in D.D. 101 Lot 77 in D.D. 101
Site area 地盤面積	207,408 sq. m 平方米 ☑ About 約 (includes Government land of 包括政府土地 nil sq. m 平方米 ☐ About 約)
Plan 圖則	Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8
Zoning 地帶	Other Specified Uses annotated "Comprehensive Development to include Wetland Restoration Area"
Proposed Amendment(s) 擬議修訂	☐ Amend the Covering Notes of the Plan 修訂圖則《註釋》的說明頁 ☑ Amend the Notes of the zone applicable to the site 修訂適用於申請地點土地用途地帶的《註釋》 ☐ Rezone the application site from_____ to _____ 把申請地點由_____地帶改劃為_____

Development Parameters (for indicative purpose only) 發展參數(只作指示用途)

			sq.m 平方米	Plot Ratio 地積比率
(i) Gross floor area and/or plot ratio 總樓面面積及／或地積比率	Domestic 住用	265,847	☑ About 約 ☐ Not more than 不多於	1.28 ☑About 約 ☐Not more than 不多於
	Non-domestic 非住用	3,800	☑ About 約 ☐ Not more than 不多於	0.02 ☑About 約 ☐Not more than 不多於
(ii) No. of block 幢數	Domestic 住用	128 houses and 47 residential towers		
	Non-domestic 非住用	1 RCHE cum E&M building, 4 clubhouses, 1 E&M building		
	Composite 綜合用途			

<table>
<tr><td rowspan="6">(iii) Building height/No. of storeys
建築物高度／層數</td><td rowspan="3">Domestic
住用</td><td>m 米
☐ (Not more than 不多於)</td></tr>
<tr><td>
<table>
<tr><td>3-storey House</td><td>+21 mPD</td><td>128 nos.</td></tr>
<tr><td>6-storey Residential Tower</td><td>+28 mPD</td><td>12 nos.</td></tr>
<tr><td>8-storey Residential Tower</td><td>+35 mPD</td><td>15 nos.</td></tr>
</table>
上)
於)
</td></tr>
<tr><td>Storeys(s) 層
☐ (Not more than 不多於)

(☐Include 包括/☑ Exclude 不包括
☐ Carport 停車間
☑ Basement 地庫
☐ Refuge Floor 防火層
☐ Podium 平台)</td></tr>
<tr><td rowspan="3">Non-domestic
非住用</td><td>m 米
☐ (Not more than 不多於)</td></tr>
<tr><td>mPD 米(主水平基準上)
☐ (Not more than 不多於)</td></tr>
<tr><td>Storeys(s) 層
☐ (Not more than 不多於)

(☐Include 包括/☑ Exclude 不包括
☐ Carport 停車間
☑ Basement 地庫
☐ Refuge Floor 防火層
☐ Podium 平台)</td></tr>
<tr><td rowspan="3">Composite
綜合用途</td><td>m 米
☐ (Not more than 不多於)</td></tr>
<tr><td>mPD 米(主水平基準上)
☐ (Not more than 不多於)</td></tr>
<tr><td>Storeys(s) 層
☐ (Not more than 不多於)

(☐Include 包括/☐ Exclude 不包括
☐ Carport 停車間
☐ Basement 地庫
☐ Refuge Floor 防火層
☐ Podium 平台)</td></tr>
<tr><td>(iv) Site coverage
上蓋面積</td><td colspan="2">25 (not more than) % ☐ About 約</td></tr>
<tr><td>(v) No. of units
單位數目</td><td colspan="2">3,571</td></tr>
<tr><td rowspan="2">(vi) Open space
休憩用地</td><td>Private 私人</td><td>9,998 sq.m 平方米 ☑ Not less than 不少於</td></tr>
<tr><td>Public 公眾</td><td>sq.m 平方米 ☐ Not less than 不少於</td></tr>
</table>

(vii) No. of parking spaces and loading / unloading spaces 停車位及上落客貨車位數目	Total no. of vehicle parking spaces 停車位總數	2,782
	Ancillary Private Car Parking Space	1
	Private Car Parking Spaces 私家車車位	2,134
	Motorcycle Parking Spaces 電單車車位	212
	Light Goods Vehicle Parking Spaces 輕型貨車泊車位	
	Medium Goods Vehicle Parking Spaces 中型貨車泊車位	
	Heavy Goods Vehicle Parking Spaces 重型貨車泊車位	
	Others (Please Specify) 其他 (請列明)	
	Visitors' (including 1 for disabled) Parking Spaces	235
	Accessible Parking Spaces	27
	Bicycle Parking Spaces	173
	Total no. of vehicle loading/unloading bays/lay-bys 上落客貨車位／停車處總數	49
	Taxi Spaces 的士車位	1
	Coach Spaces 旅遊巴車位	
	Light Goods Vehicle Spaces 輕型貨車車位	1
	Medium Goods Vehicle Spaces 中型貨車位	
	Heavy Goods Vehicle Spaces 重型貨車車位	47
	Others (Please Specify) 其他 (請列明)	

Submitted Plans, Drawings and Documents 提交的圖則、繪圖及文件

	Chinese 中文	English 英文
Plans and Drawings 圖則及繪圖		
Master layout plan(s)/Layout plan(s) 總綱發展藍圖／布局設計圖	☐	☑
Block plan(s) 樓宇位置圖	☐	☑
Floor plan(s) 樓宇平面圖	☐	☑
Sectional plan(s) 截視圖	☐	☑
Elevation(s) 立視圖	☐	☐
Photomontage(s) showing the proposed development 顯示擬議發展的合成照片	☐	☑
Master landscape plan(s)/Landscape plan(s) 園境設計總圖／園境設計圖	☐	☑
Others (please specify) 其他（請註明）	☐	☐
Reports 報告書		
Planning Statement/Justifications 規劃綱領/理據	☐	☑
Environmental assessment (noise, air and/or water pollutions) 環境評估（噪音、空氣及／或水的污染）	☐	☑
Traffic impact assessment (on vehicles) 就車輛的交通影響評估	☐	☑
Traffic impact assessment (on pedestrians) 就行人的交通影響評估	☐	☑
Visual impact assessment 視覺影響評估	☐	☑
Landscape impact assessment 景觀影響評估	☐	☑
Tree Survey 樹木調查	☐	☐
Geotechnical impact assessment 土力影響評估	☐	☐
Drainage impact assessment 排水影響評估	☐	☑
Sewerage impact assessment 排污影響評估	☐	☑
Risk Assessment 風險評估	☐	☐
Others (please specify) 其他（請註明）	☐	☐
Air Ventilation Assessment		
Ecological Impact Assessment		

Note: May insert more than one「✔」. 註：可在多於一個方格內加上「✔」號

Note: The information in the Gist of Application above is provided by the applicant for easy reference of the general public. Under no circumstances will the Town Planning Board accept any liabilities for the use of the information nor any inaccuracies or discrepancies of the information provided. In case of doubt, reference should always be made to the submission of the applicant.

註： 上述申請摘要的資料是由申請人提供以方便市民大眾參考。對於所載資料在使用上的問題及文義上的歧異，城市規劃委員會概不負責。若有任何疑問，應查閱申請人提交的文件。

MASTERPLAN LIMITED
Planning and Development Advisors
領賢規劃顧問有限公司

The Secretary,
Town Planning Board,
15/F, North Point Government Offices,
333 Java Road, North Point,
Hong Kong.

Date: 5 February 2025

By Hand and Email

Dear Sir/ Madam,

Section 12A Planning Application

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

We are authorized by the Applicant, namely "Profit Point Enterprises Limited", to submit a Section 12A planning application to the Town Planning Board for the captioned proposed use and location.

Please note the following are enclosed in support of the application:

1) A signed original copy of the application form;
2) 4 hard-copies of the planning statement, including drawings and supporting technical assessments in the appendices;
3) Original authorization letter signed by the Applicant;
4) Documentary proof of the land ownership;
5) Particulars of the Applicant and authorized agent; and
6) Checklist of Documents.

Yours faithfully,

Benson Poon
For and On Behalf of
Masterplan Limited

Encl.
cc. Client and Consultants (By Email)

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

☐Urgent ☐Return receipt ☐Expand Group ☐Restricted ☐Prevent Copy ☐Confidential

From:	Michelle Li [redacted]
Sent:	2025-02-13 星期四 14:44:34
To:	Karen Kei Yee CHAN/PLAND <kkychan2@pland.gov.hk>
Cc:	Benson Poon [redacted]; Ian BROWNLEE [redacted]; Pak Him CHIU/PLAND <phchiu@pland.gov.hk>
Subject:	Re: Wo Shang Wai S12A - Replacement pages of Application Form, Planning Statement, Appendix 1

Dear Karen,

We would like to submit supplementary information for S12A application No. Y/YL-MP/9. This includes replacement pages of Application Form, revised Planning Statement, and replacement pages of Appendix 1 (MLP and Sections).

Please find the submission documents in the following link:
[redacted]

Kind regards,
Michelle Li

Masterplan Limited
Rm 3516B, 35/F, China Merchants Tower,
Shun Tak Centre,
200 Connaught Road Central,
Hong Kong

Direct Line: [redacted]

Section 12A Rezoning Application:

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in D.D. 101

Supporting Planning Statement
January 2025

Applicant:
Profit Point Enterprises Limited

MASTERPLAN
Planning and Development Advisors
領賢規劃顧問有限公司

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List of Consultants

Aurecon Hong Kong Ltd
AXXA Group Limited
LWK & Partners (HK) Ltd
Masterplan Limited
Mott MacDonald Hong Kong Limited
Scenic Landscape Studio Ltd
WSP Hong Kong Limited

Executive Summary

S1. This application is made under section 12A of the Town Planning Ordinance, with regard to the Application Site on the "Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8" (the "OZP"). The Application Site is located at Wo Shang Wai, Yuen Long. Castle Peak Road – Mai Po and San Tin Highway are to the east of the Application Site, while the Site is easily accessible via Mai Po South Road off Castle Peak Road – Mai Po. This application aims to increase the maximum plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3 with a maximum building height ("BH") adjusted from 6-storeys (i.e. maximum building height permissible on the OZP) to not more than 10-storeys (excluding 1 storey of basement), by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. The current proposal is incorporated with improved design and planning merits, as compared to the previously approved section 16 planning application No. A/YL-MP/344.

S2. In recent years, a changing context of the overall planning approaches of the New Territories North have evolved, including the implementation of the Northern Metropolis Development Strategy. The Government is actively taking forward the development of the Northern Metropolis and is commissioning a series of local and strategic transport infrastructure projects which would create capacity for the higher development intensity in the area.

S3. In July 2024, the Town Planning Board ("TPB") considered and agreed to a new OZP at San Tin, which would materialize the major development node of the "San Tin Technopole" in a new future development context based on closer integration with Shenzhen. In September 2024, the Chief Executive in Council approved the new OZP. The new OZP has defined a new development context in the planning area for ***co-existence of development and conservation***, with a focus on driving both ***innovation and technology development and quality housing supply*** in the district.

S4. The proposed increase in development intensity is to optimize the development potential of the Site, in view of the future drastic transformation in the development context, emerging trend of increasing development intensity in other nearby sites, major infrastructure development. The Application Site would be able to leverage on the upgrades of the surrounding infrastructure, which would provide capacity to increase development intensity of the Site. The technical assessments have

indicated that with mitigation measures, there would not be any adverse technical impact arising from the proposed development. The ecological function of the completed WRA remains intact and unaffected, while technical assessments have demonstrated that the increased development intensity would have no adverse impact to the surrounding traffic network, sewage capacity, drainage, water supplies, wetland ecology, landscape, visual, air ventilation, and land-use character; while the proposed scheme will continue to uphold its planning intention and function in the Wetland Buffer Area.

S5. The Applicant is aware of the housing and community facilities shortfall in Hong Kong and the Site has already been intended for residential use with previous planning approvals. The intention now is to better utilize the land resources in view of the surrounding transformations and available infrastructure. The amendments proposed in this application would allow the Application Site to blend in with and strike a good balance between the nearby development intensity of the San Tin Technopole (i.e. plot ratios of 6.5 and building heights of up to 200mPD) and existing surrounding private residential clusters (i.e. around 3-storey houses). It provides a practical option to contribute to housing supply in the Northern Metropolis, while allowing co-existence of optimised development potential and nature conservation.

(If there is any inconsistency or ambiguity between the English version and the Chinese version, the English version shall prevail)

摘要

S1. 本申請依據《城市規劃條例》第 12A 條提出，擬議就申請地點將「米埔及錦繡花園分區計劃大綱核准圖編號 S/YL-MP/8」作出修改。申請地點位於元朗和生圍，青山公路-米埔和新田公路位處申請地點以東，由青山公路-米埔經米埔南路便能便捷到達申請地點。申請旨在將申請地點之地積比率由 0.4（即分區計劃大綱圖上的最高許可地積比率）提高至 1.3，最高建築高度由 6 層（即分區計劃大綱圖上的最高許可建築高度）調整至不超過 10 層（不包括 1 層地庫）。與先前獲城市規划委員會批准的第 16 條規劃申請編號 A/YL-MP/344 相比，擬議發展之設計和規劃優點有所改善。

S2. 近年來，新界北的整體規劃境況已明顯改變，尤其包括北部都會發展策略的實施。政府正積極推動北部都會的發展，並令速建設一系列本地和跨境策略性運輸交通基礎設施項目，為該區更高的發展能力創造動力。

S3. 城市規劃委員會於 2024 年 7 月同意在新田制定新的分區計劃大綱圖，旨在與深圳更緊密融合，實現「新田科技城」此主要發展。行政長官會同行政會議於 2024 年 9 月已批准了新的大綱圖，締造一個發展與保護共存的新發展環境，重點是推動該區的創新和科技發展配以優質住房配套供應。

S4. 擬議之發展密度是為了充分利用申請地點的發展潛力，考慮到未來發展環境轉變、附近其他地點發展密度相應增加的新趨勢、以及主要基礎設施發展所帶來的便利交通。申請地點將能夠利用周邊優化的基礎設施，提高發展能力。各技術評估結果亦顯示擬議發展方案採取緩解措施後不會產生任何不良影響。建成後的濕地保護區生態功能仍然完好無損，同時增加的發展密度不會對周圍的交通網絡、排污能力、排水、供水、濕

地生態、景觀、視覺、空氣流通和土地使用等範疇產生不良影響。擬議方案將繼續維持其在濕地緩衝區的規劃意向和功能。

S5. 緊於香港的房屋及社區設施短缺，該片土地已在先前的規劃批准下用作住宅用途以為未來房屋土地供應出一分力。現在申請能充份更利用土地資源，並考慮到周圍的規劃環境和基礎設施。本申請方案中建議的修訂將使申請用地與毗鄰的新田科技城（即 6.5 的地積比率和高達 200mPD 的建築高度）以及周圍現有的私人住宅集群（即約 3 層住宅）相互融合協調，特別提供了一個務實而可行的發展機遇，既有助於北部都會區的住房配套供應，又兼顧發展潛力和自然保護。

(如果英文版本和中文版本之間有任何不一致或不一致，以英文版為準)

1. Introduction

1.1 This application is made under section 12A of the Town Planning Ordinance, with regard to the Application Site on the "Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8" (the "OZP"). This application aims to increase the maximum plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3 with a maximum building height ("BH") adjusted from 6-storeys (i.e. maximum building height permissible on the OZP) to not more than 10-storeys (excluding 1 storey of basement), by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.2 This supporting planning statement will provide an overview of rationale and justifications for this rezoning application. The major topics that would be covered include a review of the existing and future development context, relevant planning applications background, proposed scheme, technical feasibility, proposed amendments to the OZP, and planning assessment and justifications.

2. The Application Site and Its Surroundings

2.1 ***The Application Site***

2.1.1 The Application Site is located at Wo Shang Wai, Yuen Long. Castle Peak Road – Mai Po and San Tin Highway are to the east of the Application Site, while the Site is easily accessible via Mai Po South Road off Castle Peak Road – Mai Po. It is also generally bounded by fishponds to the north, residential developments namely Royal Palms, Palm Springs and Wo Shang Wai Village to the south, and Mai Po San Tsuen to the east. The Site falls under the MP OZP, and is zoned "OU(CDWRA)". A location plan is provided in **Figure 1**.

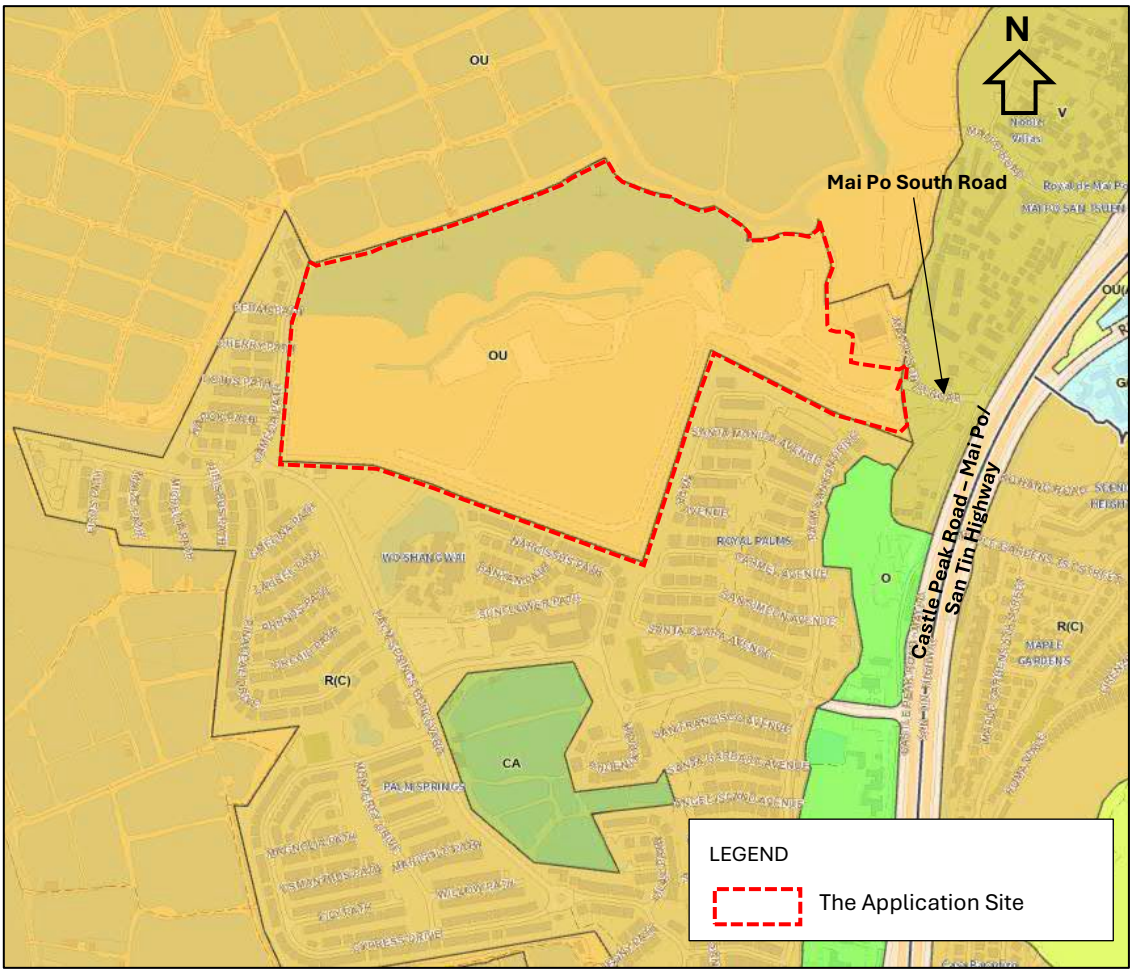


Figure 1: Indicative Location of the Application Site on the OZP

2.2 ***Existing Site Conditions***

2.2.1 The Site has been underutilized for years and is currently in a vacant land with wild grass and partly paved. It is capable of speedy implementation as it is ready for construction. **Figure 2** shows the current site condition.



Figure 2: Photo of the existing site condition

2.3 ***Site Constraints***

2.3.1 The major site constraints of the Site that has restricted its development intensity, include (**Figure 3**):

a) MTRCL railway protection zone to the east of the Site.
b) The completed Wetland Restoration Area portion in the Site.
c) The Wetland Conservation Park to the north of the Site.
d) The existing low-density private residential developments in the surroundings.

2.3.2 In view of these major site constraints, the residential portion has been designed to a scale and form to be compatible to, and mitigate the impact to the surroundings.

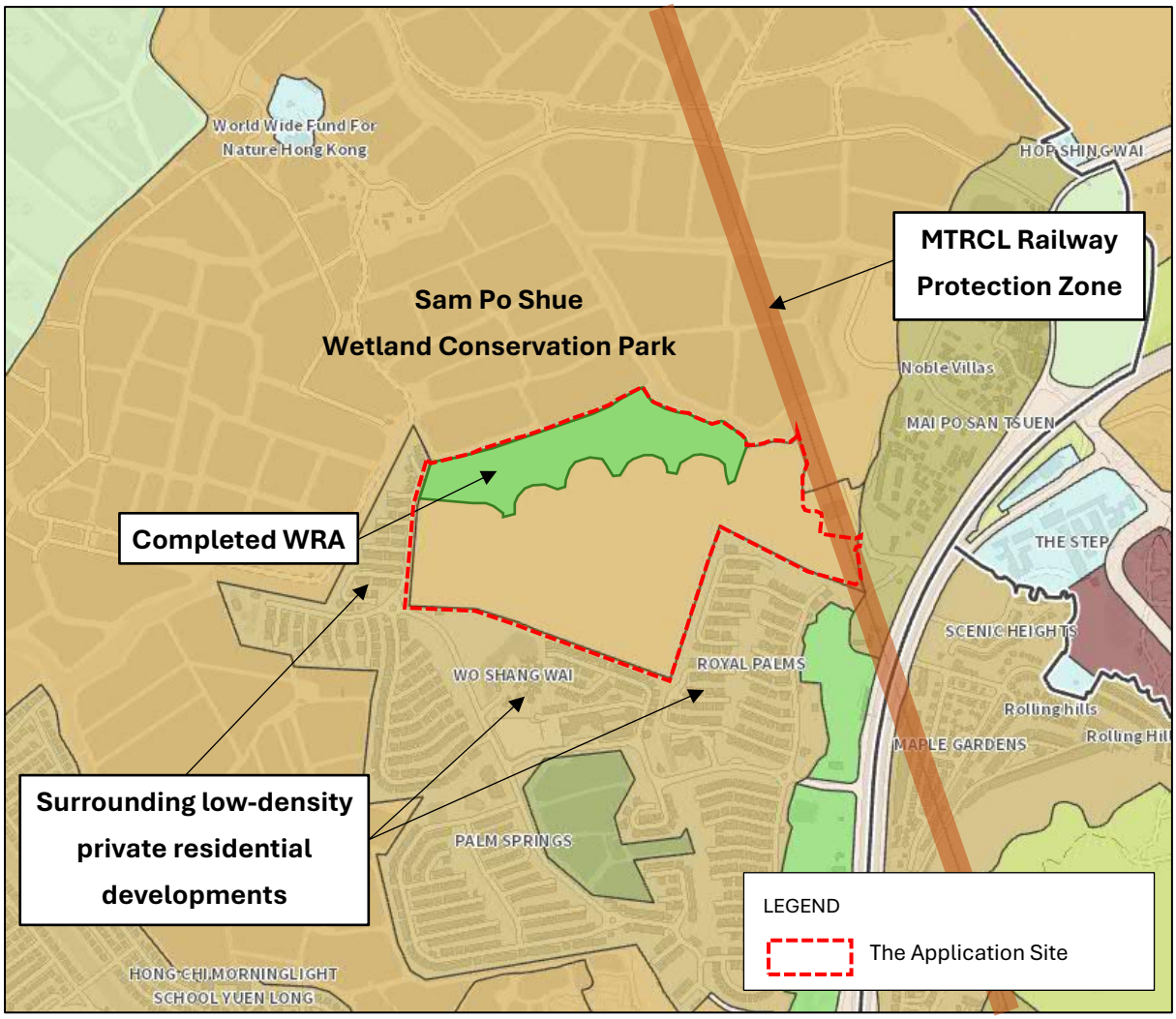


Figure 3: Major Site Constraints

2.4 ***Surrounding Developments***

2.4.1 The Site is surrounded by various existing and planned residential developments and villages houses, as well as fish ponds.

2.4.2 To the immediate east of the Site are the MTRCL's Mai Po Ventilation Building for the Express Rail Link (XRL) project and a village cluster called Mai Po San Tsuen. Further to the east are major roads / highway (e.g., Castle Peak Road – Mai Po Section and the San Tin Highway) in the San Tin area. Private residential developments are located next to the Site, including to the west is Palm Springs (West); to the south is the Palm Springs (East), and to the east is Royal Palms. Moreover, there are some existing open storage uses and lorry parking spaces to the further northeast.

2.4.3 To the north of the Application Site is the "Sham Po Shue Wetland Conservation Park" ("WCP"), made up of mainly large areas of continuous fishponds and vegetation.

2.5 ***Statutory Planning Context***

2.5.1 The Application Site is currently zoned "OU(CDWRA)". The planning intention of the zone states that:

"This zone is intended to provide incentive for the restoration of degraded wetlands adjoining existing fish ponds through comprehensive residential and/or recreational development to include wetland restoration area. It is also intended to phase out existing sporadic open storage and port back-up uses on degraded wetlands. Any new building should be located farthest away from Deep Bay."

2.5.2 The Remarks to the Notes states that:

(a) Application for permission of use or development… shall be in the form of a comprehensive development scheme to include wetland restoration proposal. An applicant shall prepare a layout plan and other documents showing the following information for consideration of the Town Planning Board:

(i) the proposed land uses, development parameters, the nature, position and heights of all buildings to be erected in the area;

(ii) an environmental impact study report, including but not limiting to an ecological impact assessment and a visual impact assessment, to examine any possible environmental, ecological and visual problems that may be caused to or by the proposed development or redevelopment during construction and after completion and the proposed mitigation measures to tackle them;

(iii) landscape proposals;

(iv) a traffic impact study report to examine any possible traffic problems that may be caused by the proposed development or redevelopment and the proposed measures to tackle them;

(v) a drainage and sewerage impact study report to examine any possible flooding, drainage, sewerage and associated problems that may be caused to or by the proposed development or redevelopment and the proposed mitigation measures to tackle them;

(vi) programming, phasing, and implementation schedule of each component of the proposed development or redevelopment…

(c) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 0.4 and a maximum building height of 6 storeys including car park.

(d) In determining the maximum plot ratio… any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room, caretaker's office and caretaker's quarters, or recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

2.6 ***Town Planning Board Guideline No. 12C***

2.6.1 Town Planning Board Guideline No. 12C for "Applications for developments within Deep Bay Area under Section 16 of the Town Planning Ordinance" applies to the Application Site. The proposed scheme abuts the Wetland Conservation Area (WCA) and is situated within the Wetland Buffer Area (WBA).

3. Relevant Planning Applications Background

3.1 ***Previously Approved Section 16 Planning Application No. A/YL-MP/344***

3.1.1 The Application Site contains a previously approved S.16 planning application (No. A/YL-MP/344) for proposed comprehensive house and wetland restoration area on 1 March, 2024. The purpose of the S.16 application was to amend the layout of the residential portion in another approved planning application (No. A/YL-MP/229), in response to the rising demand for housing supply in the market trends. The number of flats was increased from 400 to 789 as compared to the A/YL-MP/229 scheme. It would not affect the already completed Wetland Restoration Area ("WRA") portion within the Application Site. Please find the layouts and the parameter table of the previous approved S.16 planning application (No. A/YL-MP/344) in **Appendix 1**.

3.2 ***Previously Approved Planning Applications***

3.2.1 The previously approved planning applications at the Site are shown in **Table 1** below.

Table 1: Previously Approved Planning Applications at the Application Site

Application No.	Applied Use/Development	Approval Date
A/YL-MP/166	Comprehensive development and WRA	19 Sep 2008
A/YL-MP/185	An alternative layout for the comprehensive development and WRA	4 Nov 2011
A/YL-MP/185-1	Minor amendment to the approved development scheme under Application No. A/YL-MP/185	18 Jul 2012
A/YL-MP/229	An alternative comprehensive development scheme with a utility installation (sewerage treatment plant)	27 Feb 2015
A/YL-MP/291	An alternative layout and form of housing which entails a principal residence at the centre of the site	10 Jul 2020
A/YL-MP/344	Proposed comprehensive house and wetland habitat development with filling and excavation of land (amendments to Approved Application No. A/YL-MP/229)	1 Mar 2024

3.3 ***Section 6(1) Representation No. S/YL-MP/7-R3***

3.3.1 The Applicant submitted a representation to the TPB in May 2024, in respect of the proposed amendments to the Approved Mai Po and Fairview Park OZP. The representation proposed to increase the development intensity from total plot ratio of 0.4 to 1.5, and building height from 6-storeys to 22-storeys, and provide about 5,134 flats in the OU(CDWRA) zone. The proposed representation scheme comprised 80 no. of houses that are 3-storey high, and 47 residential blocks, arranged in a configuration with a stepped building height band with the lowest building height of 6 to 8-storeys closest to the wetland areas, and increases gradually to 12, 18 and 22-storeys that are farthest from the wetland areas at the south of the Site. Please refer to **Appendix 2** for the representation scheme.

3.3.2 The representation was not upheld for the following reasons by Town Planning Board: "The site-specific proposals submitted by the representers are considered

inappropriate to be taken on board as insufficient details are available or the proposals are not supported by any technical assessments. The current land use zonings and the associated Notes and ES for the concerned sites under both STT OZP and MP OZP have already taken into account relevant planning and technical considerations and are considered appropriate"

3.3.3 In the TPB Paper No. 10973, Para. 5.3.7.2, the Planning Department also indicated there was a lack of technical assessments to justify the technical feasibility of the proposed increase in development density of the site, and was not compatible to the surrounding low-rise village/ residential developments.

3.3.4 In view of the feedback of TPB and PlanD in the process of this Representation, we have taken their advice and proceeded with the current application, with full technical feasibility; an investigation of how the current scheme fits in with the wider planning context of medium-density developments, springing from the new major development nodes (such as STT and NTM New Development Area); the reduction of our original development intensity from total plot ratio 1.5 to 1.3, maximum building height of 22-storeys down to 10-storeys, to ensure the current scheme is compatible to the surrounding developments; and the inclusion of planning merits to demonstrate the benefits the scheme could bring to the community.

4. Land Administration

4.1 After the previous planning approvals, the Applicant applied to the Lands Department for a land exchange under planning permission of application No. A/YL-MP/229, and a land grant was executed on 29 January, 2021.

4.2 Under the planning permission of the previous application No. A/YL-MP/229, one of the conditions was (g) – the submission and implementation of a funding arrangement proposal for ensuring the long-term maintenance and management of the Wetland Restoration Area. On 25 January 2021, the Applicant made a one-off lump sum donation to the Environment and Conservation Fund ("ECF"). An agreement between the Applicant and the ECF was made on 26 January 2021. The conservation agent of the Applicant has been carrying out the maintenance and management plan and the funding agreement is fully applicable to this application.

5. Environmental Impact Assessment Ordinance

5.1 The WRA has been completed under a previously approved application, and its conservation management plan has been implemented and put in place since 2010. The main ecological function of the WRA is to provide habitat for bird species in the surrounding wetland area.

5.2 The residential portion in the site is subject to the Environmental Impact Assessment Ordinance (EIAO). Approvals pertinent to EIAO include:

i. Environmental Impact Assessment (Register No.: AEIAR-120/2008) for the development at the site approved on 31 July 2008.

ii. Environmental Permit (No. EP-311/2008) for the construction and operation of the development issued on 9 September 2008, the latest one being 19 December 2017 (EP-311/2008/E).

iii. Variations to the Environmental Permit reflecting the approved development schemes have been approved, the latest one being 19 December 2017 (No. VEP-538/2017).

5.3 Should this application be approved by TPB, the Applicant shall seek advice from the Environmental Protection Department to confirm the necessity of submitting a revised environmental impact assessment report and apply for the Environmental Permit or variations under the EIAO.

6. Development Context

6.1 ***The Increase in Development Intensity of Comprehensive Residential Developments in the Vicinity***

6.1.1 The Northern Metropolis covers a total area of 30,000 hectares, which is about one third of the total area of Hong Kong. It comprises various existing new towns in the New Territories North, some NDAs, and some expanded areas. In the Policy Address 2022, the development of Northern Metropolis is one of the policy priorities as it is the new engine for growth. The Policy Address 2023 further suggested that the Northern Metropolis will become a major hub for Hong Kong to integrate into the overall development of China.

6.1.2 Drawing on the policy momentum of the Northern Metropolis Development Strategy, many locations in the vicinity of the Application Site is under-going or has gone through the increase of development intensity and infrastructure upgrade, especially the Northern Link Main Line and the future Northern Metropolis Highway. In recent years, land-use zonings for comprehensive residential developments that are similar to the Application Site, have obtained approval from Government for increased development intensity and have proceeded with implementation of medium to high-density residential and supporting community facilities. Please refer to **Table 2** and **Figure 4** for the locations of the developments.

6.1.3 With reference to **Table 2** and **Figure 4**, Item 1 (Application No. Y/YL-NSW/7) (i.e. "Approved Rezoning") was recently approved by the TPB in November 2023, for upzoning from PR 0.4 to 1.5 and building height restriction increase of up to 15-storeys high, while retaining the original planning intention. The Approved Rezoning also went through the OZP amendment process, as amendment Item E, and was upheld by the TPB in December 2024. The Approved Rezoning site has a similar planning context and the identical zoning of "OU(CDWRA)" as the Application Site. It is in proximity and situated on the west side of the San Tin Highway; within the same Wetland Buffer Area (WBA); at the fringe of a Wetland Conservation Park (i.e. Nam Sang Wai Wetland Conservation Park); and there are low-density houses in proximity to the Approved Rezoning site.

6.1.4 With reference to **Table 2** and **Figure 4**, Item 6 (Land Sharing Pilot Scheme at Tung Shing Lei) (i.e. "Approved LSPS"), which comprises public and private housing and associated supporting infrastructures, was endorsed in principle by the Chief Executive in Council in November 2022. Subsequently, it went through the OZP amendment process and was upheld by the TPB in December 2024. The Approved LSPS was to rezone the existing low-density zoning to a high-density zoning in an area of mainly rural character, to allow public and private housing developments with a plot ratio of about 3.23, and building heights of 26-storeys (not more than 100mPD).

6.1.5 The surrounding land-use character is under-going major changes and adopting a development model to coincide with the future development context of the NMDS. The Application Site is amid this change, and it is a suitable juncture to follow the development trend and contribute to the socio-economic growth of the New Territories North.

Table 2: Similar Approved Comprehensive Developments in the District

Item No.	Application No.	Type	Zoning	Date Approved	Maximum Parameters	
1	Y/YL-NSW/7	Private Housing	OU CD(WRA)	2023 November	PR 1.5	15-storeys
2	N/A	Sha Po Public Housing	R(A), R(C)3 & GIC	2023 (agreed by TPB)	PR 6.7	185 mPD
3	A/YL-KTN/663	Private Housing	CDA	2020	PR 1.67	17-storeys
4	A/YL-KTN/118	Park Yoho - Existing Private Housing	CDA	2012	PR 1.25	11 to 17-storeys (62.5 mPD)
5	A/YL-KTN/604	Private Housing	CDA(1)	2019	PR 1.254	12 to 18-storeys
6	N/A	LSPS Tung Shing Lei	R(D)	2022	PR 3.23	26-storeys
7	A/YL-NSW/274	Private Housing	U	2021	PR 2.29	21-storeys (75mPD)
8	Y/YL-NSW/3	Commercial (Hotel)	OS	2016	PR 1.5	11-storeys
9	A/YL-NSW/242	Private Housing	OU CD(WEA) & SSSI(1)	2021	PR 2.76 (based on development site area)	26-storeys
10	A/YL-NSW/241	Private Housing	OU CD (WRA)	2017	PR 0.4	4-storeys
11	A/YL-MP/287	Private Housing	R(D)	2020	PR 0.2	2-storeys
12	A/YL-MP/205	Private Housing	R(D)	2013 2017 EOT	PR 0.2	3-storeys
13	A/YL-MP/247	Private Housing	OU CD(WPA)	2016 2020 EOT	PR 0.2	3-storeys
14	A/YL-MP/341	Light Public Housing	R(C)	2023	PR 0.64	3-storeys
15	A/YL-NTM/310	Private Housing	R(C)	2014	PR 0.48	3-storeys
16	A/YL-NTM/470	Transitional Housing	R(D)	2024	PR 1.29	4-storeys

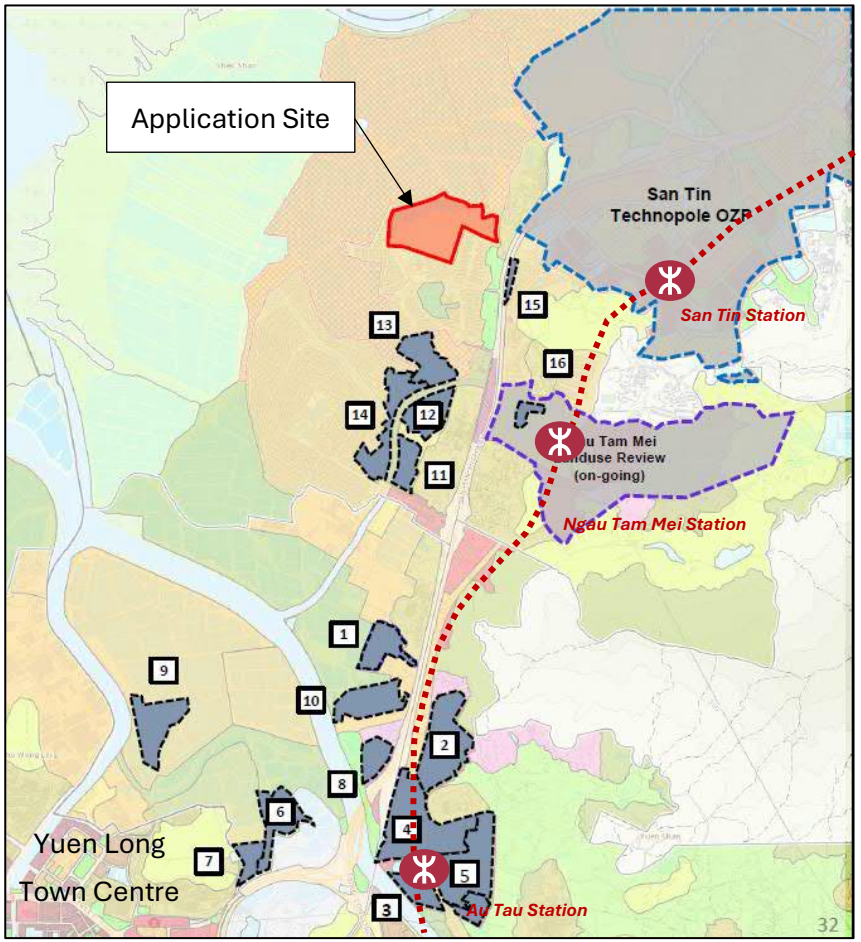


Figure 4: Indicative Locations of Similar Approved Comprehensive Developments in the District

6.2 ***On-going Applications for Upzoning Private Residential Development***

6.2.1 There have been many submitted and on-going applications that are being processed by the TPB, for upzoning private housing sites into medium-density developments in the district. These applications have proposed plot ratios of between 1.23 to 5 and building heights of 16 to 35 storeys. Similar to this current application, many of them have already obtained planning approval for lower-density housing developments. This reveals the development trend in the New Territories North and demonstrates how the underutilized sites in the district could be used for residential developments. A list of submitted and on-going upzoning private residential applications is provided **Table 3** in below. Please refer to **Figure 5** for the locations of the applications.

Table 3: On-going TPB Applications for Upzoning Private Residential Developments

Item No.	Application No.	Type	Proposed Zoning	Maximum Parameters	
A	Y/YL-NSW/9	Private Residential	OS, OS & Road	PR 2.7	29-storeys
B	Y/YL-NSW/8	Private Residential	OU (CDWRA)1	PR 2.25	29-storeys
C	Y/YL-MP/8	Private Residential	R(C)1	PR 1.23	16-storeys
D	Y/YL-MP/7	Private Residential	R(C)1	PR 1.28	16-storeys
E	Y/YL-ST/1	Private Residential	OU (CDWRA)1	PR 1.53	18-storeys
F	Y/YL-NTM/5	Private Residential	R(C)	PR 5	35-storeys

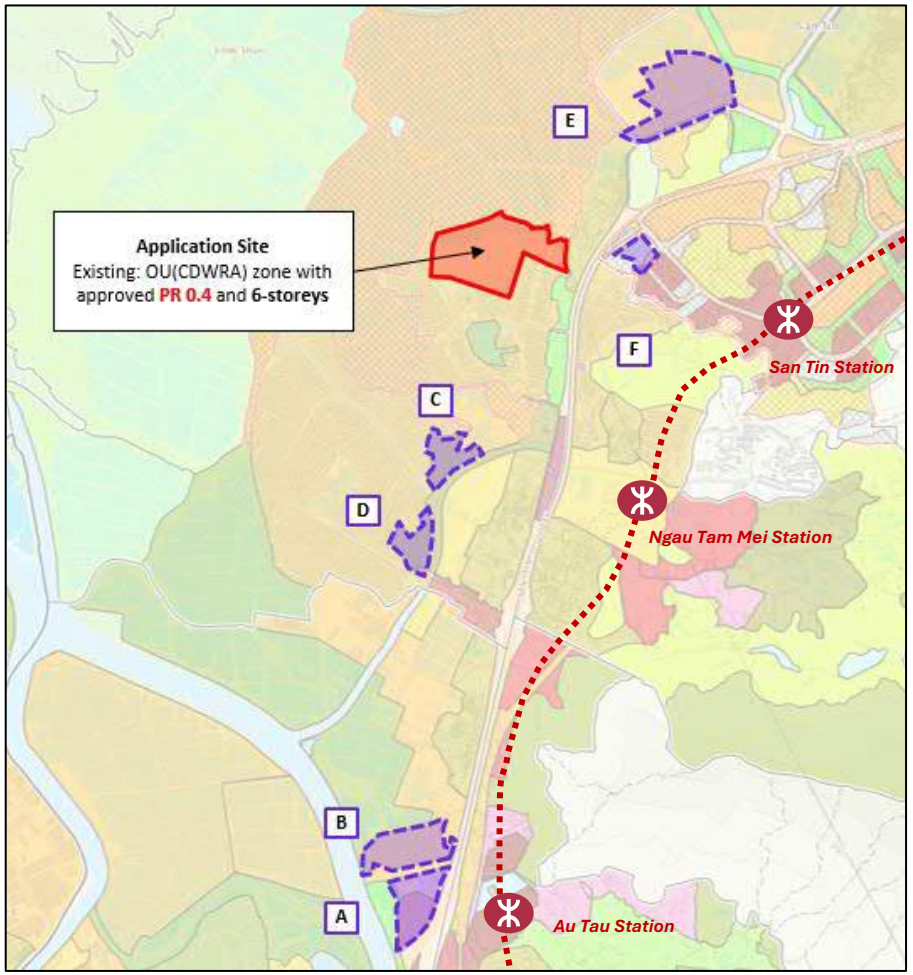


Figure 5: Locations of the On-going Upzoning Applications

6.3 ***The High-density Developments of San Tin Technopole***

6.3.1 On 8 March 2024, a new draft San Tin Technopole Outline Zoning Plan No. S/STT/1 was gazetted to support the development of the San Tin/Lok Ma Chau area ("STLMC area") of the San Tin Technopole, which has replaced the previous San Tin OZP. The north-west portion of San Tin Technopole is right adjacent to the Wetland Conservation Park ("WCP"). The development intensity and building height of future developments in the San Tin Technopole will be progressively stepped towards the south-east from 15mPD, 35mPD, 75mPD, to 105mPD and higher. The area will be transformed from rural setting to sub-urban mixed use new town. This standard configuration enables the development intensity closest to the WCP to be at the lowest, and gradually increases to high-density developments further away, so to create a balanced form of development that minimize impact to the WCP, while allowing optimal development potential of the scarce land resources. (**Figure 6**)

6.3.2 With reference to the revised Recommended Outline Development Plan ("RODP") for the land use proposal of the San Tin Technopole published in February 2024, the public and private housing sites will have a domestic plot ratio of 6 to 6.5. There will be high-rise development clusters in the south-western part of the San Tin Town Centre. These housing sites are about 450m away from the Application Site and the area will be transformed into a high-density residential neighbourhood. Similar to the stepped building height profile of the San Tin residential developments, the north-west portion of the Application Site is right next to and directly interfacing with the WCP, hence it will also adopt building height bands that decreases towards the south-east. With the evolving strategic planning context, the proposed increase in plot ratio and building height of the Application Site is deemed appropriate.

6.3.3 The Application Site is located at the periphery of the San Tin Technopole, accessible to the San Tin Highway, and is within 1.2km from the planned San Tin MTR Station. While the San Tin Technopole is an example of striving for co-existence of development and conservation, the proposed development is in line with such principle.

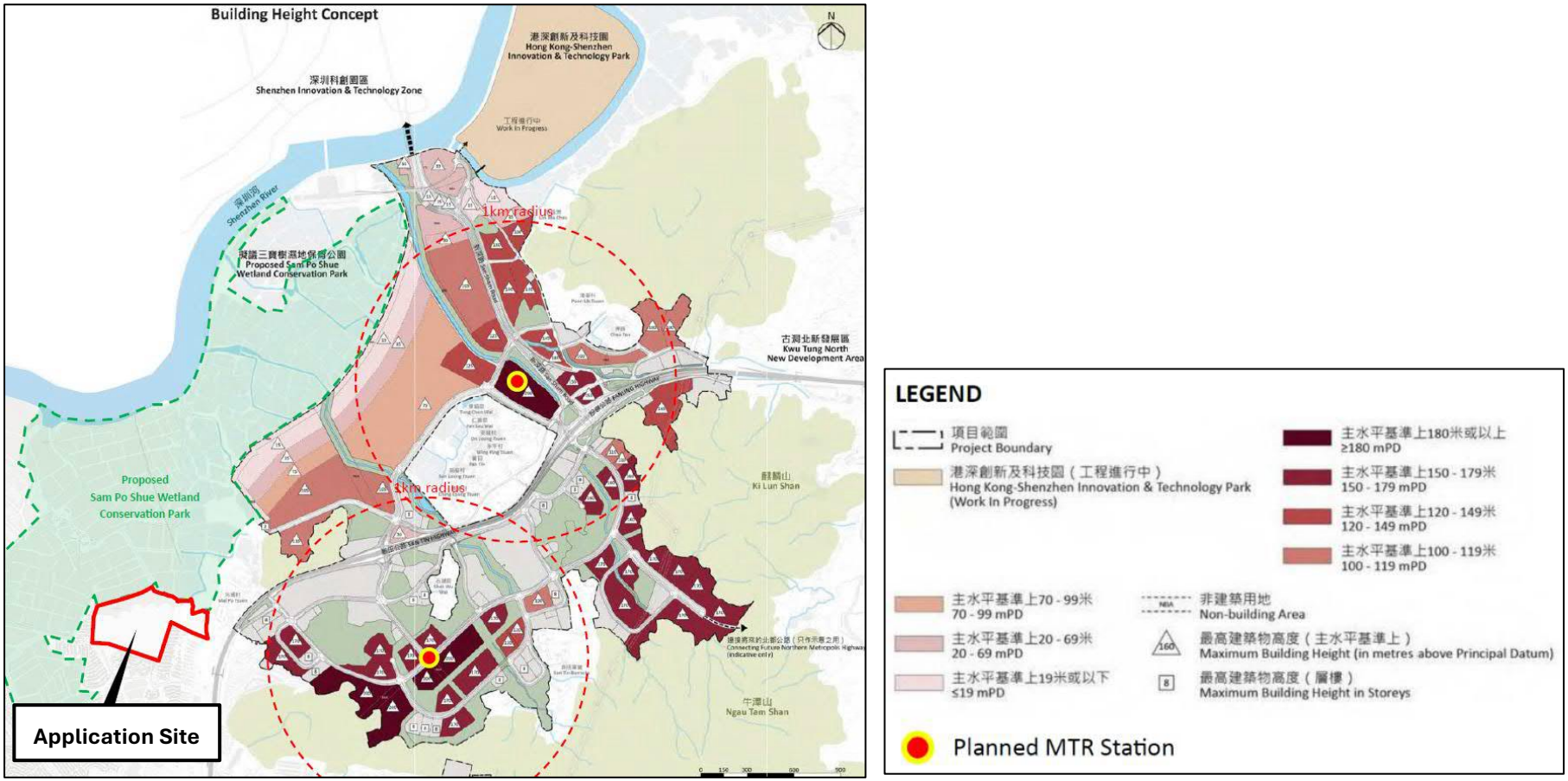


Figure 6: The Correlated Development Context of San Tin Technopole and Application Site[1]

[1] Basemap Source: Building Height Concept Figure 6 of the San Tin Technopole OZP (Draft Explanatory Statement)

6.4 ***The Northern Link and Future Developments in Ngau Tam Mei***

6.4.1 The planned MTR Northern Link ("NOL") Main Line will connect the existing Kam Sheung Road Station and the future Kwu Tung Station, with 3 intermediate stations at Au Tau, Ngau Tam Mei and San Tin. It will serve as an important railway network for the Kwu Tung North NDA and San Tin Technopole, which would unleash the development potential around its stations. The Application Site is about 1.3km and 1.5km away from the planned San Tin Station and Ngau Tam Mei Station respectively, and there is enormous potential to extend development near the two new NOL stations.

6.4.2 The Government began a study in 2021 to review land uses in Ngau Tam Mei (NTM). It aimed to make better use of the existing brownfield cluster and unleash the area's development potential created by the planned NTM Station of the NOL. In November 2024, the development proposal of NTM New Development Area was made public by the Government, and the public engagement process was initiated. NTM is earmarked for a University Town, integrated hospital, and new residential developments and supporting facilities, to accommodate a population of about 30,000, as well as new job opportunities.

6.4.3 Given the large-scale infrastructure improvements as well as the enhanced accessibility in the northwestern part of Yuen Long, there is an absolute need to up-zone the Site and unleash its great potential for residential development.

6.5 ***Research on Private Housing Targets***

6.5.1 In the 2023 policy address, Government has identified sufficient land for developing public housing flats to go above the supply target, while major research institutions such as Our Hong Kong Foundation ("OHKF") have reported that completions of private housing flats beyond the next five years (2028-2032), are expected to decline and is uncertain to meet private housing targets.[2] Jones Lang LaSalle also reported

[2] Our Hong Kong Foundation (April 2023). Land and Housing Policy Research Report.

annual private housing completion in the coming years (2026-2028) is expected to decrease by 44% as compared to the previous two years.[3]

6.5.2 According to OHKF, despite an improved predicted average annual completion figure of private housing units in 2023-2027 and the Government's policy of streamlining statutory and administrative procedures, based on currently known projects, the OHKF suggested that completions in 2028-2032 could tail off and reach only 13,900 units (below the targets). While the Northern Metropolis Development Strategy holds the key to long-term housing supply, there is a lack of supporting infrastructure facilities and this would hinder housing supply. OHKF has repeatedly proposed that the Northern Link is a strategic opportunity to enable Government to proactively increase the development intensity in New Territories to create large-scale urbanization and stimulate economic growth of the New Territories.

6.5.3 Compared with the previously approved S.16 planning applications, the proposed rezoning would provide various types of housing including detached houses, semi-detached houses, and flats of different sizes. The existing development restrictions on the OZP are no longer suitable for meeting the demand for housing and catalysing emerging changes.

[3] Jones Lang LaSalle (Nov 2023). Hong Kong Residential Sales Market Monitor.

7. Proposed Scheme

7.1 ***Design Concept of Master Layout Plan***

7.1.1 The Applicant aspires to create a sustainable residential development with a quality living environment that is in co-existence and harmony with the wetland and natural areas. The residential portion will contain a medium-density, residential development with a maximum plot ratio of 1.3 and a maximum GFA of about 269,647m^2. It is comprised of 3-storey houses adjacent to the WRA, and 6 to 10-storeys residential blocks (not more than +42mPD) in the central and southern edge locations, erected over one basement level, including an underground carpark for each phase. It adopts a stepped building height profile with building heights of 6-storeys at the southern boundary, then increases to 10-storeys at the central portions of the Site, and decreases down to 3-storey houses towards the WRA in the north. Supporting clubhouse facilities for residents' recreational and leisure needs are provided in each phase of the development. It will provide about 3,571 residential flats, with an average flat size of about 74.5m^2, and accommodate a design population of (about) 9,998.

7.1.2 Please refer to **Figure 7** for the Master Layout Plan and **Appendix 3** for the full set of architectural drawings.

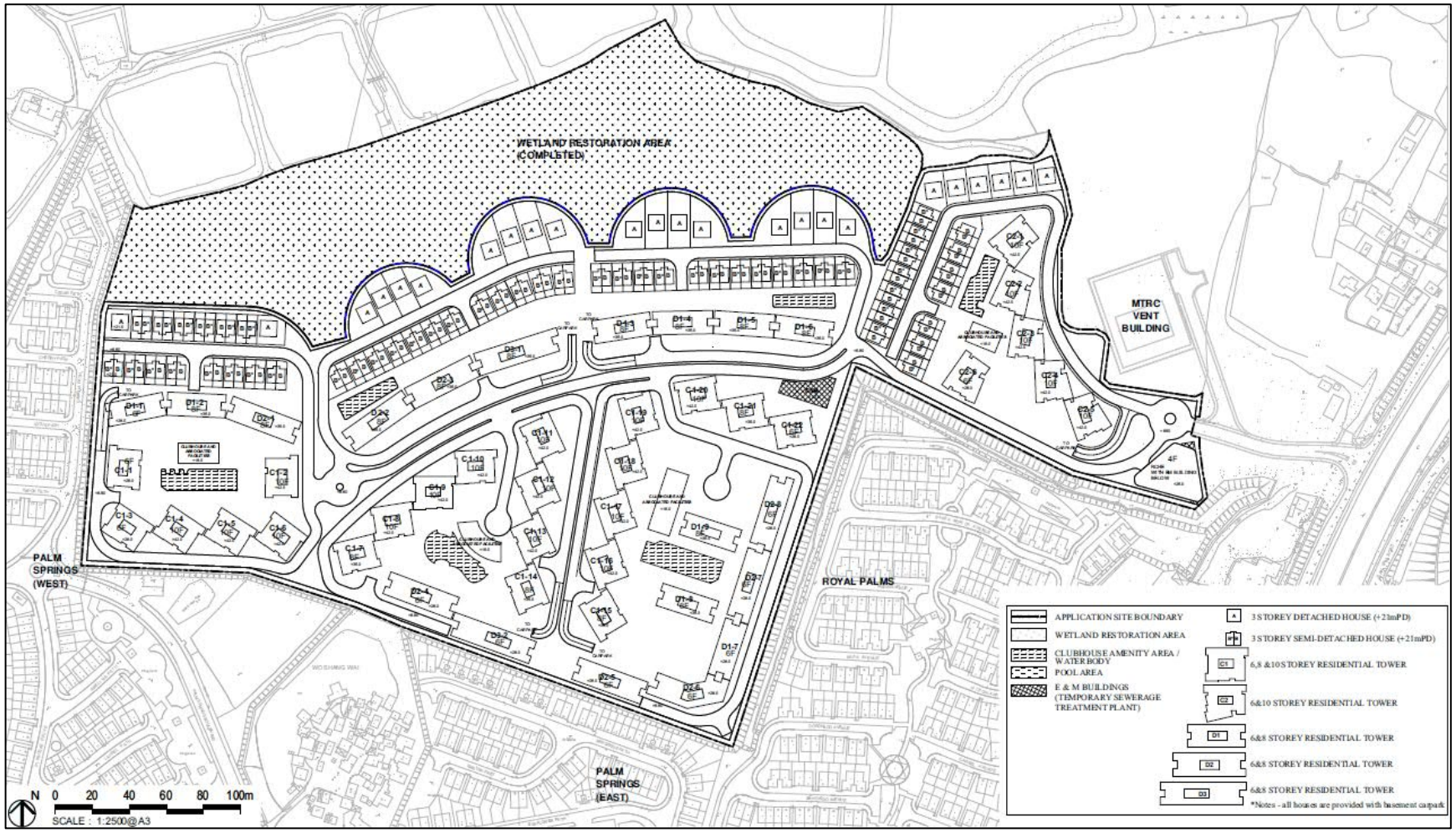


Figure 7: Master Layout Plan of the Proposed Development

7.2 ***Indicative Development Parameters***

7.2.1 The indicative development parameters are provided in **Table 4** below.

Table 4: Indicative Development Parameters

Application Site Area (about)	**207, 408 m^2**
Areas of the Site (about)	
Wetland Restoration Area	47,400 m^2
Communal Open Space	21,203 m^2
Communal Landscape and Communal Perimeter Landscape	39,072 m^2
Private Garden	15,444 m^2
Residential Portion	
Total Plot Ratio (about) Domestic Plot Ratio (about) Non-Domestic Plot Ratio (about)	1.30 1.28 0.02
Total GFA (about) Maximum Domestic GFA (about) Maximum Non-Domestic GFA (about)[4]	269,647 m^2 265,847 m^2 3,800 m^2
Site Coverage (not more than)	25%
Total Number of Units (about)	3,571
Average Unit Size (Approx.)	74.5 m^2
Ancillary Recreational Facilities (Clubhouse GFA) (about)	11,581 m^2
Estimated Population (about)	9,998 *
Building Height (about)[5]	
3-storey House (128 nos.)	+21 mPD
6-storey Residential Tower (12 nos.)	+28 mPD
8-storey Residential Tower (15 nos.)	+35 mPD
10-storey Residential Tower (20 nos.)	+42 mPD
Clubhouse (2-storey) (4 nos.)	+16 mPD

[4] Non-domestic GFA includes RCHE only, and excludes clubhouse and E&M.

[5] Rounded up to the nearest integer. Please refer to Appendix 1 for the exact figures.

Residential Care Home for Elderly cum E&M Building (4-storey)	+25 mPD
E&M Building (TSTP)	+12 mPD
Residential Car Parking Provisions#	
Residential	2,134
Visitors'	235
Accessible Parking Space	27
Motorcycle Parking Space	212
Loading / Unloading Bay for Heavy Good Vehicles	47
Bicycle Parking Space	173
RCHE (100-places) Car Parking Provisions	
Ancillary Private Car Parking Space	1
Loading Bay for Light Good Vehicles	1
Taxi/Private Car Pick-up/Drop-off Space	1

Remarks:

Over-provided.

* Based on person per flat-ratio of 2.8.

7.3 ***Communal Open Space and Landscaping***

7.3.1 The scheme has dedicated a large proportion of area (i.e. about 47% land area of the residential portion) for communal open space, landscaping, and gardens. There are pockets of landscaped open spaces scattered around the site, encouraging residents to enjoy the outdoors, creating visual interest and a lush walking environment. There will be communal landscaping along the internal roads, the perimeter of the Site and the pedestrian pathways.

7.4 ***Responsive Building Heights on Visual Amenity***

7.4.1 The proposed scheme contains building heights arranged to ensure the buildings do not disrupt surrounding visual or landscape character. It emphasizes sustainable development, architectural quality, and effective use of land use, maintaining liveability and aesthetic coherence.

(a) Responsive building heights, where disposition and orientation of proposed blocks are designed to minimize the potential impact on the visual amenity of the wetlands and fishpond areas to the north and west.

(b) The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.

(c) Introduction of three visual corridors, and building separation to break up the combined development frontage and avoid potential wall effect.

(d) Location of car parking in the basemen to maximize the area available for landscaping amenities.

7.5 ***Visual and Breezeway Corridors***

7.5.1 The orientation and disposition of the residential buildings are arranged to provide sufficient space in between to allow three visual and breezeway corridors, running north-south across the site to the surroundings. These corridors contribute to the favourable air ventilation at pedestrian level of the development, and enhance the comfort and health of residents and visitors. These visual and breezeway corridors are made up of the following:

(a) At least 20m-wide building separations to allow air ventilation between domestic blocks at the eastern side of the proposed scheme.

(b) At least 25-m wide building separations to allow air ventilation between residential towers at the centre of the proposed scheme.

(c) At least 15m-wide building separations to allow air ventilation between residential towers at the southern side of the proposed scheme.

(d) At least 15m-wide building separations to allow air ventilation between domestic blocks at the western side of the proposed scheme.

7.6 ***Cycling Facilities***

7.6.1 The proposed development will promote the sustainable traveling mode of cycling to its residents and visitors. There will be a total of 173 bicycle parking spaces provided in the Site, and the existing and planned cycling network of the North West New Territories can be accessed at the entrance of the site via Mai Po South Road.

7.7 ***Residential Care Home for the Elderly***

7.7.1 The proposed development would provide a 100-place Residential Care Home for the Elderly (RCHE) and supporting facilities, in a 4-storey building at the east of the Site, next to the access road. The RCHE cum E&M Building would be designed to comply with the specifications and requirements under the planning standards and relevant regulations. The RCHE would cater to the shortfall against the planned provision for such community facilities in the wider context.

7.8 ***Internal Roads or Driveways***

7.8.1 The entrance of the Site on the access road connecting to Castle Peak Road – Mai Po will be an east-west two ways main driveway running through the Site, which also serves as the Emergency Vehicular Access. It will lead to access ramps to the basement carpark. The internal driveways are aligned to branch out and serve the frontages of the houses, residential, and other buildings for drop off movements.

7.9 ***Basement Carparking***

7.9.1 The carpark will be underground in the basement level, and will be extended to serve all the houses and residential buildings in the Site. Internal transport facilities including car parking spaces and loading/unloading bays have been increased in accordance with the changes in unit sizes and numbers. The provision is in accordance with the Hong Kong Planning Standard and Guidelines ("HKPSG"). The Basement Carpark Plan is provided in **Appendix 3.**

7.10 ***Preliminary Phasing Plan***

7.10.1 The development will be constructed and occupied in six phases. This is indicated in **Figure 8**. The anticipated completion year of the entire development (including all the phases) is 2031.

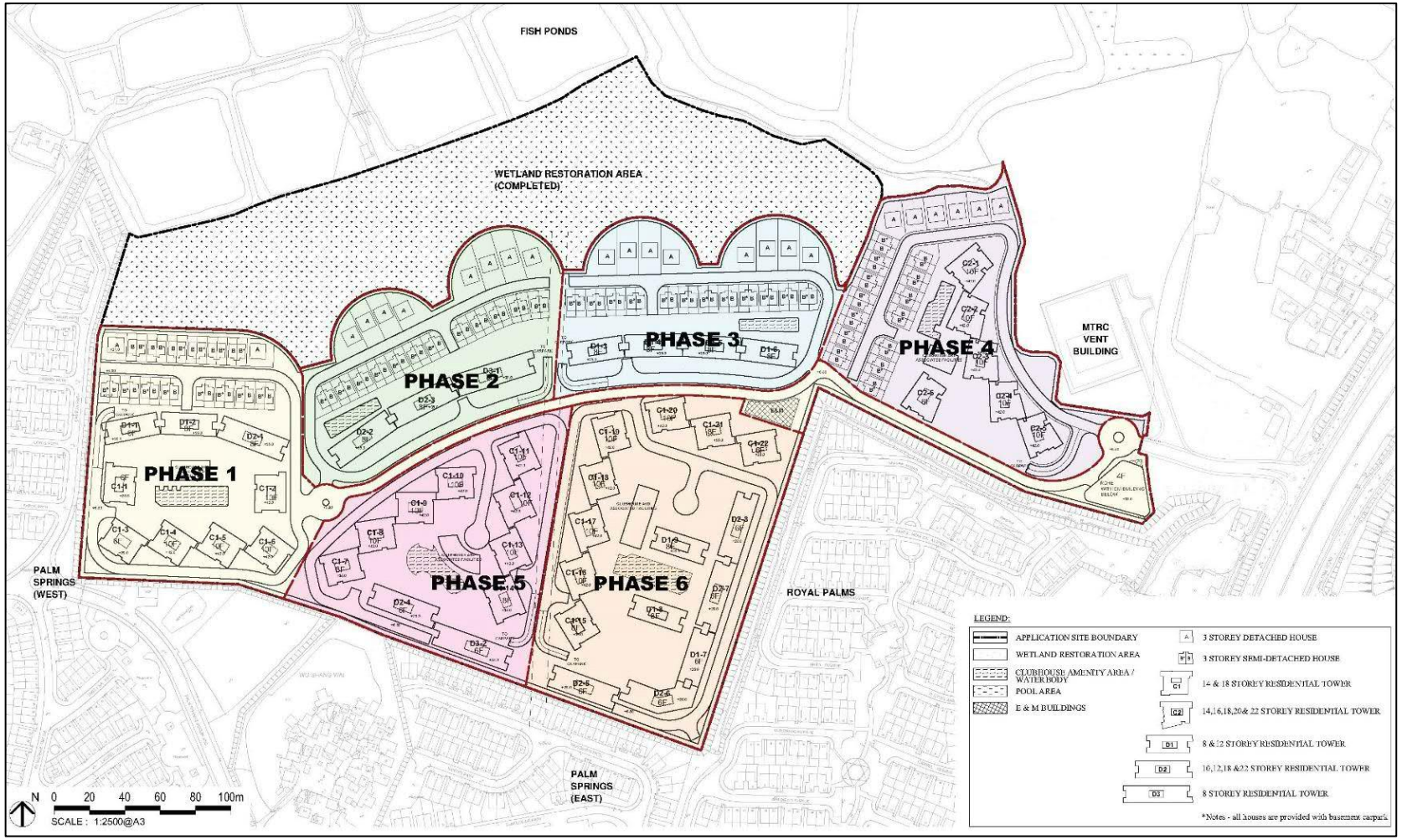


Figure 8: Preliminary Phasing Plan

8. Technical Feasibility

8.1 ***Environmental Assessment***

8.1.1 Reference is made to the Environmental Assessment in **Appendix 4** which provides environmental considerations including air quality, noise, water quality and waste of the proposed development. With the implementation of mitigation measures during both the construction and operation phases, there will be no adverse environmental impacts as a result of the proposed development.

8.2 ***Drainage Impact Assessment***

8.2.1 The Drainage Impact Assessment in **Appendix 5** demonstrates that the drainage facilities will be of sufficient capacity to cater for the stormwater runoff. In case of unexpected rainfall events, water retention facilities are put in place to ensure there will not be runoff to the wetland portions of the site. The drainage system of the WRA will remain independent from that of the residential component.

8.3 ***Sewerage Impact Assessment***

8.3.1 The Sewerage Impact Assessment in **Appendix 6** concludes that the sewerage system within the Application Site will be designed to facilitate the future connection to the San Tin/ Lok Ma Chau (STLMC) Effluent Polishing Plant (EPP), which is targeted to come into commission in 2031 to meet the anticipated first population intake. This is according to the approved EIA-302/2023 of the STLMC Development Node, STT OZP, and strategic government policy documents. No adverse sewerage impact will be incurred because of occupation of the Application Site. In case there is program mismatch, the Applicant has provided two contingency options in the assessment, including a Temporary Sewage Treatment Plant (TSTP)[6] to treat and discharge the effluent into the Mai Po Tributary; or a pipe connection to the public network of the Yuen Long Sewerage Treatment Works. The proposed connection to the EPP and contingency options would be explored with the relevant Government departments.

[6] Considering the minor structure of the TSTP, there is no need to demolish the structure when decommissioned.

8.4 ***Water Supplies Impact Assessment***

8.4.1 The Water Supplies Impact Assessment in **Appendix 7.** The proposed development is required to connect to existing or planned water supply networks in the surroundings. The Applicant has proposed to connect to the surrounding public water supply network in two options of alignment and connection. The two options would be explored with the relevant Government departments.

8.5 ***Ecological Impact Assessment***

8.5.1 The Ecological Impact Assessment in **Appendix 8** indicated that since there are no changes proposed to the WRA or at the boundary between the residential portion and WRA, no additional direct impact to the ecological function and area of the WRA is anticipated. The WRA has also been implemented as buffer area between the residential development and the WCA; no additional impact is anticipated to the fauna species of conservation importance in the WCA. The WRA has also been functioning for over a decade, providing habitat to wildlife, and has integrated with the ecology of the surrounding wetlands. It has brought overall ecological gain to the conservation areas in the surrounding.

8.5.2 The proposed taller buildings have been considered carefully the alignment and orientation. More than 50m setback from the nearest WCA at the eastern part of Application Site is proposed while including the WRA and Palm Springs, there are more than 100m setback between the taller buildings and the WCA to the north and to the west. No significant adverse ecological impacts are anticipated due to the proposed amendments. With the implementation of all the mitigation measures, no adverse impact to the wildlife and ecological function and area of the WRA and WCA is anticipated.

Extra Ecological Merits

8.5.3 In addition, the project team has explored extra ecological merits of the proposed development, including (**Figure 9**):

(a) Wildlife viewing points, with vegetation screening, at the edge and outside of the WRA, and at the roof-top of the residential blocks, to raise the public awareness and education of biodiversity in the wetlands of this area.

(b) Landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds).

(c) Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

(d) A 5m buffer planting within the residential portion of the Site, with 1 to 2 rows of trees to screen residential development and prevent disturbance to the WRA. This is an increased buffer planting area compared to the previous approved s16 scheme, with a 2.5m buffer planting within the residential portion.

(e) Only low-rise buildings adjacent to the WRA and within 50m buffer from the nearest fishponds (i.e. land zoned as Conservation Area) so that the proposed development would not lead to adverse ecological impacts.

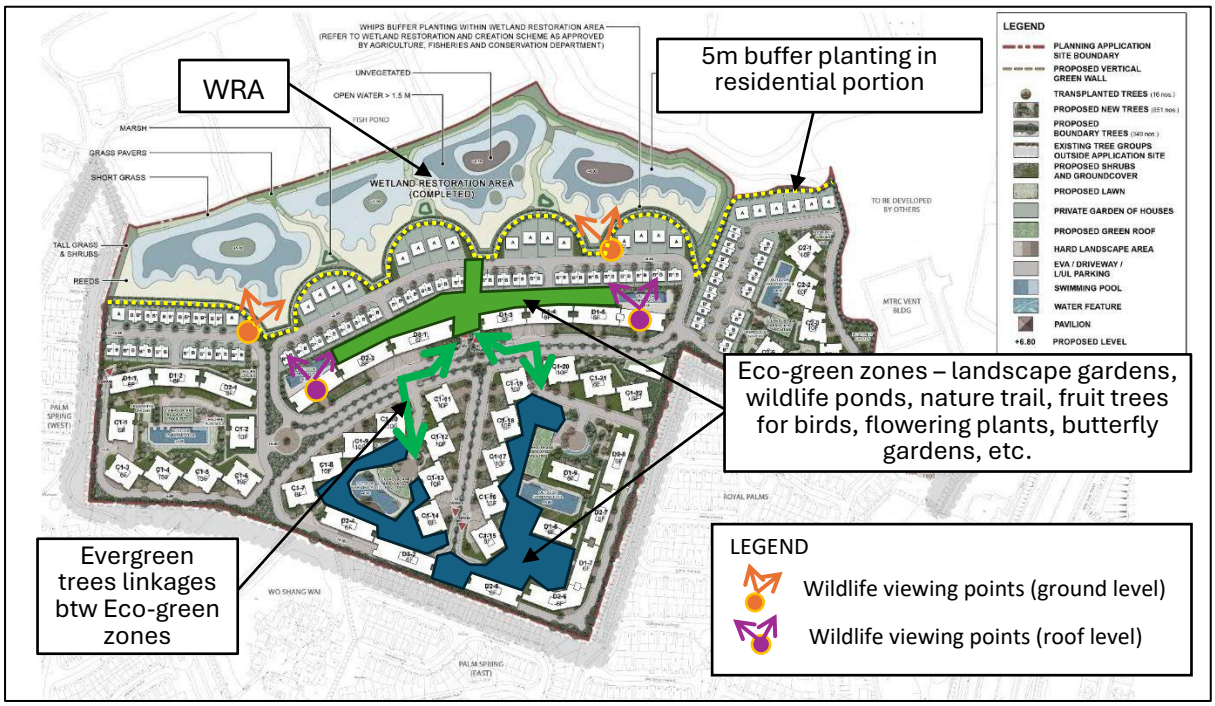


Figure 9: Extra Ecological Merits of the Proposed Scheme (indicative)

8.6 ***Traffic Impact Assessment***

8.6.1 The Traffic Impact Assessment in **Appendix 9** concludes that the traffic generated by the proposed development can be absorbed by the future road improvements of the San Tin Technopole. In case of program mismatch, sensitivity tests have been carried out to demonstrate with proper mitigation, including road and junction improvement works, that there would not be adverse impact to the traffic network. Particularly, with appropriate bus service enhancements and planned junction improvement at Fairview Park Interchange, the proposed development would not cause any adverse traffic impact to the road network.

8.7 ***Visual Impact Assessment***

8.7.1 The Visual Impact Assessment in **Appendix 10**, concludes that the proposed development, in general, will not result in adverse visual impacts in the existing and future development context. In fact, it is envisaged that the proposed development would be compatible in scale, form and building height to the future development context of the nearby San Tin Technopole; intermixed with high, medium, and low-density developments.

8.8 ***Air Ventilation Assessment***

8.8.1 The Air Ventilation Assessment in **Appendix 11** concludes that the proposed scheme of medium-density development, compared to the approved low-density baseline scheme, will result in overall enhanced air ventilation performance.

8.9 ***Tree Preservation and Removal Proposal***

8.9.1 A Tree Preservation and Removal Proposal is included in the Landscape Master Plan in **Appendix 12**. The 1,200 new trees as approved from the previous planning applications are proposed to be planted.

8.10 ***Landscaping, Private Open Space and Greenery***

8.10.1 The open spaces and greenery of the proposed development are accompanied by the Landscape Master Plan (LMP) in **Appendix 12** and shown in **Figure 10**.

8.10.2 The landscaping design ensures that the proposed development will sensitively integrate into the surrounding areas through naturalistic interface treatments and minimizes any visual impact. The LMP will adopt the following design features:

(a) Landscaped open space to create an attractive, lush landscape setting for the buildings and to provide visual and airflow permeability. These open spaces will be punctuated by tree clusters throughout the Site as a strong node and visual landmark within the development.

(b) Communal gardens with outdoor activity areas, children play area and fitness area for the recreational enjoyment of residents and their visitors.

(c) Green roofs and vertical greens are proposed at various locations to enhance existing greenery.

(d) Landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds).

(e) Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

(f) The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimize potential visual impacts.

(g) The clubhouse will be landscaped to provide a relaxed, resort-like atmosphere and will incorporate shade trees, ornamental shrubs and groundcovers, as well as buffer planting around the edges of the Site.

8.10.3 In accordance with the open space requirement in the Hong Kong Planning Standard and Guidelines, 1m^2 of open space per person is required. Not less than 9,998m^2 open space will be provided for designed population of 9,998 residents. The total open space achieves the required provision. In accordance with the requirement of PNAP APP-152, an area of not less than 30% of the total greenery will be provided for the proposed development.



Figure 10: Landscape Master Plan of the Proposed Development

9. Proposed Amendment to the OZP

9.1 The proposed amendment to the Plan to meet this proposal at the Application Site would not require any changes to the existing zoning of "OU(CDWRA)" in the OZP per se (note that the "OU(CDWRA)" zone in the OZP only contains the Application Site). As such, the change required to meet our proposal is to update the Notes of the OZP, in the "OU(CDWRA)" zone, Remarks (c) and explanatory statement para. 9.9.3, as follows (with changes shown in bold, strikethrough, and highlighted texts):

- Remarks (c): No new development, or addition, alteration and/or modification to or redevelopment of an existing building (except developemnt or redevelopment to 'New Territories Exempted House') shall result in a total development and/or redevelopment in excess of a maximum plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park**, or the plot ratio, site coverage and height of the building which was in existence on the date of the first publication in the Gazette of the notice of the interim development permission area (IDPA) plan for Mai Po and Fairview Park, whichever is greater.

- Explanatory Statement, Paragraph 9.9.3: To be in line with the rural setting which is mainly village houses, to minimize visual impact and to take into account the capacities of local road network and infrastructure in this area, development or redevelopment shall not result in a total development or redevelopment intensity in excess of a total plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park**. Minor relaxation of the plot ratio and/or building height restrictions may be considered by the Board on application under section 16 of the Ordinance. The criteria given in paragraph 8.5 above would be relevant for the assessment of minor relaxation of building height restrictions. Each application will be considered on its own merits.

10. Planning Assessment and Justifications

10.1 ***Proposed Amendments would continue to Comply with the Planning Intention of "OU(CDWRA)"***

10.1.1 The proposed amendment to the notes of the "OU(CDWRA)" zone, only involves relaxation of PR and BH restrictions without changing the planning intention of the subject zone. The planning intention would continue to be to develop comprehensive residential development to include wetland restoration area as a means of incentive for the restoration of degraded wetlands adjoining existing fishponds. The completed WRA would continue its ecological function, while the residential portion continues to be designated for residential land use. The current proposal is to increase the development intensity of the residential portion to an acceptable level, which is compatible with the surroundings; technically feasible, with no adverse impact to the site and surroundings; and provides planning merits that benefit the community.

10.2 ***In Line with the Northern Metropolis Development Strategy***

10.2.1 The strategic development context of the Northern Metropolis is already planned, and higher density developments are emerging in the land-use character. The whole area would undergo major changes in development land-use and infrastructure upgrade, and the integration with the bordering city of Shenzhen will become more apparent. Along these lines, the increase of development intensity of suitable locations in the Wetland Buffer Area should be supported, especially when a recent and nearby case (No. Y/YL-NSW/7) has been approved by the Board, and completed the OZP amendment process.

10.2.2 The overarching trend of "co-existence of development and conservation" will be evident throughout the landscape, and as shown in the exemplar case of the San Tin Technopole, this is the most appropriate and forward-planning approach to create a balanced development model in the North New Territories area.

10.3 ***Conform to Development Trend of Upzoning Comprehensive Developments in the Area and Infrastructure Upgrades of San Tin Technopole***

10.3.1 As mentioned, the future development context is transforming from low-density rural setting to high-density developments, supported by major infrastructure upgrades and supporting facilities. The proposed development is targeted for completion at a period that would coincide with the available infrastructure capacity that is planned at San Tin Technopole.

10.3.2 There have been many similar approved comprehensive residential developments in the nearby area of the Application Site, reflecting the impetus for appropriate development intensity of higher density developments is coming into place, led by the large-scale transport infrastructural projects in the area. The proposed private housing scheme has a comparable development intensity to the planned/committed developments in the vicinity, and will help capture the benefit to be brought by the NOL.

10.4 ***Compatible to its Surrounding Planning Context***

10.4.1 The proposed increase in development intensity is compatible with the existing surrounding land uses. The accompanying technical assessments have demonstrated that there will not be any adverse impact to the wetland ecology of the SPS WCP, and the proposed scheme complies with the principle of no-net-loss in wetland. The increased development intensity of the residential portion is insignificant as it would not create negative off-site disturbance impact, or lead to both loss in area and function of the existing wetland and fish ponds, and the conservation of continuous and adjoining fish ponds is maintained.

10.4.2 The proposed scheme is also compatible in scale and land-use to the surrounding low- to medium-density housing neighbourhood on the west side of the San Tin Highway. In view of the significant future transformations in built environment and infrastructure that would be brought about with the major development nodes on the east side of the San Tin Highway, the proposed scheme is suitably positioned within this high-density, intermixed with medium and low-density development context.

10.5 ***Compliance with Town Planning Board Guideline No. 12C***

10.5.1 The proposed scheme is in compliance with the Guideline, as supported by the technical assessments and discussed in this Planning Statement, as follows: -

(a) Proposed changes in layout of the internal road, landscaping, and number of houses (not abutting the WRA) are not anticipated to have any impact on the WRA and the wetlands in the WCA.

(b) The approved and completed WRA component will not be affected by this application and will continue to meet the requirements of this Guideline.

(c) The proposed scheme is compatible with the surrounding land uses in terms of the relationship with the rural and wetland setting, and the visual and landscape quality of the area.

(d) The proposed scheme has carefully considered environmental impacts in terms of noise, air and water qualities, traffic, drainage and sewerage impacts, provision of infrastructure and visual impact.

(e) The Sewerage Impact Assessment concludes that the proposed scheme will not add to the pollution loading of the Deep Bay Area.

(f) The proposed scheme complies with the principle of "no-net-loss in wetland" as it does not lead to both loss in "area" and "function" of the existing wetland and fish ponds, and the conservation of continuous and adjoining fish ponds is maintained.

(g) The proposed scheme complies with the planning intention of the WBA, which is "to protect the ecological integrity of the fish ponds and wetland within the Wetland Conservation Area and prevent development that would have a negative off-site disturbance impact on the ecological value of fish ponds."

10.6 ***The Dire Need to Provide Private Housing Supply in the Next 5 to 10 Years***

10.6.1 The report published by the OHKF found that the private housing supply in the coming decade would tail off. Therefore, the proposed development would provide private flats to offer an alternative private housing supply to help alleviate the over-inflated property prices. The proposed scheme is in line with contributing to this demand for private housing and the Site is immediately available for development.

10.6.2 Moreover, the proposed development provides additional private housing supply to support the proposed I&T development in San Tin Technopole. It helps to diversify housing choices for future residents, including medium-rise apartments and low-rise houses. As the site is at the fringe neighbourhood of the San Tin Technopole, it should be utilised to generate more housing supply to echo with the vision of the NMDS and to achieve "balanced living and working opportunities" as desired by the Government. The recent amendment of the San Tin Technopole OZP has raised comments from the representations and Board members on the importance of creating more private housing supply in the area to attract professional talents and to diversify the housing options and supporting facilities. In response, the Government indicated that there may be potential to adjust the public to private flat production ratio for a higher proportion of private housing, subject to changing planning circumstances, social aspirations, and development needs.

10.7 ***The Planning Merits of the Proposed Private Housing Scheme***

Compared to the Previously Approved S16 Application No. A/YL-MP/344

10.7.1 The current proposed scheme is a medium-density development with 3,571 private flats, which would contribute a greater number of flats to the medium and long-term private housing supply. The building disposition and form would also contribute to better air ventilation at the pedestrian level, enhancing the comfort and well-being of residents and visitors.

10.7.2 The current proposed scheme would contain ecological merits, in the form of abundant landscaped gardens, ponds and nature trails, and wildlife viewing points. These would contribute to the public education and awareness of wetland and biodiversity conservation of residents and visitors.

10.7.3 The current proposed scheme would contain a RCHE that would cater to the demand for such community facilities in the district-wide context. It is anticipated that there would be an insufficient supply of such facilities in the future planning provision of the district.

Compared to the Existing Site Conditions

10.7.4 The increased development intensity of the proposed private housing development will optimize the scarce land development potential at the existing site, and provide

quality private housing to contribute to the long-term housing supply shortage. The site is currently vacant, ready for construction and does not require resumption of land. In its current state, it would be capable of speedy implementation.

10.8 ***No Insurmountable Technical Issues***

10.8.1 The technical assessments have demonstrated that the proposed scheme is technically feasible. It has taken into account various constraints including environmental, ecological, infrastructure capacities and urban design considerations. There are no insurmountable technical issues, and contingency scenarios for program mismatch with government developments have been provided.

11. Conclusion

11.1 The Applicant has obtained planning permissions from TPB for low-density residential developments. The clear trend of increasing development intensity in the area and the materialization of the San Tin Technopole, have revealed a significant opportunity for upzoning at the Site. This application aims to better utilize the scarce develompent potential of the Site in response to evolving strategic planning context in the area and to increase private housing supply while striking a balance for conservation of the wetland areas. Given the proximity to the San Tin Highway, and high-density developments and infrastructure upgrades of STT OZP, it is proper to increase the development intensity of the Application Site.

11.2 The proposed medium-density private housing at the Application Site is suitable, compatible and technically feasible at its location and to the future planning context. It will enable the private sector to take an active part in the provision of housing to meet the long-term housing shortfall and bring the application site in line with the nearby San Tin Technopole in an integral manner from area planning perspectives.

11.3 Therefore, the Board is invited to favourably consider the proposed amendment to OZP as put forward in this planning application.

Masterplan Limited – Planning and Development Advisors
January 2025

Appendix 1: Previous Approved Planning Application No. A/YL-MP/344

adverse impact on the ecological aspects, no adverse impact to the surrounding road networks, adequate transport facilities, drainage and sewerage, environmental aspects on noise, air, and water quality, with mitigation measures where relevant.

Table S1: Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	12,221m^2
Communal Landscape and Communal Perimeter Landscape	16,202m^2
Communal Streetside Landscape	2,623m^2
Communal Water Body	717m^2
Private Garden	49,827m^2
Domestic Buildings and Clubhouse	42,658m^2
Internal Road/Driveway	35,760m^2
Domestic Components	
Plot Ratio	0.4
Maximum Domestic GFA (Approx.)	82,963m^2
Site Coverage (not more than)	25%
Total Number of Units	789
2-storey houses	749
3-storey houses	40
Average Unit Size (Approx.)	105.2m^2
Ancillary Recreational Facilities (Approx.)	3,000m^2
Building Height	
2-storey houses	9m or 16.8mPD
3-storey houses	13.5m or 21.3mPD
Clubhouse (2-storey)	17mPD
Car Parking Provisions	
Residential	1,578
Visitors' (including 1 for disabled)	5
Motorcycle Parking Space	37
Loading / Unloading Bay	1
Trees	
Perimeter Trees	375
New Trees (excluding perimeter trees, but including trees on pavement)	825
Total No. of Trees	1,200

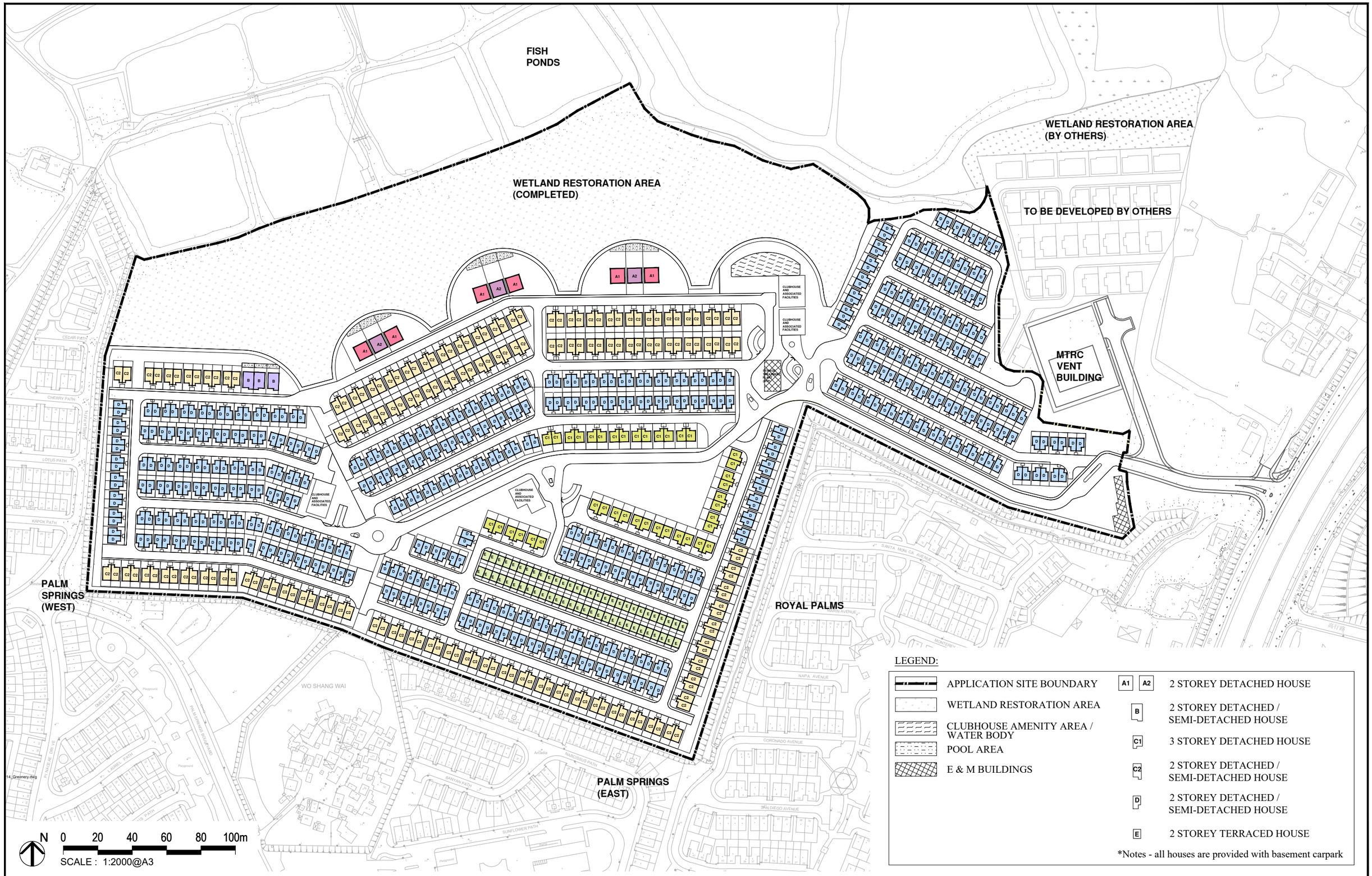


Figure 3: Revised Master Layout Plan in this Amendment Application

1:2000 in A3
DWG. No. : 3809-003

lwk&partners
architects

Appendix 2: Layouts and parameters of Section 6(1) Representation S/YL-MP/7-R3

MLP



	House type A	360 m² x 16=5,760 m²
	House Type B	180 m² x 74=13,320 m²
	Tower C	12 STOREY 5,757.755 m² x 2 =11,516 m² 18 STOREY 8,636.632 m² x 4 =34,547 m² 22 STOREY 10,555.883 m² x 11 =116,115 m²
	Tower D	6 STOREY 3,337.924 m² x 9 =30,041 m² 8 STOREY 4,450.565 m² x 3=13,352 m² 12 STOREY 6,675.848 m² x 12 =26,703 m² 18 STOREY 10,013.771 m² x 6 =60,083 m²

TOTAL =311,436 m²

TOTAL NO OF UNITS = 5,134
AVERAGE FLAT SIZE = 60.661 m²

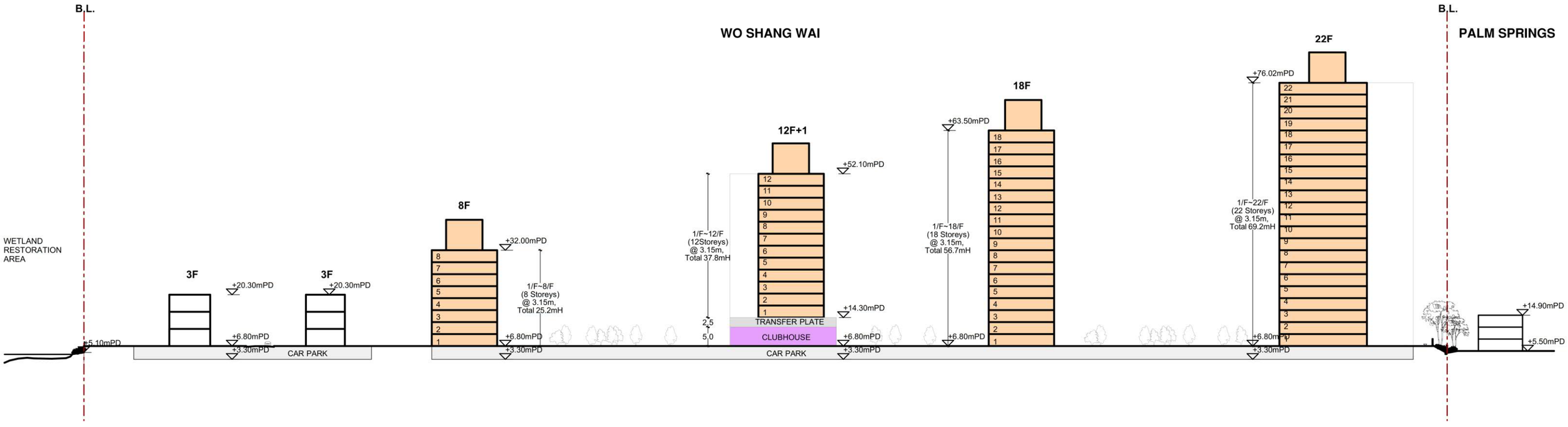
LWK +PARTNERS

PROPOSED RESIDENTIAL DEVELOPMENT AT WO SHANG WAI, MAI PO, YUEN LONG , NEW TERRITORIES
1:2000@ A3
30/4/2024

SECTION



KEYPLAN



Building Section A-A

1:1000

LWK +PARTNERS

PROPOSED RESIDENTIAL DEVELOPMENT AT WO SHANG WAI, MAI PO, YUEN LONG , NEW TERRITORIES

1:1000@ A3

6/5/2024

Table 2: Indicative Development Parameters of the Proposed Private Housing Concept

Representation Site Area	207,408 m^2 (about)
Total Plot Ratio	1.5 (not more than)
Total GFA	311,436 m^2 (not more than)
Building Height in No. Storeys	22 (not more than) (excluding 1 level of basement carpark)
No. of Private Flats	5,134 (about)
Average Flat Size	60 sqm (about)

Appendix 3: Architectural Drawings

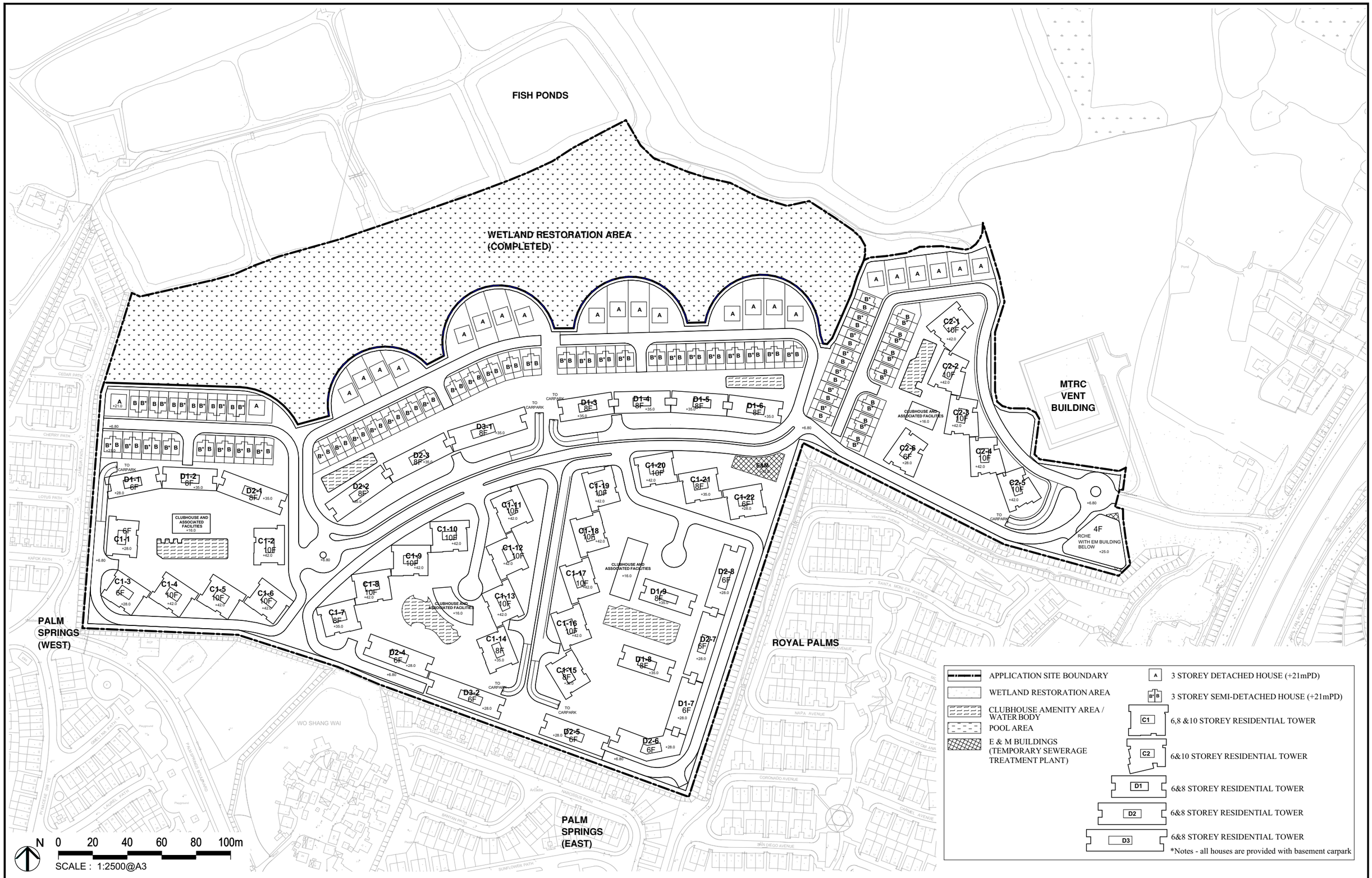
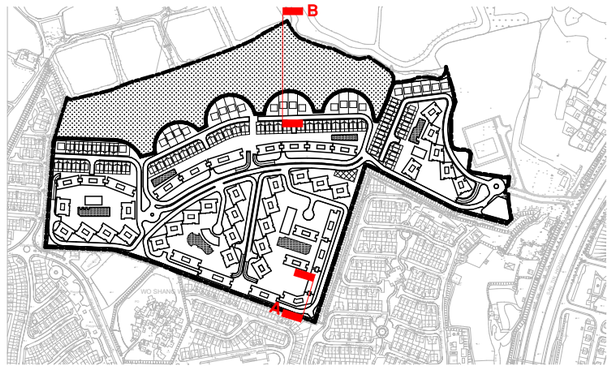


Figure 3: Revised Master Layout Plan in this Amendment Application

1:2500 in A3
DWG. No. : 3809-003

LWK +PARTNERS



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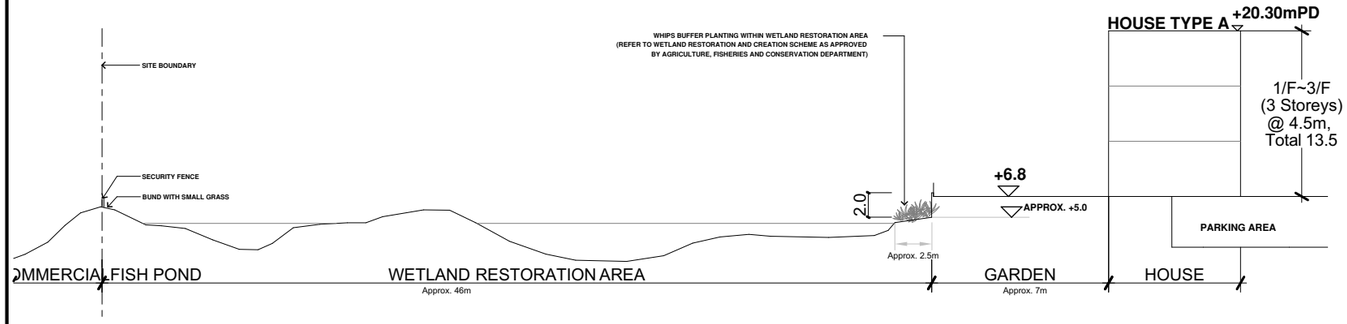
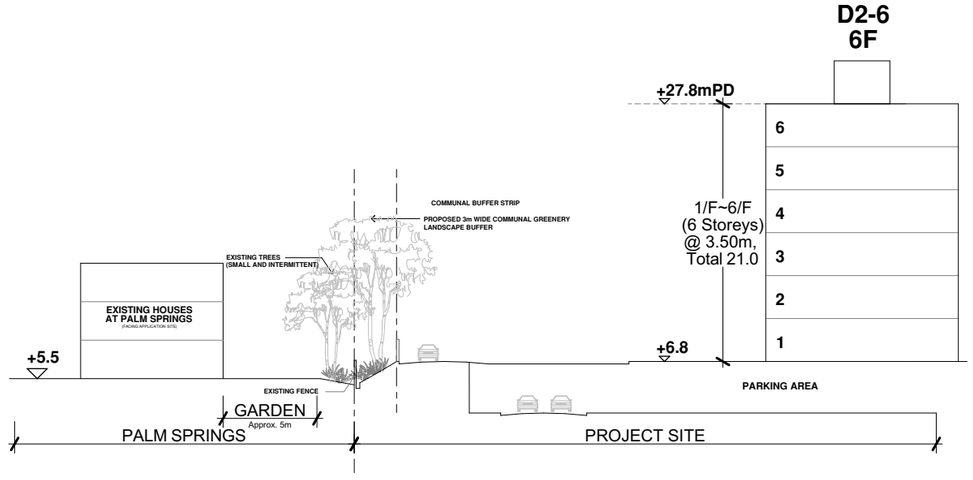


SECTION B - THROUGH INTERFACE OF WETLAND BUFFER AND RESIDENTIAL AREA (TYPICAL)



SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:500 @ A3
November 2019 Submission

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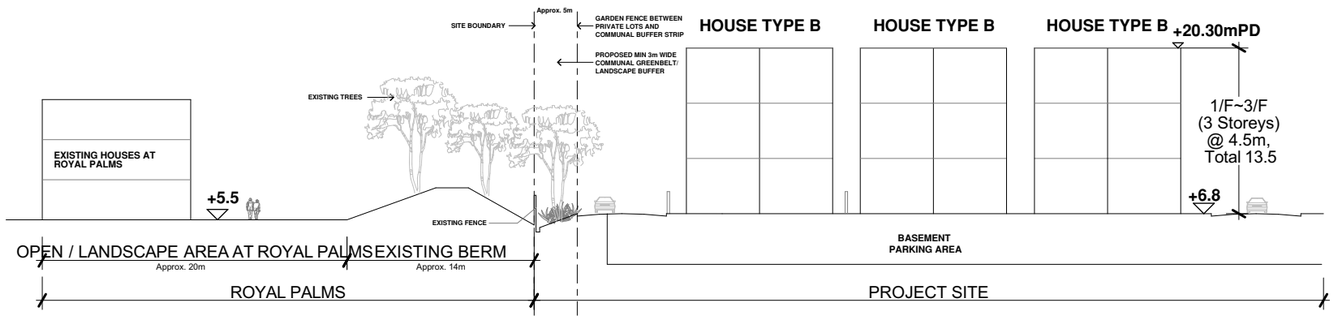
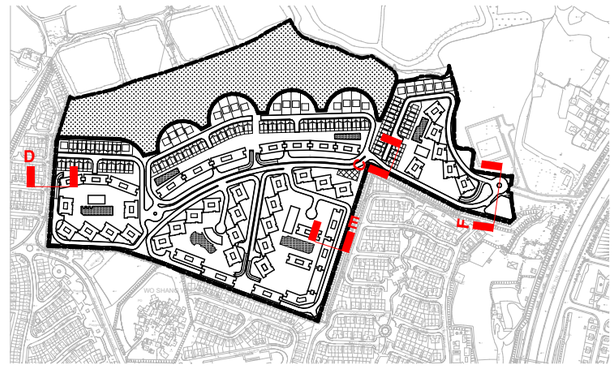


SECTION C - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA



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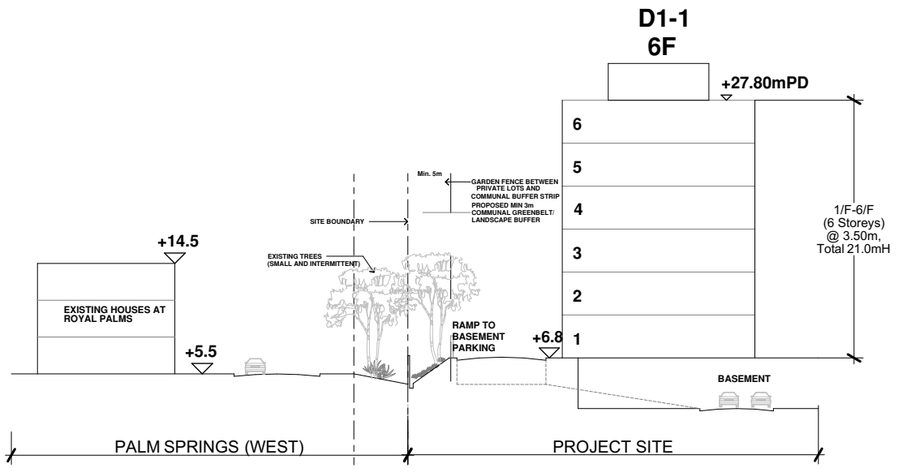
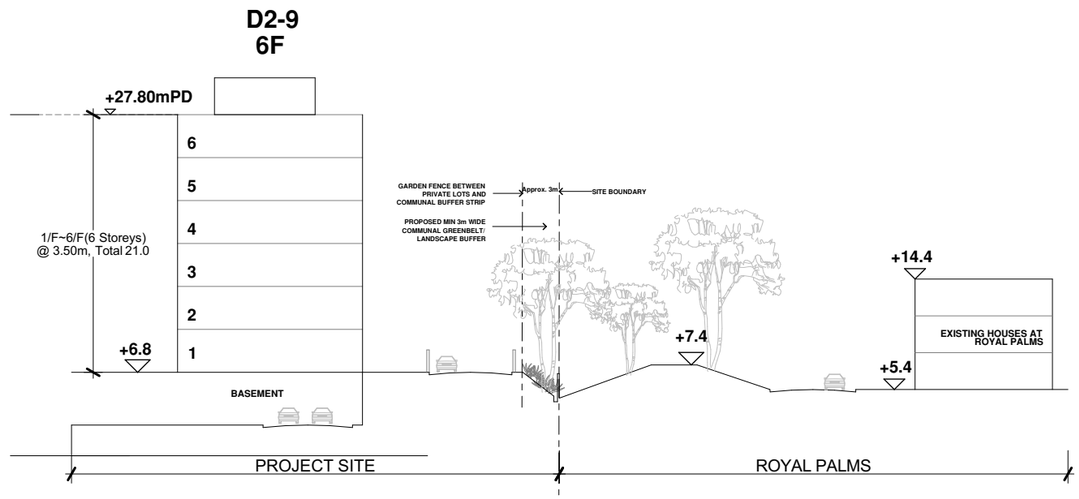
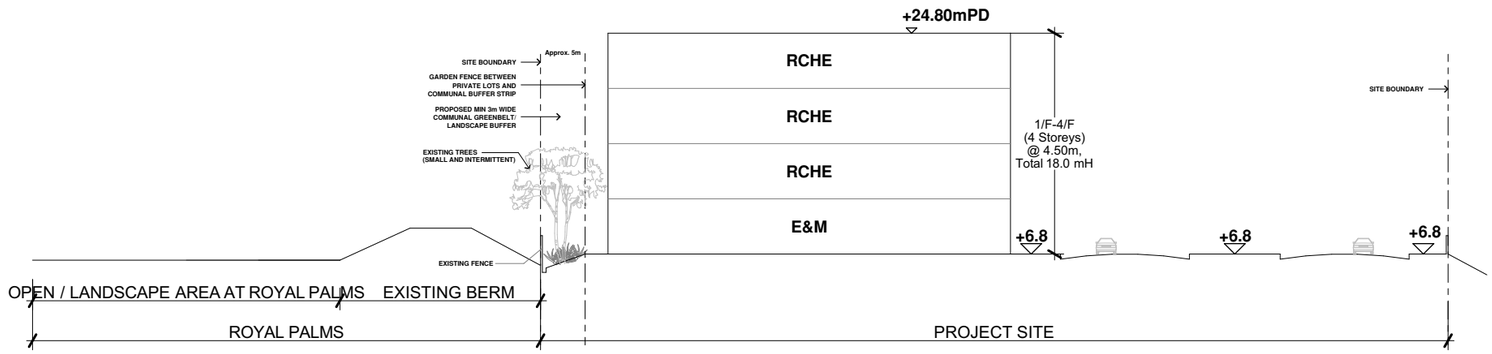


SECTION D - SECTION THROUGH PALM SPRINGS (WEST) / PROJECT AREA (APPROXIMATE)



SECTION E - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)



SECTION F - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:500 @ A3
November 2019 Submission

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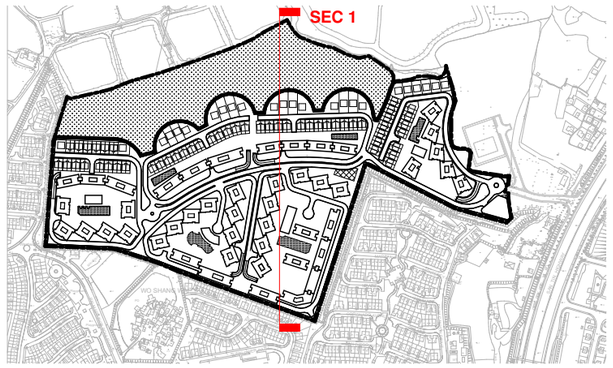

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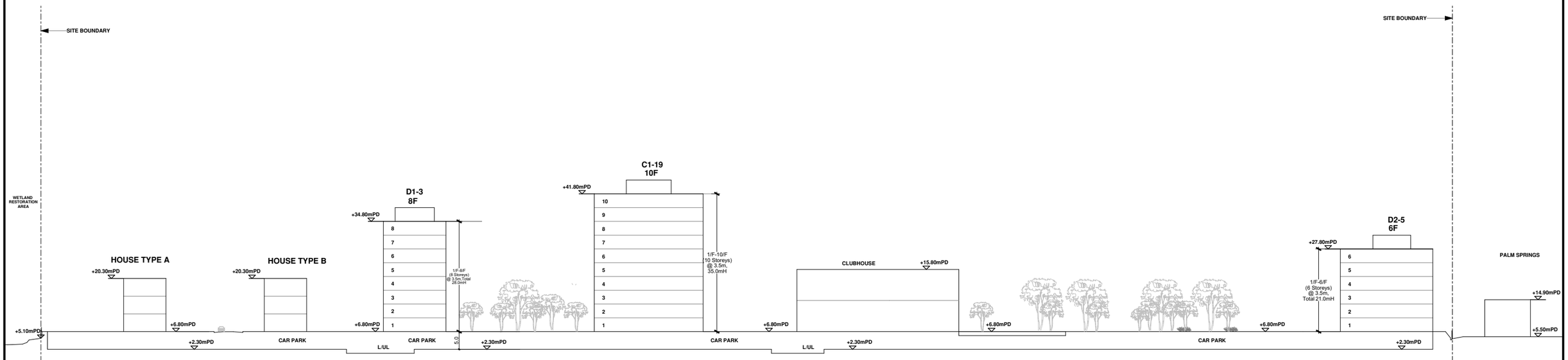

SECTION 1 - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:1000 @ A3
November 2019 Submission

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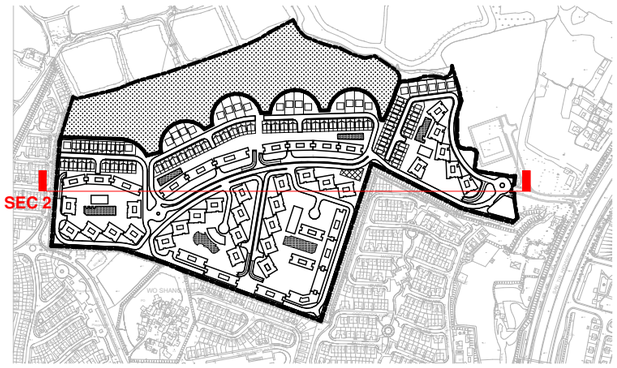

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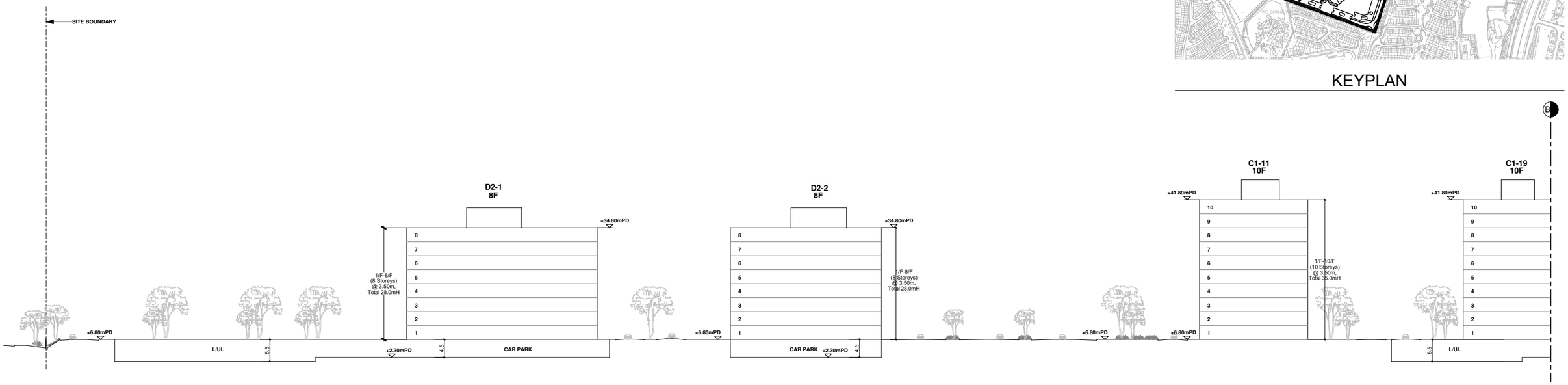
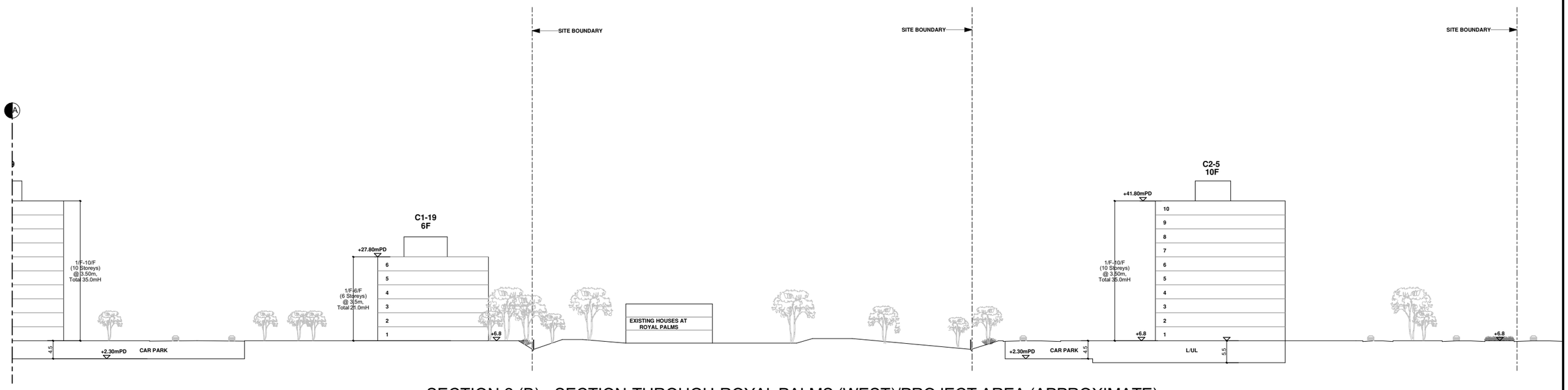


SECTION 2 (A) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)



SECTION 2 (B) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:1000 @ A3
November 2019 Submission

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FISH PONDS

WETLAND RESTORATION AREA
(COMPLETED)

MTRC
VENT
BUILDING

PALM
SPRINGS
(WEST)

ROYAL PALMS

PALM
SPRINGS
(EAST)

LEGEND:

- APPLICATION SITE BOUNDARY
- BASEMENT PARKING
- DRIVEWAY/ E&M/ PLANT ROOMS/ CLUBHOUSE
- UNEXCAVATED

Proposed Comprehensive Development in Wo Shang Wai

Basement Floor Layout

1:2500 in A3
DWG. No. : 3809-003

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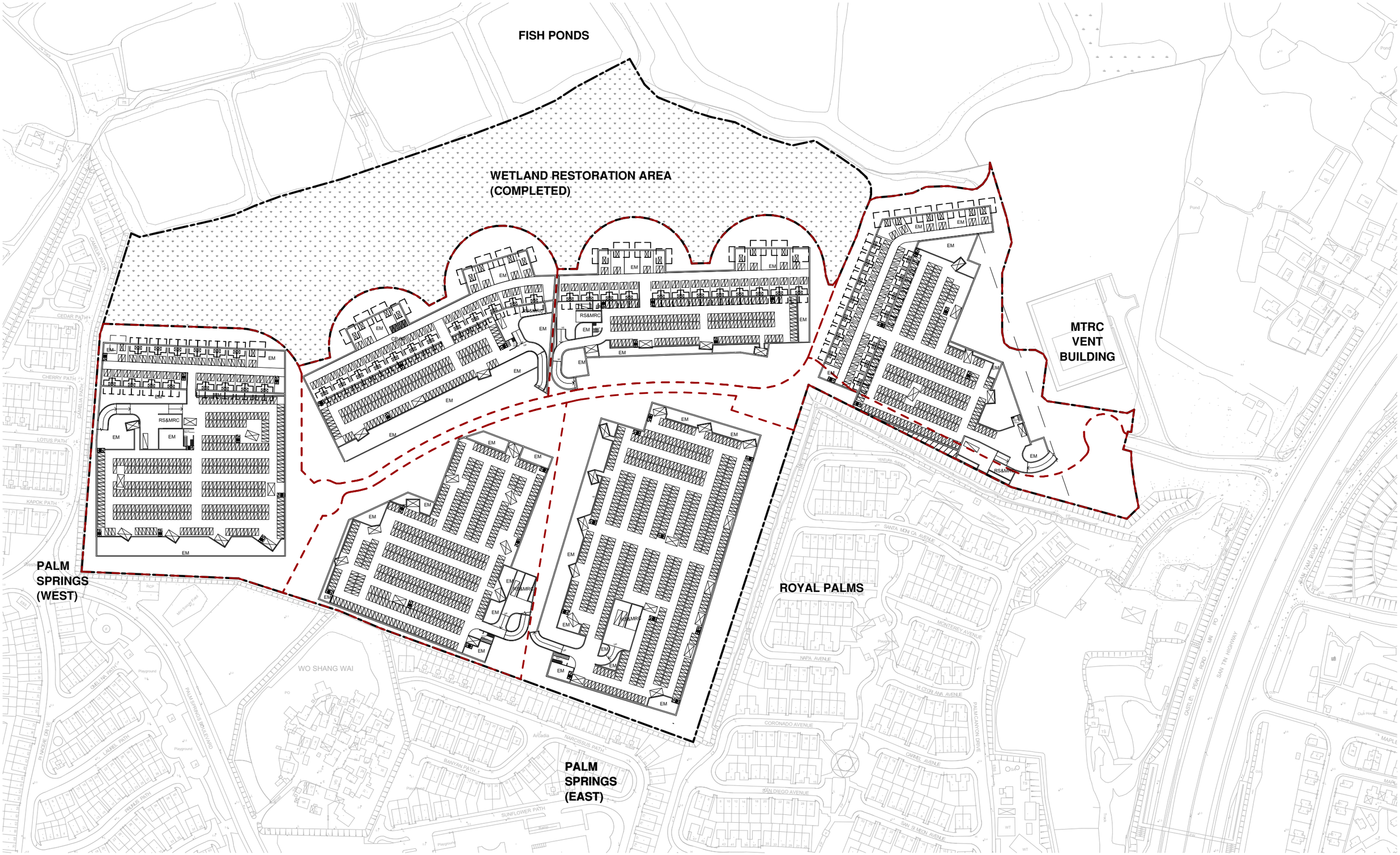
Basement



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PROPOSED RESIDENTIAL DEVELOPMENT AT WO SHANG WAI, MAI PO, YUEN LONG , NEW TERRITORIES
1:2500@ A3
9/12/2024

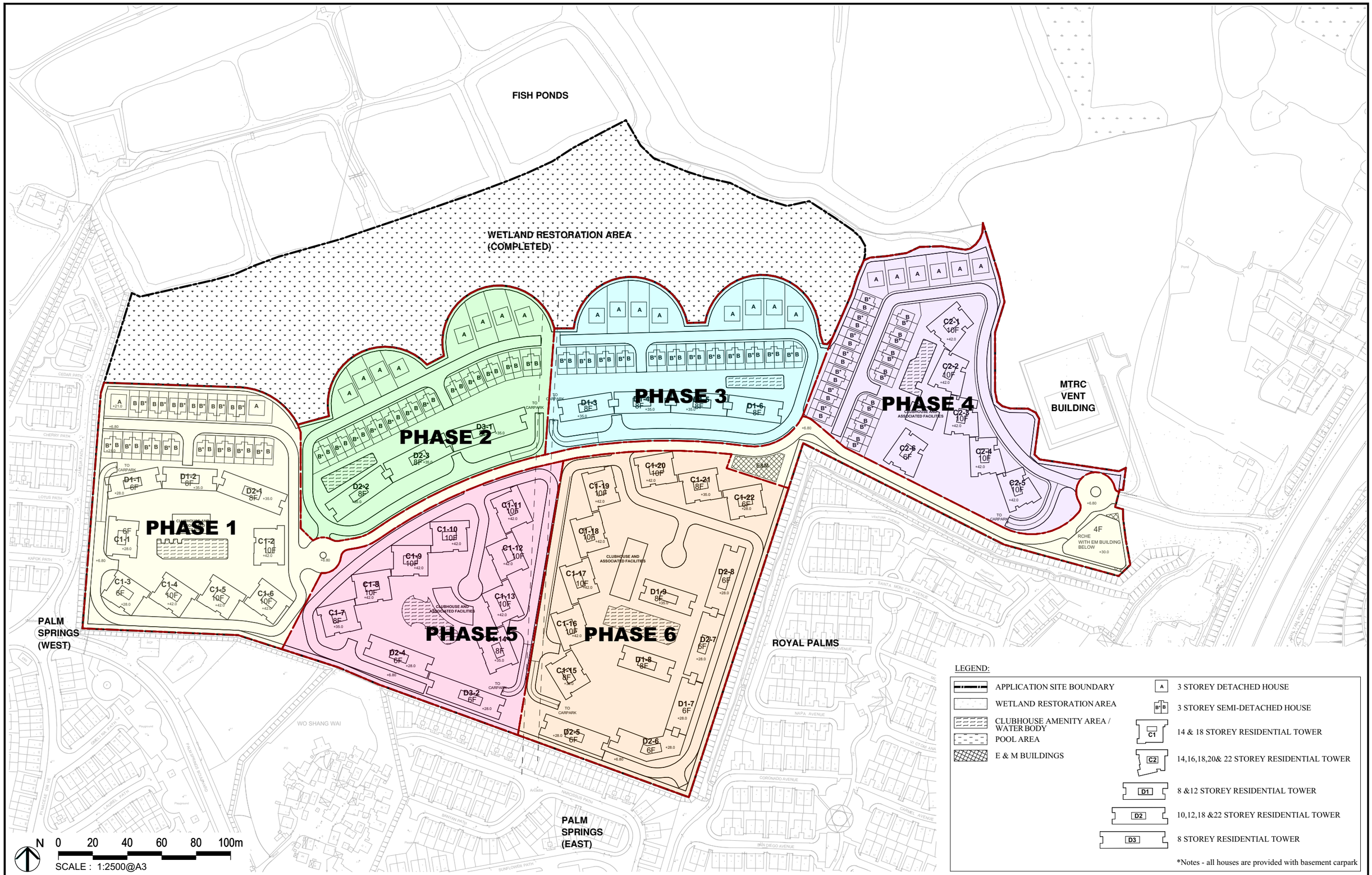


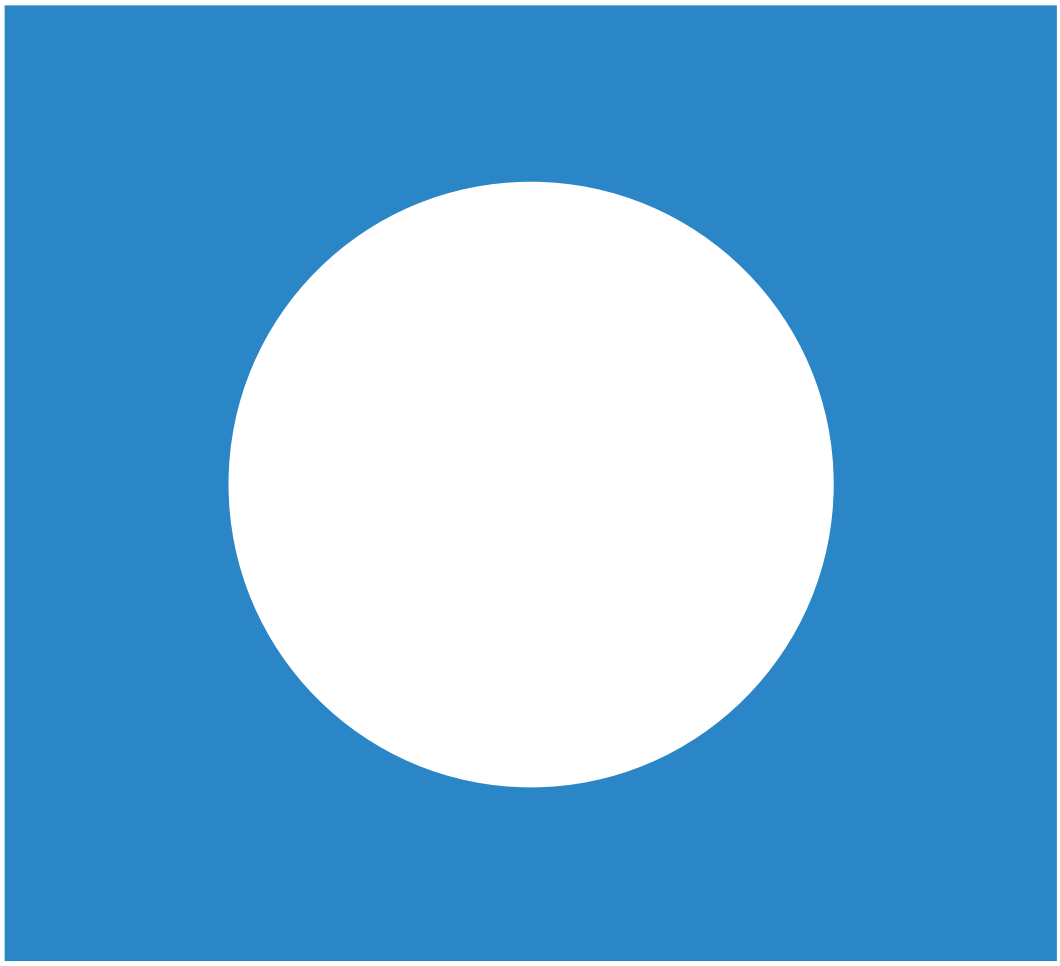
Figure 3: Revised Master Layout Plan in this Amendment Application

1:2500 in A3
DWG. No. : 3809-003

LWK +PARTNERS

Appendix 4: Environmental Assessment

MOTT MACDONALD



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.B)

January 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.B)

January 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

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Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/7. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area. This proposed comprehensive residential development comprises of club house, landscaped open spaces, car parks, residential care homes for elderly (RCHE).

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	39,072m^2
Communal Streetside Landscape	2,988m^2
Communal Water Body	5,103m^2
Private Garden	15,444m^2
Domestic Buildings and Clubhouse	42,078m^2
Internal Road/Driveway	34,120m^2
Domestic Components	
Plot Ratio Domestic Non-Domestic	1.3 1.28 0.02
Maximum Domestic GFA (Approx.)	265,847m^2
Maximum Non-Domestic GFA (Approx.)	3,800m^2
Site Coverage (not more than)	25%
Total Number of Units	3,751
Average Unit Size (Approx.)	74.45m^2
Ancillary Recreational Facilities (Approx.)	11,581 m^2
Estimated Population	9,998*

Completion Year	2031

Remarks:
* Based on person per plat ration of 2.8

Mott MacDonald Hong Kong Limited (MMHK) was commissioned by Profit Point Enterprises Ltd to conduct an Environmental Assessment (EA) to assesses the potential environmental impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

Meanwhile, two options are also being considered for offsite sewerage conveyance to handle the sewage generated from the Development during the operational phase. The two options are (1) construction of a sewerage pipeline to the new San Tin Lok Ma Chau Effluent Polishing Plant and adopting a temporary on-site sewage treatment plant until the San Tin Lok Ma Chau Effluent Polishing Plant is commissioned; and (2) construction of a sewerage pipeline to connect to the existing Nam San Wai Sewage Pumping station for discharge to Yuen Long Sewage Treatment Plant. The feasibility of these two options will be determined in the later stage and the potential environmental impacts arise from these two options will be assessed in the updated Environmental Impact Assessment.

1 Air Quality Impact

1.1 Introduction

This section assesses the potential air quality impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

1.2 Legislation, Standards, Guidelines and Criteria

The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance;
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulation;
- Recommended Pollution Control Clauses for Construction Contracts;
- Environmental Impact Assessment Ordinance and Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM); and
- Hong Kong Planning Standards and Guidelines (HKPSG).

Air Pollution Control Ordinance

The principal legislation for the management of air quality is the APCO. The APCO specifies Air Quality Objectives (AQOs) which stipulate the statutory limits of air pollutants and the maximum allowable numbers of exceedances over specific periods. The prevailing AQOs which have been effective since 1st January 2022 are listed in **Table 1.1** below.

Table 1.1: Air Quality Objectives

Pollutant	Averaging time	Concentration[i] ($\mu g/m^3$)	Number of exceedances allowed
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	50	3
Respirable Suspended Particulates (PM_{10}) [ii]	24-hour	100	9
	Annual	50	Not applicable
Fine Suspended Particulates ($PM_{2.5}$) [iii]	24-hour	50	35
	Annual	25	Not applicable
Nitrogen Dioxide (NO_2)	1-hour	200	18
	Annual	40	Not applicable
Ozone (O_3)	8-hour	160	9
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Lead (Pb)	Annual	0.5	Not applicable

Notes:

[i]. All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.

[ii]. Respirable suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.

[iii]. Fine suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

Air Pollution Control (Construction Dust) Regulation

The Air Pollution Control (Construction Dust) Regulation enacted under the APCO defines notifiable and regulatory works activities that are subject to construction dust control. Notifiable works are site formation, reclamation, demolition of a building, construction of foundation and superstructure for a building, and road construction work. Regulatory works are renovation of building, road opening or resurfacing work, slope stabilisation work, and any work involving stockpiling, loading and unloading of dusty material, transfer of dusty material using belt conveyor system, etc.

Notifiable works require that advance notice of activities shall be given to EPD. The Air Pollution Control (Construction Dust) Regulation also requires the works contractor to ensure that both notifiable works and regulatory works are conducted in accordance with the Schedule of Regulation, which provides dust control and suppression measures.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation controls the emissions from non-road vehicle and regulated machines to be used in construction sites. The regulated machines must comply with the emission standards of Stage IIIA of the European Union (EU) or equivalent, while non-road vehicles must comply with the prevailing emission standards for newly registered road vehicles, which is Euro V. Upon confirmation of their compliance with the emission requirement, EPD will issue them with an approval label.

According to the regulation, mobile machine and equipment (regulated machines) means any mobile machine or transportable industrial equipment that is powered by an internal combustion engine with a rated engine power output that is greater than 19 kW but less than or equal to 560 kW. Non-road Mobile Machinery (NRMM) is intended to be used in a private road that is within an area wholly or mainly used for the carrying on of construction work/industry. The regulated machines include crawler cranes, excavators, etc., while non-road vehicles include private cars, goods vehicles, etc. Therefore, this regulation is applicable to the NRMM to be deployed for construction activities of the Project.

Air Pollution Control (Fuel Restriction) Regulation

The Air Pollution Control (Fuel Restriction) Regulation specifies the legal control on the type of fuels to be allowed for use and the sulphur contents of the fuels. Apart from Shatin district, the fuels to be used should comply the following respective requirements:

- Gaseous fuel; and
- Liquid fuel with a sulphur content not exceeding 0.005% by weight and a viscosity not more than 6centistokes at 40°C, such as Ultra Low Sulphur Diesel ("ULSD")

Recommended Pollution Control Clauses (RPCC) for Construction Contracts

The RPCC for construction contracts provide generally good engineering practices to minimise inconvenience and environmental nuisance to nearby sensitive receivers during the construction phase of the development. Some modifications may be required to suit different site conditions.

Technical Memorandum on Environmental Impact Assessment Process

The criteria and guidelines for evaluating air quality impacts are laid out in Section 1 of Annex 4 and Annex 12 respectively of the EIAO-TM. Section 1 of Annex 4 stipulates the criteria for evaluating air quality impacts. This includes meeting the Air Quality Objectives (AQOs) and other standards established under the APCO, and the 5-second average odour concentration of 5 odour units (ou/m^3). Annex 12 provides the guidelines for conducting air quality assessments under the Environmental Impact Assessment (EIA) process, including determination of Air Sensitive Receivers (ASRs), assessment methodology as well as impact prediction and assessment.

Hong Kong Planning Standards and Guidelines

According to Table 3.1 in Chapter 9 of the Hong Kong Planning Standards and Guidelines (HKPSG), guidelines on the buffer distances for air sensitive usage from vehicular emissions and industrial emissions have been recommended. The type of pollution source, associated parameters and their respective minimum buffer distances for open space sites are given in **Table 1.2**. The HKPSG buffer distances recommended for "active and passive recreational uses" have been adopted as references for residential uses in this assessment.

Table 1.2: Guidelines on Usage of Open Space Site

Pollutant Source	Parameter	Buffer Distance (m)	Permitted Uses
Road and Highways	*Type of Road:*		
	Trunk Road and Primary Distributor (PD)	>20	Active and passive recreational uses
		3-20	Passive recreational uses
		<3	Amenity areas
	District Distributor (DD)	>10	Active and passive recreational uses
		<10	Passive recreational uses
	Local Distributor (LD)	>5	Active and passive recreational uses
		<5	Passive recreational uses
	Under Flyovers	--	Passive recreational uses
Industrial Areas	*Difference in Height between Industrial Chimney Exit and the Site:*		
	<20m	>200	Active and passive recreational uses
		5-200	Passive recreational uses
	20-30m (*)	>100	Active and passive recreational uses
		5-100	Passive recreational uses
	30-40m	>50	Active and passive recreational uses
		5-50	Passive recreational uses
	>40m	>10	Active and passive recreational uses

Notes:
[i]. The buffer distance refers to the horizontal, shortest distance from the edge of road kerb or the position of existing chimneys, to the boundary of open space sites.
[ii]. In situations where the height of chimneys is not known, the set of guidelines marked with an asterisk are used for preliminary planning purposes and refined as and when more information is available.

1.3 Assessment Methodology

1.3.1 Construction Phase

Activities anticipated during the construction phase that could potentially give rise to fugitive dust emissions include site formation and construction of on-site infrastructure (roads/drains) and residential units. Other potential sources of air quality impacts may include exhaust emissions from construction vehicles and machinery and odour generated from excavation of fishpond deposits. No concurrent projects were identified in the vicinity of the Project.

1.3.2 Operational Phase

Potential air quality impacts during the operational phase could be attributed to vehicular emissions from existing road traffic and project induced traffic emissions, as well as odour from the existing sewage treatment plants (STP) in the vicinity. A site survey was conducted on 13 June 2024, during which no active chimney was identified within 200m from the site boundary.

1.4 Baseline Conditions / Sensitive Receivers

1.4.1 Baseline Conditions

Historical background air quality has been referenced from EPD's general air quality monitoring station (AQMS) located in Yuen Long, which is closest to the Project site. The recent five years' monitoring data (Year 2019 - 2023) recorded at the AQMS in Yuen Long is presented in **Table 1.3**.

Table 1.3: Historical Air Quality from EPD's General Monitoring Station at Yuen Long

Pollutant	Averaging Period	Concentration (µg/m^3)						Corresponding AQOs (µg/m^3)
		2019	2020	2021	2022	2023	5-year annual average	
Respirable Suspended Particulates (RSP or PM_{10})	24-hour - 10th highest	83	77	73	56	59	70	100
	Annual	37	30	30	25	26	30	50
Fine Suspended Particulates (FSP or $PM_{2.5}$)	24-hour - 36th highest	34	28	31	30	30	31	50
	Annual	20	16	17	16	16	17	25
Nitrogen Dioxide (NO_2)	1-hour - 19th highest	161	135	148	122	130	139	200
	Annual	**44**	32	40	37	37	38	40
Sulphur Dioxide (SO_2)	10-minute - 4th highest	42	26	24	21	20	27	500
	24-hour - 4th highest	11	10	14	7	10	10	50
Ozone (O_3)	8-hour - 10th highest	**200**	154	**178**	**194**	155	**176**	160
Carbon Monoxide (CO)	1-hour	2,150	1,530	2,090	1,700	1,580	1,810	30,000
	8-hour	1,903	1,279	1,591	1,519	1,273	1,513	10,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.0.
[ii]. Monitoring results that exceeded prevailing AQO criteria are shown in **bold** characters.
[iii]. Lead is not measured at Yuen Long AQMS.

The predicted future background air pollutant concentrations within the Assessment Area are extracted from the relevant grids of the Pollutants in the Atmosphere and their Transport over Hong Kong (PATH) v.3.0 model for Year 2030, the nearest to the year of population intake of the Project (2031) and are summarised in **Table 1.4** below.

Table 1.4: Future Background Air Quality from PATH for Year 2030

Pollutant	Averaging Period	Concentration (µg/m^3)		Corresponding AQO (µg/m^3)
		(28,51)	(28,52)	
NO_2	1-hour – 19th Highest	74	78	200
	Annual	15	15	40
RSP / PM_{10}	24-hour – 10th Highest	54	54	100
	Annual	21	21	50
FSP / $PM_{2.5}$	24-hour – 36th Highest	27	28	50
	Annual	13	13	25
SO2	10-min – 4th Highest	24	24	500

	24-hour – 4th Highest	7	7	50
Ozone (O_3)	8-hour – 10th highest	**186**	**182**	160
Carbon Monoxide (CO)	1-hour	526	526	30,000
	8-hour	495	496	10,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.0.
[ii]. Monitoring results that exceeded prevailing AQO criteria are shown in **bold** characters.

As shown in **Table 1.4**, the future background levels of pollutants (except for ozone) would be below their corresponding AQOs in 2030. The improvement in future ambient air quality can be attributed to the government's commitment to implement various planned emission reduction measures, as published on EPD's website.

1.4.2 Air Sensitive Receivers

Representative ASRs within 500m of the site boundary have been identified according to the criteria set out in the EIAO-TM through site inspections and a review of land use plans. ASRs and their horizontal distance from the Project site boundary have been identified and are summarized in **Table 1.5**. Locations of the ASRs are shown in **Figure 1.1**.

Table 1.5: Locations of Representative Air Sensitive Receivers

ID	Receiver Description	Usage	Construction Phase	Operation Phase	Approx. Horizontal Distance to the Site Boundary (m)
ASR1	Royal Palms	Residential	✓	✓	23
ASR2a	Palm Springs	Residential	✓	✓	21
ASR2b			✓	✓	16
ASR3	Wo Shang Wai Village	Residential	✓	✓	51
ASR4	Village House of Mai Po San Tsuen	Residential	✓	✓	107
ASR5	Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential	×	✓	--

1.5 Evaluation of Air Quality Impact

1.5.1 Construction Phase

The entire site will be divided into six portions, corresponding to six phases of residential development. Construction will be carried out in phases, starting from the northwestern portion and progressing towards the northeastern portion, followed by the southern portion. The population intake year for all six phases of the residential development is 2031.

Fugitive dust could be generated during the construction of the Project as a result of construction activities like material handling, excavation, vehicles movement and erosion of unpaved area and stockpiles. The estimated total amount of construction and demolition (C&D) materials to be disposed off-site for the construction period is about 462,700 m^3, of which 361,400 m^3 would be inert C&D materials while 101,300 m^3 would be non-inert C&D materials. For details, please refer to **Section 4**.

Dust generation could be effectively minimized by providing covers to dusty materials in order to prevent erosion, and dust could be suppressed by regular site watering. The highest number of dump trucks is expected to be around 25-50 per day, assuming 25 dump trucks shall be travelling on the haul road and 25 numbers will be stationary at various work phases for load/ unloading works. The speed of the trucks within site will be controlled to 10 kph to reduce air quality impact

and for safe movement around the site. In addition, site hoarding shall be provided at the site boundary as a control measure. The potential air quality impact is anticipated to be short-term and with appropriate dust control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation under the APCO, adverse air quality impact would not be expected.

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation came into effect to control the emissions from diesel powered engines and limit the amount of diesel-powered mechanical equipment to be used on-site during the construction phase.

The number of diesel-powered machinery to be used at the site is subject to site conditions and detailed construction methods. It is noted however that the works will be phased and there would be no population intake within any of the six phases of the residential development until the construction works of all phases are completed. According to the Air Pollution Control (Fuel Restriction) Regulations, liquid fuel with a sulphur content of less than 0.005% by weight should be used. Under the effects of the two regulations, emissions of gaseous pollutants from the operation of on-site diesel-powered mechanical equipment are considered to be minimal.

No concrete batching plants will be provided on-site. Concrete will be brought into the site in "ready-mixed" state or in pre-cast sections. Given the relatively flat site, no rock crushing will be necessary.

Apart from the implementation of control measures, an EM&A programme will be undertaken to monitor the dust impacts associated with construction to ensure no adverse construction air quality impacts on the adjacent ASRs and to verify the effectiveness of the control measures. In conclusion, adverse air quality impact during the construction stage is not anticipated given the proper control measures recommended in **Section 1.6.1**and the EM&A programme.

Since the proposed Project site was derived from fishponds, pond deposits underlay a majority of the Project site. Pond deposits are a mixture of organic material and may release odour for a short duration if excavated. In order to minimise the odour nuisance to surrounding environment, the following control measures are recommended:

- all malodorous excavated material should be placed as far as possible from any ASRs;
- the malodourous materials will be immediately contained in watertight containers on-site and transported off-site by trucks for disposal at a strategic landfill within one day. Sufficient number of containers will be provided;
- During transportation, odorous materials on the trucks should be properly covered by tarpaulin sheets;
- Limited number of ponds shall be excavated at a time and the duration of the works at each pond shall also be limited; and
- Frequent site inspections shall be conducted to monitor odour impact.

With proper planning and measures in place, potential odour impact is considered to be short-term and controllable.

1.5.2 Operational Phase

Impacts arising from the operation of this Project could primarily attribute to vehicular emissions that may affect the proposed development itself and identified ASRs off-site. Vehicular emission impacts from the major roads, San Tin Highway and Castle Peak Road are considered insignificant, as the nearest Project sensitive receivers are more than 162m from these major roads. Based on the Annual Traffic Census 2023, the road type of San Tin Highway and Castle Peak Road - Mai Po are expressway (EX) and rural road (RR), respectively. According to the information provided by the Project's Traffic Consultant and agreed upon by the Transport Department (TD), the road leading to the project site (i.e., Mai Po South Road) is classified as a

feeder road, which is similar to a local distributor under the road types listed in the HKPSG as advised by the Project's Traffic Consultant. The email correspondence between the Project's Traffic Consultant and the TD is presented in **Appendix 1.1**, and the corresponding buffer zones for each road type are shown in **Figure 1.1**. No air-sensitive uses of the proposed development including openable window, fresh air intake and recreational use in the open space shall be located within the buffer zones.

The HKPSG buffer distance requirement is met from all the surrounding roads for the proposed development. Based on the traffic forecast of Mai Po South Road (the road leading to the Project site) provided by the Project's Traffic Consultant, more than 90% of vehicles inside the Project site during peak hours will be private cars. The rest of the vehicle types will be light goods vehicles and a small number of heavy vehicles, such as refuse collection vehicles, would also appear within the Project site. In addition, Mai Po South Road is designated as a private road, mainly serving as an access road for the proposed development. No public transport service (including public transport interchange (PTI) and transport lay-by) will be provided within the proposed development. The vehicular emission impact is therefore limited, and adverse vehicular emission impact to nearby ASRs and the proposed development from Project induced traffic is not expected. A proposed car park will be located at the basement of the residential development. Reference shall be made to ProPECC PN 2/96 "*Control of Air Pollution in Car Parks*" for its design and operation. There will be 2,134 residential car parking spaces, 235 for visitors, 27 accessible parking spaces, 212 motorcycle parking spaces, 173 bicycle parking spaces and only 47 loading/ unloading bays, which may be used for passenger boarding / alighting, goods vehicles, etc.. Hence, no adverse air quality impact is expected from the proposed basement car park. The exhaust of the car park will be located away from any nearby ASRs, as far as possible. Therefore, the potential vehicular emission impact is not anticipated to be significant.

The planned STLMC EPP and food waste pre-treatment facilities is located over 500m away from the nearest air-sensitive uses of the proposed development, as indicated in **Figure 1.1**. Therefore, odour impact from the STLMC EPP is not anticipated.

Within the 500m Assessment Area, two existing private STPs located more than 200m from the Project site, as shown in **Figure 1.1**, serve the Palm Springs and Royal Palms residential developments. The population sizes of both Palm Springs and Royal Palms are about 3,300 and 1,700, respectively. According to the previously approved Section 16 submissions, no sewage odour was detected when conducting site surveys at the Project site over 15 months from April 2005 to June 2006, and on 21 July 2023. A recent site survey was conducted on 13 June 2024 during which no odour was also detected around the site boundary of the proposed development and the site boundaries of both existing STPs.

1.6 Mitigation Measures

1.6.1 Construction Phase

To ensure compliance with the AQOs at the ASRs at all times, it is recommended to include good site practice in the contract clauses to minimize cumulative construction air quality impact, and to implement a dust monitoring and audit programme to ensure proper implementation of the identified mitigation measures. All the relevant control measures stipulated in the Air Pollution Control (Construction Dust) Regulation would be fully implemented. Mitigation measures include:

- use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding where scaffolding is erected around the perimeter of a building under construction;
- dump trucks for material transport should be totally enclosed using impervious sheeting;

- any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;
- dusty materials remaining after a stockpile is removed should be wetted with water;
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g., concrete, bituminous materials, hardcore or similar;
- the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;
- all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;
- vehicle speed to be limited to 10 kph except on completed access roads;
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction site;
- the load of dusty materials carried by vehicles leaving the construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicles;
- the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet;
- deploy electrified NRMMs as far as practicable;
- use of exempted NRMMs should be avoided as far as practicable;
- regular maintenance of construction equipment deployed on-site should be conducted;
- all malodorous excavated material should be placed as far as possible from any ASRs;
- the stockpiled malodorous materials should be kept in watertight container on site and transported off site within 24 hours; and
- during transportation, these odorous materials on the trucks should be properly covered by tarpaulin sheets.

1.6.2 Operational Phase

As the potential impacts in terms of air quality during the operational phase will be insignificant, no specific mitigation measures are required.

1.7 Evaluation of Residual Impact

No adverse residual impact is anticipated for the construction and operational phases of the Project.

1.8 Environmental Monitoring and Audit

Although the proposed Project is not expected to generate excessive dust levels, an environmental monitoring and audit program is recommended to ensure compliance with air quality criteria and the proper implementation of mitigation measures. Details are discussed in the EM&A Manual of the approved EIA report.

1.9 Conclusion

Through proper implementation of control measures, construction dust and gaseous emissions can be controlled at source to acceptable levels and hence no adverse construction air quality impacts are anticipated.

During the operational stage, no adverse impact is anticipated.

2 Noise Impact

2.1 Introduction

This section reviews the noise impact assessment findings from the previously approved Section 16 submission (Application No.: A/YL-MP/344) and identifies any changes or additional noise impacts that may arise due to the proposed changes to the layout of the residential portion.

2.2 Legislation, Standards, Guidelines and Criteria

2.2.1 Construction Phase

ProPECC PN1/24 offers guidance on the existing control on noise from construction activities under the Noise Control Ordinance (NCO) and Environmental Impact Assessment Ordinance (EIAO). It also outlines the requirements and recommendations on the practices for minimizing construction noise. The noise generated by construction activities for the project during non-restricted hours (7 a.m. to 7 p.m. on any day that is not a Sunday or general holiday) should be minimized to the greatest extent practicable. Additionally, the construction noise at the facade of the respective noise-sensitive receivers should not exceed the following noise levels.

Table 2.1: Relevant Noise Standard for Daytime Construction Activities

Noise Sensitive Receivers	Leq(30min) dB(A)
All domestic premises	75
Educational institutions (including kindergartens and nurseries	70 (65 during examinations)

Notes:
[i] The above noise standards apply to uses, why rely on opened windows for ventilation
[ii] The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

2.2.2 Operational Phase

Road Traffic Noise Criteria

With reference to the guideline in Table 4.1 of Chapter 9 of the HKPSG, the summary of relevant noise criteria regarding road traffic noise is given in below.

Table 2.2: Relevant Road Traffic Noise Standard for Planning Purposes

Uses	Road Traffic Noise, L10 (1 Hour), dB(A)
All domestic premises	70

Notes:
[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade

Fixed Noise Assessment Criteria

As stated by Section 4.2.13 of Chapter 9 of the HKPSG, noise assessments for fixed noise sources would normally be conducted in accordance with the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM) under the Noise Control Ordinance (NCO). The IND-TM lays down statutory Acceptable Noise Levels (ANLs). The level of the intruding noise at the facade of the nearest sensitive use should be at least 5 dB(A) below the appropriate ANL shown in Table 3 of the IND-

TM or, in the case of the background being 5 dB(A) lower than the ANL, should not be higher than the background. In accordance with IND-TIM, the ANLs for the Noise Sensitive Receivers (NSRs) are determined with consideration of the Area Sensitivity Rating (ASR). The ASR depends on the type of area and the degree of impact that Influencing Factors (IF) have on the NSRs. **Table 2.3** Shows the considerations for determining the appropriate ASR for different NSRs.

Table 2.3: Area Sensitivity Ratings

Type of Area Containing NSR	Degree to which NSR is affected by IF		
	Not Affected[(c)]	Indirectly Affected[(d)]	Directly Affected[(e)]
(i) Rural area, including country parks[(a)] or village type developments	A	B	B
(ii) Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
(iii) Urban area[(b)]	B	C	C
(iv) Area other than those above	B	B	C

Definitions:

a) "Country park" means an area that is designated as a country park pursuant to section 14 of the Country Parks Ordinance.
b) "Urban area" means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.
c) "Not Affected" means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR.
d) "Indirectly Affected" means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR.
e) "Directly Affected" means that the NSR is at such a location that noise generated by the IF is readily noticeable at the NSR and is a dominant feature of the noise climate of the NSR.

The appropriate ANL, in dB(A), for a given NSR may be determined from , having regard to the appropriate ASR and the time period under consideration.

Table 2.4: Acceptable Noise Levels (ANLs)

Time Period	Area Sensitivity Rating		
	A	B	C
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

Notes:
[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

The proposed development in Wo Shang Wai is situated adjacent to low density residential areas, which include low-rise private residential units such as Royal Palms and Palm Spring. The proposed development consists of numbers of 6 to 10 storey mid-rise residential towers and 3 storey houses in this S12A planning application. Therefore, when determining the type of area containing NSR, the Site is considered to be located in low density residential area consisting of low-rise or isolated high-rise development in accordance with IND-TM. In addition, the type of area containing NSR is not considered to be urban areas because the Site is not within the area of San Tin / Lok Ma Chau Development Node.

For the degree to which NSR is affected by IF, San Tin Highway (STH) is considered to be an IF since STH is an expressway that has Annual Average Daily Traffic (AADT) greater than 30,000. Since there is certain separation distance from the Site to the STH, the majority of the area of the proposed development would not be directly affected by the IF. Therefore, Area Sensitivity Rating

(ASR) "B" would be adopted in this planning application. Hence, the Acceptable Noise Levels (ANL) should be 65 dB(A) in daytime period and 55 dB(A) for nighttime period.

In accordance with Table 4.1 of chapter 9 of HKPSG, the noise standards of planned fixed noise sources should be 5 dB(A) below the appropriate the ANL shown in IND-TM. For this reason, the planning noise criteria for planned fixed noise sources should be 60 dB(A) in daytime period and 50 dB(A) for nighttime period, or the prevailing background noise level, whichever is lower.

2.3 Identification of Potential Noise Impacts

The Assessment Area for the noise impact assessment has included all areas within 300m from the boundary of the Project site boundary as shown in **Figure 2.1**. Major land use within the Assessment Area includes residential developments such as Royal Palms, Palm Springs, Mai Po San Tsuen and Wo Shang Wai village, and roads such as Castle Peak Road, San Tin Highway and San Tam Road.

The potential noise impacts associated with the construction and operational phases of the proposed development are identified and described in this section.

2.3.1 Construction Phase

Potential construction noise impact would be associated with the uses of Powered Mechanical Equipment (PME) for various construction activities of the Project. The construction activities mainly divided into 3 main categories sequentially - (1) Site Clearance, (2) Substructure Works and (3) Superstructure Works.

The construction activities for the proposed development are divided into 6 Phases. It is assumed that all the Phases (Phase 1 to Phase 6) would be under construction at the same time in the assessment and the haul road would be equally distributed for each phase as shown in **Figure 2.2.**

Non-percussive piling shall be used for the foundation works at the subject development site. No noisy operations are expected during the 'finishing' activity of each phase as such activities are mostly confined to the inside of the already constructed houses. The above statement is the same as previously approved Section 16 submission.

The potential noise impact during the construction phase of the development was assessed quantitatively as detailed in **Section 2.6.1**.

2.3.2 Operational Phase

2.3.2.1 Road Traffic Noise

Road traffic on nearby road network is the dominant noise source within the Assessment Area. There is potential road traffic noise impact on the proposed development.

2.3.2.2 Fixed Noise Sources

Existing Fixed Noise Sources

Based on the approved EIA report (Ref. no. AEIAR-217/2018A), STP in Royal Palms and the Mai Po Ventilation Building of the XRL near the site entrance were identified within the Assessment Area. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. Furthermore, no additional planned fixed plant has been identified since the previously approved Section 16 submission.

Planned Fixed Noise Sources

E&M buildings and one permanent on-site sewage treatment plant were proposed in the previous Section 16 submission which the plants within the buildings will be entirely enclosed and confined, hence, no adverse noise impact was concluded. According to the tentative layout, E&M buildings will be provided on-site. Given that the E&M buildings will be entirely enclosed and confined, no adverse fixed noise impact from the planned fixed noise sources is expected.

The operation noise impact assessment was detailed in **Section 2.6.2**.

2.4 Determination of Noise Sensitive Receivers

NSRs have been identified within the Assessment Area. These NSRs included all existing NSRs as well as planned/committed noise sensitive developments and uses earmarked on the relevant Outline Zoning Plans and development layout plans.

According to Planning Department's record, no planning application or rezoning application for residential development or other noise sensitive uses is identified in the nearby Other Specified Uses (OU) and Village (V) zones. The adjacent OU zone is being used for the Mai Po Ventilation Building of XRL Project.

Any future planned residential uses of these sites require the approval from Town Planning Board and application for such uses likely have to go through the EIA process. Therefore, there are currently no known planned sensitive uses in the OU. As New Territories Exempted Houses in V zone are always permitted, representative noise sensitive receiver at the V zone in the vicinity of the proposed development is included in this assessment.

The uses and designation of the noise sensitive receivers within the Assessment Area are shown in **Table 2.5**. The assessment points for construction noise impact assessment are shown in **Figure 2.2** and summarised in **Table 2.6**.

During the operation phase of the development, NSRs will be subject to the noise impact from road traffic and fixed plant sources. As determined in the approved EIA of the proposed development (Register No. AEIAR-120/2008), the NSRs mostly affected by road traffic noise are those located close to the site access road connecting San Tin Highway. For the fixed plant noise impact, the most affected NSRs are those located nearby the XRL ventilation building (i.e. major fixed noise source). The assessment points identified for operation phase assessment are shown in **Figure 2.3a** and **Figure 2.3b** and summarised in **Table 2.7** and **Table 2.8**, respectively.

Table 2.5: Noise Sensitive Receivers Identified within the Assessment Area

Designation	Uses
Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential
Palm Springs	Residential
Royal Palms	Residential
Wo Shang Wai Village	Residential
Mai Po San Tsuen	Residential
Scenic Heights	Residential
St Lorraine English Kindergarten	Educational

Table 2.6: Horizontal Distances between the Representative NSRs and the Notional Source Position of Each Phase for Construction Phase

NSR ID	Uses	Locations / Descriptions	No. of storeys	Horizontal distance between NSRs and the notional source position of each phase, m ^					
				1	2	3	4	5	6

NSR1	Residential	House No. 5, Cherry Path, Palm Springs	3	84	220	389	577	287	414
NSR2	Residential	House No. 5, Camelia Path, Palm Springs	3	73	223	402	591	262	404
NSR3	Residential	House No. 1, Pinaceae Drive	3	85	259	439	626	218	386
NSR4	Residential	House No. 17, Wo Shang Wai Village	3	154	211	329	456	89	190
NSR5	Residential	House No. 1, Narcissus Path, Royal Palms	3	133	187	289	418	54	150
NSR6	Residential	House No. 25, Narcissus Path, Royal Palms	3	184	217	278	375	65	67
NSR7	Educational	St Lorraine English Kindergarten	3	278	321	381	457	173	167
NSR8	Residential	House No. 61, Narcissus Path, Royal Palms	3	282	294	292	335	162	66
NSR9	Residential	House No. 1, Marin Avenue, Royal Palms	3	301	269	175	173	216	69
NSR10	Residential	House No. 1, Ventura Avenue, Royal Palms	3	294	243	93	82	239	82
NSR11	Residential	House No. 202, Mai Po San Tsuen	3	577	519	340	167	518	368
NSR12	Residential	House No. 330, Mai Po San Tsuen	3	548	498	304	148	510	366
NSR13	Residential	Block A1, Scenic Heights	3	721	669	513	311	637	491

Note: (^) – For Phase 1, the horizontal distance between the NSRs and (i) the notional source position, or (ii) the notional source position of Phase 1 development area at the west of the site, whichever is the shortest, was adopted as conservative approach.

Table 2.7: Representative NSRs for Operation Phase (Road Traffic Noise)

NSR ID	Description	Uses	No. of storeys
TN1	3-Storey House	Residential	3
TN2	Tower C2-1	Residential	10
TN3	Tower C2-1	Residential	10
TN4	Tower C2-1	Residential	10
TN5	Tower C2-2	Residential	10
TN6	Tower C2-2	Residential	10
TN7	Tower C2-2	Residential	10
TN8	Tower C2-3	Residential	10
TN9	Tower C2-3	Residential	10
TN10	Tower C2-3	Residential	10
TN11	Tower C2-4	Residential	10
TN12	Tower C2-4	Residential	10
TN13	Tower C2-4	Residential	10
TN14	Tower C2-5	Residential	10
TN15	Tower C2-5	Residential	10
TN16	Tower C2-5	Residential	10
TN17	Tower C2-5	Residential	10

NSR ID	Description	Uses	No. of storeys
TN18	Tower C2-5	Residential	10
TN19	Tower C1-22	Residential	6
TN20	Tower D2-8	Residential	6
TN21	Tower D2-7	Residential	6
TN22	Tower D1-7	Residential	6
TN23	Tower D2-6	Residential	6
TN24	Tower C2-6	Residential	6
TN25	Tower C2-6	Residential	6

Table 2.8: Representative NSRs for Operation Phase (Fixed Plant Noise)

NSR ID	Description	Uses	No. of storeys
FN1	Tower C2-5	Residential	10
FN2	Tower C2-5	Residential	10
FN3	Tower C2-4	Residential	10
FN4	Tower C2-3	Residential	10
FN5	Tower C2-2	Residential	10
FN6	Tower C2-1	Residential	10
FN7	3-Storey House	Residential	3

2.5 Assessment Methodology

2.5.1 Construction Phase

Construction noise levels are predicted at the identified NSRs for both the foundation and superstructure work stages in order to assess the project feasibility during the planning stage and to identify if there are any potential constraints on the works programme or the use of construction equipment.

The methodology for the construction noise assessment other than percussive piling is based on the procedures set out in the GW-TM, as summarised below:

- To identify the affected NSRs within the Study Area;
- To identify the phasing of construction work and, locations and required number of construction plant items;
- To obtain the sound power levels in dB(A) of the construction equipment from the GW-TM;
- To determine the distance from the effective noise source location (or "notional source position") to the NSRs and distance attenuation (from geometric spreading and other absorption effects where appropriate), barrier corrections and reflection corrections at the NSR as prescribed in the GW-TM;
- To calculate the Corrected Noise Level (CNL) which will be generated by the construction works at the NSRs; and
- To propose direct mitigation measures, if necessary, to minimise the impact by the construction work in order to comply with the stipulated noise limits.

Construction Phases

Construction of the Project will commence in 2027 with the residential development ready for occupation in 2031. The entire site will be divided into 6 portions i.e., 6 residential development phases. It is assumed that construction works will be carried out at the same time as conservative approach. All the phases will be completed before the population intake.

Non-restriction Hours

No evening or night time (7pm to 7am the next day) construction work is anticipated. Therefore, potential construction noise impacts during restricted hours were not assessed. The potential noise impacts on the nearby NSRs arising from the construction works during non-restricted hours (7am to 7pm) were assessed. Notwithstanding the above, for any construction works to be carried out during the restricted hours, the Contractor will be required to submit CNP application to Noise Control Authority and has the responsibility to ensure compliance with the condition of CNP, if need.

Construction Plant Inventory

A typical plant inventory for the major construction works provided by the project team was shown in **Appendix 2.2.**

Whilst it is possible that the future appointed Contractor may propose a different plant inventory, this assessment has been undertaken on the anticipated plant to allow early identification of any potential noise problem and to ensure there are practicable and sufficient noise mitigation measures that can be implemented to alleviate adverse noise impacts during the planning stage. The Contractor will be required to provide an updated Construction Noise Mitigation Plan (CNMP) with details of the updated plant inventory and mitigation measures to achieve acceptable noise levels on the nearby NSRs.

2.5.2 Operational Phase

Road Traffic Noise

The road traffic noise level at the identified noise sensitive receivers were predicted based on the maximum projection of road traffic flow within 15 years upon the last phase occupation of the proposed residential development which is 2046. The traffic flow project in year 2046 as shown in **Table 2.9** is adopted.

Table 2.9: Traffic Flow Forecast of Road Networks (Year 2046) (1)

Index No.	Road Name	Direction	Road Speed (km/hr)	AM Peak		PM Peak	
				Total Flows(2) (Veh/hr)	HV% (3)	Total Flows(2) (Veh/hr)	HV% (3)
1	Mai Po South Road	EB	50	350	9%	150	9%
		WB	50	250	11%	200	9%
2	Castle Peak Road – Mai Po	2-way	50	750	21%	600	28%
3	San Tin Highway	NB	100	5100	39%	4600	38%
4	San Tin Highway	SB	100	5300	36%	5300	28%
5	San Tam Road	2-way	50	400	36%	350	28%
6	San Tam Road	2-way	50	450	33%	350	31%
7	San Tam Road	2-way	50	500	27%	400	22%
8	Ko Hang Road	2-way	50	50	30%	50	27%
9	Maple Po Gardens 1st St	2-way	50	150	16%	100	9%
10	Maple Po Gardens 1st St	2-way	50	100	16%	100	4%
11	Maple Po Gardens 5th St	2-way	50	50	11%	50	18%
12	Castle Peak Road – Mai Po	2-way	50	500	35%	500	43%
13	Mai Po Road	2-way	50	100	35%	50	28%
14	Royal Palms Boulevard	2-way	50	450	15%	400	11%

Notes:
1. The forecast data is provided by the traffic consultant;
2. Traffic flows are rounded up to the nearest 50 veh/hr;
3. Heavy vehicles include all category of motor vehicles except private car, taxi and motorcycle;
4. AM Peak is selected for assessment as worst-case scenario.

The road traffic noise calculation procedures prescribed in the "Calculation of Road Traffic Noise (1988)" (CRTN) published by the Department of Transport, UK have been adopted in this assessment. The traffic noise modelling was carried out using proprietary traffic noise model software "RoadNoise", which implements the CRTN procedures. **Figure 2.4** shows the computer plot of the input features in the noise model.

Fixed Noise

With reference to the previously approved Section 16 submission, the existing STP at Royal Palms and Mai Po Ventilation Building were identified as the potential fixed noise sources. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. As for the planned fixed noise sources (e.g., E&M Buildings) under the Project, it is similar to those previously approved in the Section

16 submission. Details of all the identified existing and planned fixed noise sources are presented below –

i. Existing Sewage Treatment Plant at Royal Palms

Within the Assessment Area, there is an existing STP at the entrance of Royal Palms at the northeast corner of the Project site. The STP at Royal Palms is located 184m from the Project site boundary. The location of the STP is shown in **Figure 2.3b**. With reference to the previously approved Section 16 submission, the noise level at 3m from the said plant is 56dB(A). The plant operates 24 hours a day and it is assumed that the operating noise is steady throughout the day.

The worst-case fixed plant noise level at the Project site was predicted using standard acoustics principles and practices. The predicted noise level at the Project Boundary is 20 dB(A) [56 - 20*log (184/3)] without background noise level superimposed which is far below the noise criteria for day and evening time (i.e., 65dB(A)) and night time (i.e., 55dB(A)). As such, it is anticipated that there will be no significant noise impact from this fixed plant.

ii. Existing Mai Po Ventilation Building (MPVB)

The noise data of the MPVB has been updated (compared to previously approved Section 16 submission) based on the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (XRL), the calculated SWLs of the MPVB ventilation openings have been adopted for assessment. The location of the louvres on the MPVB is shown in **Figure 2.3b**. Pages extracted from the Commissioning Test Report regarding the SWLs and louvre location of the MPVB are included in **Appendix 2.3**.

iii. Existing Mai Po Substation

Within the Assessment Area, there is a substation adjacent to the transitional Housing – The STEP, as shown in **Figure 2.3b**. The Mai Po Substation is located 322m from the Project site boundary, and they are separated by the San Tin Highway. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing Mai Po Substation will be insignificant.

iv. Existing Sewage Treatment Plant at Palm Springs

Within the Assessment Area, there is an existing STP at the western boundary of Palm Springs, as shown in **Figure 2.3b**. The STP at Palm Springs is located 239m from the Project site boundary. Based on the site observation, no noticeable noise was identified. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing STP at Palm Springs will be insignificant.

v. Existing Mai Po Floodwater Pumping Station

Within the Assessment Area, there is an existing floodwater pumping station adjacent to Mai Po San Tsuen, as shown in **Figure 2.3b**. The Mai Po Floodwater Pumping Station is located approximately 267m from the Project site boundary. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the Mai Po Floodwater Pumping Station will be insignificant.

vi. Planned E&M Buildings (from Project)

With reference to the current MLP, there will be E&M buildings, as shown in **Figure 2.3b**. The E&M buildings will be small in scale and the plants within the building will be entirely enclosed

and confined. Hence, the noise impact from this fixed plant is anticipated as insignificant and will not be considered in this assessment.

2.6 Prediction and Evaluation of Noise Impact

2.6.1 Construction Phase

Construction Noise

With the adoption of the approved mitigation measure (i.e. noise barrier) during the construction phase in the latest EP (EP-311/2008/E) as shown in **Figure 2.5** and adopting of QPME / Quiet Construction Method as shown in **Table 2.11**, the maximum predicted construction noise levels at the identified NSRs are summarised in **Table 2.10**. The cross-section drawings between the existing temporary noise barriers for construction phase and selected NSRs have been provided in **Figure 2.7** and **Figure 2.8**. A detailed noise calculation is provided in **Appendix 2.4**.

Table 2.10: Maximum Predicted Construction Noise Levels at Representative NSRs

NSR	Maximum Predicted Construction Noise Level, dB(A)	Daytime Construction Noise Criteria, dB(A)
NSR 1	63	75
NSR 2	64	75
NSR 3	63	75
NSR 4	64	75
NSR 5	67	75
NSR 6	67	75
NSR 7	60	70 (65 for examination period)
NSR 8	65	75
NSR 9	65	75
NSR 10	67	75
NSR 11	58	75
NSR 12	69	75
NSR 13	54	75

Table 2.11: QPME / Quiet Construction Method for Construction Phase

QPME / Quiet Construction Method	Description	SWL, dB(A)
Hydraulic Crusher	Replace traditional excavated-mounted breaker	94
Excavator, wheeled/tracked	Replace Regular PME [QPME ID: EPD-12299]	92
Bulldozer, tracked	Replace Regular PME [QPME ID: EPD-12694]	108
Crane, mobile	Replace Regular PME [QPME ID: EPD-12240]	101

The maximum predicted construction noise levels at the representative NSRs range from $L_{eq(30mins)}$ 54 dB(A) to 69 dB(A). The assessment results indicate that construction noise levels at all identified NSRs are expected to comply with the construction noise criteria for domestic premises and educational institution. Therefore, no additional mitigation measures due to the design changes are required.

2.6.2 Operational Phase

Road Traffic Noise

Table 2.12 summarises the predicted noise levels at the representative NSRs, and noise exceedance was observed. Mitigation measure is required to alleviate the predicted road traffic noise impact.

Table 2.12: Predicted Road Traffic Noise Levels at Representative NSRs (Base Case)

NSR ID	Uses	Max. Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN1	Residential	69	70	N
TN2	Residential	**71**	70	Y
TN3	Residential	**71**	70	Y
TN4	Residential	70	70	N
TN5	Residential	**71**	70	Y
TN6	Residential	**71**	70	Y
TN7	Residential	69	70	N
TN8	Residential	69	70	N
TN9	Residential	**72**	70	Y
TN10	Residential	69	70	N
TN11	Residential	70	70	N
TN12	Residential	**72**	70	Y
TN13	Residential	69	70	N
TN14	Residential	69	70	N
TN15	Residential	**73**	70	Y
TN16	Residential	**75**	70	Y
TN17	Residential	67	70	N
TN18	Residential	**74**	70	Y
TN19	Residential	51	70	N
TN20	Residential	53	70	N
TN21	Residential	60	70	N
TN22	Residential	62	70	N
TN23	Residential	56	70	N
TN24	Residential	66	70	N
TN25	Residential	67	70	N

Note:

[i]. **Bold** figures denote exceedance of relevant noise criteria.

Fixed Noise Sources

The potential fixed plant noise impact at the representative NSRs is assessed and the results are shown in **Table 2.13**. The detailed noise calculation is given in **Appendix 2.5**.

Table 2.13: Predicted Fixed Noise Level at Representative NSRs

NSR ID	Predicted Noise Level, dB(A)			
	Daytime	Daytime Criterion	Night-time	Night-time Criterion
FN1	39	65	39	55
FN2	41	65	41	55

NSR ID	Predicted Noise Level, dB(A)			
	Daytime	Daytime Criterion	Night-time	Night-time Criterion
FN3	41	65	41	55
FN4	40	65	39	55
FN5	39	65	38	55
FN6	37	65	36	55
FN7	35	65	34	55

Note:
[i]. **Bold** figures denote exceedance of relevant noise criteria.

No exceedances in fixed plant noise impact are predicted; therefore, no mitigation measures are necessary.

2.7 Mitigation Measures

2.7.1 Construction Phase

Construction noise assessment results show that, with the uses of QPME and noise barriers as recommended in the approved EIA of this Project, the maximum construction noise levels at all of the representative NSRs are predicted to comply with the construction noise criterion of $L_{eq(30mins)}$ 75dB(A) for domestic premises and 70 dB(A) for educational institution as stipulated in the EIAO–TM.

In addition to the measures recommended in the approved EIA of this Project, practical mitigation measures should be implemented to further alleviate the potential noise impact. It is expected that with suitable on-site supervision in limiting the number of powered mechanical equipment and good site practices, the construction noise impact can be further reduced. The following mitigation measures are recommended to further alleviate the construction noise impact:-

- Scheduling of work - The Contractor will be required to determine the number and type of construction equipment taking into account the use of quiet plant while devising a feasible work programme.
- Sitting of facilities - This includes avoiding simultaneous operation of noisy equipment; retaining existing features that can act as a noise barrier until the last phase; and erecting, as early as possible, any new structures which will have the effect of screening noise sources. Such screens can reduce noise levels by 15dB(A) or more. Noisy equipment should always be sited as far as possible from noise sensitive receivers. Consideration should also be given to the use of structures such as site offices and stores as noise barriers.
- Use of quiet Powered Mechanical Equipment (QPME) - The contractor should be requested, as far as possible, to use quiet PME, which has a lower SWL compared to one specified in GW–TM. This is one of the most effective measures to reduce noise emission at source and is increasingly practicable because of the availability of quiet equipment in the market.

Good site practices and noise management can further reduce the noise impact of the construction sites' activities on nearby NSRs. The following measures should be followed during each phase of construction:

- Only well-maintained plant should be operated on-site, and the plant should be serviced regularly during the construction programme;
- Machines and plant that may be intermittent in use should be shut down between work periods or should be throttled back to a minimum;
- Plant known to emit noise strongly in one direction, should, where possible, be oriented so that the noise is directed away from nearby NSRs;

- Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction period;
- Mobile plant should be sited as far away from NSRs as possible;
- Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; and
- The Contractor shall at all times comply with all current statutory environmental legislation.

To ensure the proper implementation of mitigation measures, a Construction Noise Management Plan (CNMP) should be prepared and submitted. The future contractor will be required through contract specifications to provide and implement sufficient direct mitigation measures with reference to the recommendations in the approved EIA and this EA or the future detailed design to achieve acceptable noise levels on the nearby NSRs. The CNMP shall identify the inventory of noise sources and assess the effectiveness and practically of all mitigation measures to minimize the construction noise impact. The CNMP should further explore and maximize the use of quiet construction methods / equipment as far as practicable. The CNMP should also confirm and summarise the mitigation measures to be implemented for the Project. The CNMP shall be submitted three months prior to the issue of tender for the construction of the Project and shall be included in the construction tender document.

2.7.2 Operational Phase

Road Traffic Noise

Table 2.12 indicates that exceedance of the relevant noise criteria is predicted at the noise sensitive facades TN2, TN3, TN5, TN6, TN9, TN12, TN15, TN16 and TN18. Hence mitigation measure is necessary to minimise the noise impact.

With reference to "Practice Note for the Planning of Residential Developments Against Road Traffic Noise (ProPECC PN 4/23)", acoustic window (AW) and enhanced acoustic balcony (EAB) are proven to be capable of reducing the noise inside the flats by at least 6 dB(A)[1], even in different configurations and dimensions to suit the individual needs, and at the same time allowing adequate natural ventilation.

The maximum traffic noise exceedance is 5 dB(A). Since AW can generally provide a notional noise reduction of about 6dB(A), it is recommended that those blocks (i.e. Tower C2-1, Tower C2-2, Tower C2-3, Tower C2-4, Tower C2-5) with exceedance up to 5 dB(A) will be provided with acoustic windows at the affected facades (i.e. facades in the vicinity of TN2, TN3, TN5, TN6, TN9, TN12, TN15, TN16 and TN18), as indicated in **Figure 2.6.**

With the implementation of the acoustic windows at the affected façades, the predicted road traffic noise levels at the representative NSRs are summarised in **Table 2.14** below, which are all in compliance with the noise criterion.

With reference to the latest EP under Wo Shang Wai (Figure 7 of EP-311/2008/E), the mitigation measures included a noise barrier integrated with E&M Building of total 5.5.m high and a 1m extend exterior wall. Given that the layout has been changed, the 1m extend exterior wall and E&M Building of total 5.5.m high would not be applied in this assessment.

[1] Based on the Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact and the findings from noise impact assessment reports prepared for private residential developments in the past.

Table 2.14: Predicted Road Traffic Noise Levels at NSRs with Exceedance in Base Case (Mitigated)

NSR ID	Mitigation Measures	Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN2	Residential	≤70	70	N
TN3	Residential	≤70	70	N
TN5	Residential	≤70	70	N
TN6	Residential	≤70	70	N
TN9	Residential	≤70	70	N
TN12	Residential	≤70	70	N
TN15	Residential	≤70	70	N
TN16	Residential	≤70	70	N
TN18	Residential	≤70	70	N

Fixed Noise Sources

According to **Table 2.13**, all NSRs comply with the relevant noise criteria. Therefore, no mitigation measures are necessary.

According to the latest EP under Wo Shang Wai (Figure 6 of EP-311/2008/E), the mitigation measures included 9.5m and 6.5m high noise barriers. Based on the above calculation (i.e. with adopting the latest noise data of MPVB from the Commissioning Test Report under EP-349/2009/N), both 9.5m and 6.5m high noise barriers mentioned in the VEP are not necessary in this assessment.

2.8 Conclusion

2.8.1 Construction Phase

With the implementation of noise mitigation measures during the construction phase, noise levels at the NSRs will comply with the noise criteria. Therefore, no residual noise impact is anticipated.

2.8.2 Operational Phase

For mitigating the potential traffic noise impact, it is recommended to adopt acoustic windows at the affected façades of the noise sensitive receivers. With this recommended measure in place, no adverse road traffic noise impacts are anticipated.

For fixed plant noise impact during the operational phase, no potential noise impacts are anticipated from the fixed noise source of XRL MPVB.

3 Water Quality Impact

3.1 Introduction

This section assesses the potential water quality impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

3.2 Legislation, Standards, Guidelines and Criteria

Water quality impacts have been assessed with reference to the relevant environmental legislation and standards, which are the same as those adopted in the previously approved Section 16 submission. The following relevant pieces of legislation and associated guidance are applicable to the evaluation of water quality impacts associated with the Project.

- Water Pollution Control Ordinance (WPCO) (Cap. 358);
- Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (WPCO, Cap. 358, S.21);
- Town Planning Board Guidelines No. 12C;
- Environmental Impact Assessment Ordinance (Cap. 499., S.16), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annexes 6 and 14;
- Marine Water Quality in Hong Kong in 2023;
- River Water Quality in Hong Kong in 2023;
- Hong Kong Planning Standard and Guidelines (Chapter 9);
- Practice Note for Professional Persons ProPECC PN 1/23 "Drainage Plan subject to Comment by the Environmental Protection Department, Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations 40(1), 40(2), 41(1) and 90;
- Practice Note for Professional Persons ProPECC PN 2/23 "Construction Site Drainage"; and
- Environmental, Transport and Works Bureau Technical Circular (Works) No.5/2005" Protection of natural streams/rivers from adverse impacts arising from construction works, ETWB TC (Works) No. 5/2005.

3.3 Existing Environment and Sensitive Receivers

Existing Environment

Baseline conditions of the Project site was identified as part of the previously approved Section 16 submission, which remain unchanged. The direction of water flow in the water ditches and drainage channels are basically from south to north diverting to the Shenzhen River in the Deep Bay Water Control Zone (WCZ). The Water Quality Objectives for Deep Bay WCZ are listed in **Table 3.1**.

Table 3.1: Summary of Water Quality Objectives for Deep Bay WCZ

Parameter	Objectives	Part(s) of Zone
Aesthetic Appearance	Waste discharges shall cause no objectionable odours or discolouration of the water.	Whole zone
	Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	
	Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	

Parameter	Objectives	Part(s) of Zone
	There should be no recognisable sewage-derived debris.	
	Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	
	Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.	
Bacteria	The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Secondary Contact Recreation Subzone and Mariculture Subzone
	The level of Escherichia coli should be zero per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	The level of Escherichia coli should not exceed 1 000 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
	The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive in one calendar year. Samples should be taken at least 3 times in a calendar month at intervals of between 3 and 14 days.	Yung Long Bathing Beach Subzone
Colour	Waste discharges shall not cause the colour of water to exceed 30 Hazen units.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the colour of water to exceed 50 Hazen units.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Dissolved Oxygen	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Inner Marine Subzone excepting Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be calculated as water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 milligrams per litre within 2 metres of the seabed for 90% of the sampling occasions during the year.	Outer Marine Subzone excepting Mariculture Subzone
	The dissolved oxygen level should not be less than 5 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to be less than 4 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone, Water Gathering Ground Subzones and other inland waters of the Zone
pH	The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 units.	Marine waters excepting Yung Long Bathing Beach Subzone
	Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones

Parameter	Objectives	Part(s) of Zone
	The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
	The pH of the water should be within the range of 6.0–9.0 units for 95% of samples. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 units.	Yung Long Bathing Beach Subzone
Temperature	Waste discharges shall not cause the natural daily temperature range to change by more than 2.0°C.	Whole zone
Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.	Whole zone
Suspended Solids	Waste discharges shall neither cause the natural ambient level to be raised by 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
	Waste discharges shall not cause the annual median of suspended solids to exceed 20 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Ganges Subzone, Indus Subzone, Water Gathering Ground Subzones and other inland waters
Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 milligram per litre, calculated as the annual average (arithmetic mean).	Whole zone
Nutrients	(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Inner and Outer Marine Subzones
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.7 milligram per litre, expressed as annual mean.	Inner Marine Subzone
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.5 milligram per litre, expressed as annual water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed).	Outer Marine Subzone
Five-Day Biochemical Oxygen Demand	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Chemical Oxygen Demand	Waste discharges shall not cause the chemical oxygen demand to exceed 15 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the chemical oxygen demand to exceed 30 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Toxins	Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone
	Waste discharges shall not cause a risk to any beneficial uses of the aquatic environment.	Whole Zone
Phenol	Phenols shall not be present in such quantities as to produce a specific odour, or in concentration greater than 0.05 milligrams per litre as C_6H_5OH.	Yung Long Bathing Beach Subzone

Parameter	Objectives	Part(s) of Zone
Turbidity	Waste discharges shall not reduce light transmission substantially from the normal level.	Yung Long Bathing Beach Subzone

Source: Statement of Water Quality Objectives (Deep Bay Water Control Zone). Water Pollution Control Ordinance (Cap. 358R), 1997.

The existing water pollution sources include the runoff from adjacent agricultural activities, effluent from fish-cum-duck activities at the northern boundary of the Project site and the disposal of domestic sewage from the adjacent developments. The routine marine water quality monitoring data collected by EPD in 2023 has been reviewed for the monitoring stations (DM1 and DM2) at Deep Bay WCZ. The location of the representative marine water quality monitoring stations are shown in **Figure 3.1**. The summary of water quality for Inner Deep Bay WCZ in 2023 is presented in **Table 3.2**. The overall WQO compliance rate for the Inner Deep Bay WCZ was 53% in 2023, as compared with a ten-year average of 47% in 2009-2018. Overall, with the measures under the Deep Bay Water Pollution Control Joint Implementation Programme taken progressively by the governments of Hong Kong and Shenzhen, there have been significant water quality improvements in Deep Bay. In particular, there has been full compliance of the NH_3-N WQO in the past seven years. Although Deep Bay, as compared with other WCZs, shows higher nutrient levels with annual depth-averaged TIN levels exceeding the respective TIN WQOs, a noticeable long-term decrease in TIN levels since mid-2000s has been seen.

Table 3.2: Summary of Marine Water Quality for the Inner Deep Bay WCZ in 2023

Parameters	DM1	DM2
Temperature (^oC)	25.6 (19.0 – 31.7)	25.5 (19.0 – 31.4)
Salinity	18.6 (9.7 – 23.3)	20.5 (11.5 – 25.5)
Dissolved Oxygen (mg/L)	5.2 (3.7 – 7.7)	5.4 (3.7 – 7.6)
Dissolved Oxygen (% Saturation)	70 (54 – 112)	74 (55 – 111)
pH	7.4 (7.1 – 7.8)	7.4 (6.8 – 7.8)
Secchi Disc Depth (m)	1.2 (0.9 – 1.6)	1.1 (0.8 – 1.5)
Turbidity (NTU)	27.2 (6.0 – 52.2)	29.1 (7.2 – 55.7)
Suspended Solids (mg/L)	28.3 (15.0 -61.0)	35.5 (15.0 – 72.0)
BOD_5 (mg/L)	1.0 (0.5 – 1.8)	1.0 (0.1 – 2.5)
Ammonia Nitrogen (mg/L)	0.397 (0.170 -0.810)	0.282 (0.076 – 0.860)
Unionised Ammonia (mg/L)	0.006 (0.001 – 0.012)	0.004 (<0.001 – 0.016)
Nitrite Nitrogen (mg/L)	0.118 (0.043 – 0.350)	0.094 (0.035 – 0.280)
Nitrate Nitrogen (mg/L)	0.883 (0.580 – 1.300)	0.724 (0.250 – 1.100)
Total Inorganic Nitrogen (mg/L)	1.40 (0.83 – 1.82)	1.14 (0.60 – 2.04)
Total Kjeldahl Nitrogen (mg/L)	0.76 (0.40 – 0.98)	0.64 (0.31 – 1.00)
Total Nitrogen (mg/L)	1.76 (1.24 – 2.20)	1.50 (0.97 – 2.18)
Orthophosphate Phosphorus (mg/L)	0.123 (0.069 – 0.170)	0.119 (0.049 – 0.320)

Parameters	DM1	DM2
Total Phosphorus (mg/L)	0.20 (0.14 – 0.27)	0.19 (0.14 – 0.35)
Silica (as SiO_2)(mg/L)	5.38 (1.90 – 10.00)	4.43 (1.00 – 11.00)
Chlorophyl l-a (µg/L)	3.5 (1.7 – 6.0)	5.5 (1.4 – 13.0)
E.coli (cfu/100mL)	310 (24 - 3,300)	380 (21 – 80,000)
Faecal Coliforms (cfu/100mL)	640 (44 – 10,000)	730 (40 – 220,000)

Source: Marine Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual arithmetic means of depth-average results, except for *E.coli* and faecal coliforms which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.

The routine river water quality monitoring data collected by EPD in 2023 has been reviewed for the nearest monitoring location to Wo Shang Wai at Fairview Park Nullah (FVR1). The location of the river water quality monitoring station is shown in **Figure 3.1**. This nullah is a short concrete channel within the Fairview Park residential development, which shares the same drainage basin as the southern part of the Project site. The summary of the River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023 is presented in **Table 3.3**. It is observed that compliance with river water quality objectives in the Fairview Park Nullah is improving from 47% in 2002 to 73% in 2023. The WQI grading remained "Fair' in 2023 (EPD, 2023).

Table 3.3: Summary of River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023

Parameters	FVR1
Dissolved Oxygen (mg/L)	5.4 (3.7 – 11.7)
pH	7.4 (7.1 – 8.5)
Suspended Solids (mg/L)	11.5 (6.8 – 22.0)
BOD_5 (mg/L)	6.9 (3.0 – 13.0)
COD (mg/L)	30 (9 – 70)
Oil & Grease (mg /L)	<0.5 (<0.5 – <0.5)
E.coli (cfu/100mL)	25,146 (2,900 – 120,00)
Faecal Coliforms (cfu/100mL)	71,882 (14,000 – 440,000)
Ammonia-nitrogen (mg/L)	1.450 (0.450 – 2.800)
Nitrate-nitrogen (mg/L)	0.760 (0.340 – 1.200)
Total Kjeldahl Nitrogen (mg/L)	2.40 (0.92 – 4.00)
Orthophosphate Phosphorus (mg/L)	0.275 (0.095 – 0.530)
Total Phosphorus (mg/L)	0.45 (0.12 – 0.73)
Sulphide (mg/L)	<0.02 (<0.02 – 0.04)
Aluminium (µg/L)	<50 (<50 - <50)
Cadmium (µg/L)	<0.1 (<0.1 - <0.1)

Parameters	FVR1
Chromium (µg/L)	<1 (<1 – 1)
Copper (µg/L)	2 (<1 – 2)
Lead (µg/L)	<1 (<1 - <1)
Zinc (µg/L)	10 (<10 – 20)
Flow (m^3/s)	NM

Source: River Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual medians of monthly samples, except those for *E.coli* which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.
[iii]. NM indicates no measurement taken.

Water Sensitive Receivers (WSRs)

The existing or potential beneficial uses that are sensitive to water pollution include the fishponds in active use in the Conservation Area (CA) adjacent to the Project site and the drainage channel connecting to the water ditch at the northern boundary of the Project site. The Deep Bay Water Control Zone, the Ramsar Site and Mai Po Nature Reserve are the indirect sensitive receivers. The WSRs are listed in **Table 3.4** and locations are shown in **Figure 3.2**.

Table 3.4: Water Sensitive Receivers Identified within the Assessment Area

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR1	Fishponds near Tam Kon Chau Road	Fishpond	Active Fishponds	0m
WSR2	Pond near Wo Shang Wai Village	Pond	Individual pond, disconnected to river system	15m
WSR3	Ponds next to Palm Springs	Pond	Individual ponds, disconnected to river system	122m
WSR4	Ponds inside Palm Springs	Pond	Individual ponds, disconnected to river system	152m
WSR5	Pond near Palm Canyon Drive	Pond	Individual pond, disconnected to river system	295m
WSR6	Pond near Cypress Drive	Pond	Individual pond, disconnected to river system	474m
WSR7	Water Ditch around Tam Kon Chau Road	Water Ditch	Individual water ditch, disconnected to river system	0m
WSR8	Water Ditch near Camelia Path	Water Ditch	Water ditch downstream to Shan Pui River	137m
WSR9	Channels next to Palm Canyon Drive	Channel	Individual channels	45m
WSR10	Channel next to Castle Peak Road	Channel	Individual channel	330m

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR11	Channels next to Sam Tam Road	Channel	Individual channels	139m
WSR12	Channels around the pond near Cypress Drive	Channel	Individual channels	460m
WSR13	Channels around the ponds near Palm Springs	Channel	Individual channels	250m
WSR14	Channel next to Mai Po Floodwater Pumping Station	Channel	Individual channel	307m

3.4 Assessment Methodology

The findings from the previously approved Section 16 submission have been reviewed to identify any changes to the previous assessment due to the proposed change in layout of the residential portion, and any additional water quality impacts that need to be addressed. Where appropriate, additional mitigation measures are recommended to mitigation potential water quality impacts.

3.5 Evaluation of Water Quality Impact

3.5.1 Construction Phase

3.5.1.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during the construction phase:

- Diversion of existing water ditches and marsh;
- Draining of existing water ditches;
- Soil excavation and stockpiling;
- Chemical waste from plant and equipment; and
- Domestic effluent.

3.5.1.2 Evaluation of Impacts due to the Proposed Change in Residential Units

The proposed change in the layout of the development portion has changed the construction activities associated with the Project, but there are no expected significant changes to the previously identified water quality impacts during the construction phase.

3.5.2 Operational Phase

3.5.2.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during operation phase:

- Wastewater pollution;
- Diversion of existing water ditches and marsh; and
- Changes in hydrology.

3.5.2.2 Evaluation of Impacts

For the previously identified potential impacts during the operation phase, the volume of sewage generated by the Project would change because of the proposed change in the layout of the

residential development portion and an increase in the design population. Other previously identified impacts would not be affected. New potential impacts arising from the offsite sewerage conveyance options would be assessed in the updated EIA.

Wastewater Pollution

As mentioned in the previously approved Section 16 submission, a permanent on-site sewage treatment plant (STP) will be established. However, no permanent on-site STP will be constructed under the proposed layout in the current Section 12A application. Instead, all sewage generated by the project will be conveyed to the public sewers, either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the Yuen Long Sewage Treatment Plant (YLSTW), or via a new connection constructed as part of the San Tin / Lok Ma Chau Development Node and ultimately directed to the San Tin / Lok Ma Chau Effluent Polishing Plant (STLMC EPP).

The total population (resident and staff) is projected to be 10,193, and the average dry weather flow (ADWF) volume of sewage is 3,788.04 m^3/day.

For the option of discharging to the planned STLMC EPP, in the event that the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned. Effluent from the STP will be treated to meet the Group C Inland Waters' discharge standard under the Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters before discharge to Mai Po Tributary.

Diversion of Existing Water Ditches and Marsh

As evaluated in the previously approved Section 16 submission, the existing water ditches and marsh within the Project site mainly act as discharge points for the surface runoff generated within the Project site to the Mai Po River in the north. They will be filled in order to facilitate the construction of the site formation for the proposed Development. An internal drainage network underneath the future road system within the proposed development will be provided to collect the surface runoff generated within the Project site. The proposed internal drainage network will have sufficient capacity to cater for the runoff generated from the proposed Development, to replace the existing water ditches and marsh. The proposed internal drainage network and box culvert are shown in **Figure 3.3**. No potential impacts are identified during the operation phase.

Change in Hydrology

The proposed development will generate additional surface runoff due to the construction of additional paved areas, roads and facilities associated with the residential development. The additional runoff will be discharged to Mai Po River in the north of the Project site via the internal drainage system under the future internal road network. In the previously approved Section 16 application, the estimated peak runoff generated is 14.26 m^3/s under a 50-year storm. Based on the flow data obtained in the latest Drainage Impact Assessment under this Section 12A application, the estimated peak runoff generated is 14.95 m^3/s under a 50-year storm. Since the increase in the surface runoff is insignificant, no adverse effect on the existing aquatic organisms or water quality in the drainage system is anticipated.

3.6 Mitigation Measures

3.6.1 Construction Phase

The previously approved Section 16 submission identified mitigation measures to be implemented to minimise potential water quality impacts due to construction activities of the Project. As there are no changes to the identified water quality impacts due to the proposed change in layout of residential portion, the previously identified good site practices and mitigation measures remain

valid, and no changes to the previously identified mitigation measures for construction phase are required. Good site practices outlined in ProPECC PN 2/23 and ETWB TC (Works) No. 5/2005 should be adopted to minimise runoff from construction works areas. The following measures are recommended to minimise the impacts of construction on water quality.

- Temporary site drainage facilities and perimeter channels shall be designed and implemented by Contractor prior to commencement of construction to convey surface runoff to silt removal facilities. The design of the silt /sand removal traps and sediment basins shall follow the design in ProPECC PN 2/23;
- Runoff into the excavation areas during rainstorm events shall be minimised as far as practicable. Any wastewater pumped out of the excavation areas shall be treated to remove suspended solids prior to discharge;
- No discharge of silty water into the drainage channel within and in the vicinity of the site;
- Maintenance and inspection of the drainage system and sediment removal facilities should be carried out regularly to remove any sediment and blockages, especially when rainstorms are forecast;
- Stockpiles of construction materials should be properly covered and located away from any natural stream/river;
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby steam/river by rain;
- Construction effluent, site run-off and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order: (1) minimisation of wastewater generation; (2) reuse and recycle; (3) treatment. Proper locations for discharge outlets of wastewater treatment facilities well away from the natural stream/river should be identified;
- Adequate lateral support may need to be erected in order to prevent soil/mud from slipping into the stream/river, but without unduly impeding the flow during heavy rain;
- Manholes (including those constructed as part of the Project) should be adequately covered and temporarily sealed at all times;
- Temporary access road should be protected by crushed stone or gravel;
- Intercepting channels should be provided to prevent storm runoff from washing across exposed soil surfaces;
- Trenches should be dug and backfilled in short sections. Measures should be taken to minimize the ingress of rainwater into trenches when rainstorms are likely;
- Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials;
- Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. There shall also be clear instructions showing what action to take in the event of an accidental;
- Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area;
- Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately;
- Spillage or leakage of chemical waste to be controlled using suitable absorbent materials;
- Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume;

- Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage; and
- Temporary sanitary facilities to be provided for on-site workers during construction.

3.6.2 Operational Phase

Under this Section 12A application, no permanent on-site STP will be constructed, as proposed in the previously approved Section 16 submission. Instead, all sewage generated during the Project's operational phase will be conveyed either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the YLSTW, or via a new connection to the public sewer to be constructed as part of the San Tin / Lok Ma Chau Development Node. In case the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned.

With the implementation of the recommended mitigation measures, the chances of any direct discharge of untreated sewage effluent into surrounding rivers or ponds will be adequately minimised, and no adverse water quality impact is anticipated.

3.7 Evaluation of Residual Impact

With the implementation of the recommended mitigation measures, no adverse water quality impacts are expected during the construction and operation phases, and no residual impact on water quality is anticipated.

3.8 Environmental Monitoring and Audit

A water quality monitoring and site auditing programme has been recommended in the previously approved Section 16 submission to ensure mitigation measures during the construction phase will be implemented. No changes to the water quality monitoring and site auditing programme are required.

3.9 Conclusion

The proposed change in the layout of the development portion has changed the construction activities associated with the Project, but there are no expected significant changes to the previously identified water quality impacts during the construction phase. Thus, through proper implementation of water pollution mitigation measures, no adverse impact is anticipated.

During the operation phase, all sewage generated by the project will be conveyed to the public sewers either via Nam Sang Wai sewage pumping station to YLSTW or via the planned STLMC EPP with temporary on-site STP to cater the population intake prior to STLMC EPP commissioning if necessary.

With the implementation of the appropriate mitigation measures during the construction and operation phases, no adverse water quality impact is anticipated.

4 Waste Management Implications

4.1 Introduction

This section identifies the potential waste attributing to the phase of construction and operation of the Project and evaluates the potential environmental impacts that may result from waste generated. Mitigation measures and good site practices on waste handling, storage and disposal, are suggested with reference to applicable waste legislation and management guidelines with a view to mitigate potential waste management impacts.

4.2 Legislation, Standards, Guidelines and Criteria

The following legislation which relates to the handling, storage and disposal of wastes in Hong Kong are relevant in the assessment of waste management implication:

- Waste Disposal Ordinance (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);
- Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK); and
- Dumping at Sea Ordinance (Cap. 466)

Waste Disposal Ordinance (Cap. 354)

The Waste Disposal Ordinance (WDO) is the principal piece of legislation for management and control of waste disposal in Hong Kong. The WDO prohibits the unauthorised disposal of wastes. Construction waste is defined as any substance, matter or thing that is generated from construction work and abandoned, whether or not it has been processed or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any desludging, desilting or dredging works. Under the WDO, waste can be disposed of only at designated waste disposal facilities licensed by the Environmental Protection Department (EPD).

Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)

Under the WDO, the Chemical Waste (General) Regulation provides regulations for chemical waste control, and administers the possession, storage, collection, transport and disposal of chemical wastes.

According to the Waste Disposal (Chemical Waste) (General) Regulation, all producers of chemical waste must register with Environmental Protection Department (EPD) and treat their wastes, either utilising on-site plant licensed by EPD, or arranging for a licensed collector to transport the wastes to a licensed facility. The Regulation also prescribes the storage facilities to be provided on-site, including labelling and warning signs, and requires the preparation of written procedures and training to deal with emergencies such as spillages, leakages or accidents arising from the storage of chemical wastes.

The EPD has also issued a 'guideline' document, the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, which details how the Contractor should comply with the regulations on chemical wastes.

Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)

Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material, whereas construction waste delivered to a public fill reception facility for disposal must consist entirely of inert material.

Land (Miscellaneous Provisions) Ordinance (Cap. 28)

The inert portion of Construction and Demolition (C&D) materials may be taken to Public Fill Reception Facilities (PFRFs) operated by the Civil Engineering and Development Department (CEDD). PFRFs usually form part of land reclamation schemes. The Land (Miscellaneous Provisions) Ordinance requires that dumping licenses be obtained by individuals or companies who deliver public fill to public filling areas. The CEDD issues the licences under delegated powers from the Director of Lands. C&D materials that are wholly inert, namely public fill, should not be disposed of to landfill, but taken to fill banks or public filling areas.

Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)

The Public Cleansing and Prevention of Nuisances Regulation provides control on illegal tipping of wastes on unauthorised (unlicensed) sites.

Dumping at Sea Ordinance (Cap. 466)

This Ordinance came into operation in April 1995 and empowers the Director of Environmental Protection (DEP) to control the disposal and incineration of substances and particles at sea for the protection of the marine environment. Under the Ordinance, a dumping permit from the DEP is required for the disposal of regulated substances within and outside the waters of Hong Kong. The permit contains terms and conditions which include the following specifications, but not limited to:

- Type and quantity of substances permitted to be dumped;
- Location of the disposal grounds;
- Requirement of equipment for monitoring the disposal operations; and
- Environmental monitoring requirements.

Marine disposal of any dredged/excavated sediment is subject to control under the Dumping at Sea Ordinance (DASO). Dredged/excavated sediment destined for marine disposal is classified based on its contaminant levels with reference to the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sedimen*t. The *Administrative Guidance* stipulated a set of sediment quality criteria or Chemical Exceedance Levels (CEL) for contaminants including metals, metalloid and organic pollutants.

ETWB TCW No. 19/2005 Environmental Management on Construction Sites

The ETWB TCW No. 19/2005 Environmental Management on Construction Sites introduces measures to enhance waste management on construction sites. The circular sets out the policies and procedures that require the contractors to prepare and implement an Environmental Management Plan (EMP), which includes the Waste Management Plan (WMP) to encourage on-site sorting of C&D materials and to minimise generation of C&D materials during the course of construction.

Other Relevant Environmental Guidelines

Other environmental relevant circulars/guidelines applicable to waste management practices for this Project include:

- WBTC No. 2/93, Public Dumps
- WBTC No 2/93B, Public Filling Facilities
- WBTC No. 16/96, Wet Soil in Public Dumps
- WBTC Nos. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Project
- WBTC No. 12/2000, Fill Management
- WBTC No. 19/2001, Metallic Site Hoardings and Signboards
- WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates
- DEVB TCW No. 06/2010, Trip-ticket System for Disposal of Construction and Demolition Material
- DEVB TCW No. 08/2010, Enhanced Specification for Site Cleanliness and Tidiness
- DEVB TCW No. 02/2011, Encouraging Use of Recycled and other Green Materials in Public Works Projects
- DEVB TCW No. 09/2011, Enhanced Control Measures for Management of Public Fill
- CEDD TC No. 11/2019, Management of Construction and Demolition Materials
- Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes

4.3 Assessment Methodology

The methods for assessing potential waste management impacts during construction and operation phases include the following:

- Identify the types and quantity of waste arising as a result of the phase of the construction and operation activities of the Project;
- Assess the potential environmental impacts associated with the waste generation, handling, storage, transport and disposal;
- Identify the opportunities for reducing waste generation, on-site or off-site reuse and recycling prior to considering the disposal options for each type of waste; and
- Identify the disposal options for each type of waste impact associated with the storage, collection, transfer, and disposal of waste.

4.4 Identification and Evaluation of Waste Management Implications

The waste implication during construction and operational phase due to the development of the Project has been assessed and presented in the following sub-sections.

4.4.1 Construction Phase

The main activities which would potentially result in the generation of waste include:

- Site formation and substructure works; and
- Construction of new buildings and infrastructures.

A variety of type of wastes would be generated during construction phase that can be divided into the following distinct categories based on their compositions:

- Construction and demolition (C&D) materials;
- Excavated sediment (including marine deposit and pond mud);
- Chemical waste; and
- General refuse.

Each type of the above waste arising is described in ensuing paragraphs, together with an evaluation of the potential environmental impacts associated with the waste generation, handling, storage, transport, and disposal.

4.4.1.1 C&D Materials

The estimated amount of C&D Materials to be generated during construction phase is summarized in **Table 4.1**.

Table 4.1: Estimated Amount of Different Types of Wastes to be Generated During the Construction Phase

Activities	Quantity of waste to be generated (m^3)		Inert C&D Material Reused On-Site (m^3)	Disposed Offsite (m^3)		Tentative Disposal Period
	Inert C&D Material [i] (m^3)	Non-inert C&D Material [ii] (m^3)		Inert	Non-inert	
Site clearance, site formation and construction of infrastructures	383,000	95,800	40,200	342,800	95,800	Year 2027 & 2028
Construction of new buildings	21,900	5,500	3,300	18,600	5,500	Year 2027 - 2031
Total	**404,900**	**101,300**	**43,500**	**361,400**	**101,300**	

Notes:
[i]. Inert C&D material: e.g. soil, sand, clay, crushed concrete, asphalt, bitumen, brick, tile
[ii]. Non-inert C&D material: e.g. bamboo, timber, paper, glass, steel, and plastic

C&D Materials from Site Clearance, Site Formation and Construction of Infrastructures

C&D materials, comprising both inert and non-inert portions, would be generated from site clearance of ground surface, as well as excavation works during site formation. It is estimated that around 478,800 m^3 of C&D material (inert portion of 383,000 m^3 and non-inert portion of 95,800 m^3) will be generated. The quantities of material generated is shown in **Table 4.1**.

Based on the best available design, it is estimated that around 40,200 m^3 of inert C&D materials will be reused on-site subjected to site constraints, while 342,800 m^3 of inert C&D materials are expected to be delivered to the public fill reception facility. The estimated amount of non-inert C&D materials is approximately 95,800 m^3, which will be disposed of at landfill.

C&D Materials from Construction of New Buildings

C&D materials would also be generated from the construction of new buildings. The inert portion of the C&D materials is referred to broken concrete, rock etc. to be delivered to the public fill reception facility and the non-inert portion including packing materials and general refuse is referred to construction waste and would be disposed of at landfill.

In accordance with the "Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)", a C&D materials generation rate of 0.1 m^3 per 1 m^2 of GFA is adopted. It is estimated that approximately total 27,400 m^3 of C&D materials would be generated from construction of the buildings of the Project.

The estimated amount of C&D materials to be generated during the construction of new buildings is summarized in **Table 4.2**.

Table 4.2: Summary of C&D Materials Volumes Generated During Construction of New Buildings

Total estimated GFA (m^2)	Total C&D material generated (m^3) [i]	Inert C&D material (m^3) [ii][iii]	Non-inert C&D material (m^3) [ii][iv]
265,800	26,600	21,200	5,400

Notes:

[i]. Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)

[ii]. Approximately ratio for (inert waste): (non-inert waste) is 8:2 "Monitoring of Solid Waste in Hong Kong, 1997" by EPD

[iii]. The inert waste mainly is Artificial Hard Material (AHM) which includes, but not limited to, broken concrete, asphalt, bitumen and granular materials, etc.

[iv]. "Non-inert C&D material" includes, but not limited to, bamboo, timber, paper and plastic, etc.

It is expected that approximately 21,200 m^3 would be inert material which are envisaged to be delivered to the public fill reception facility and 5,400 m^3 would be non-inert material to be disposed of at landfill.

All inert C&D materials will need to be carefully stockpiled if it cannot be reused or removed directly to avoid dust and other nuisance impacts. The Contractor should separate non-inert C&D materials from inert C&D materials on-site. All segregated recyclable materials (e.g., metal) should be collected by reputable recyclers. The remaining non-inert C&D materials should be disposed of at designated landfill by dump trucks.

4.4.1.2 Excavated Sediment

Based on the existing ground investigation (GI) information, land-based sediment (including marine deposit and pond mud) is anticipated within the proposed residential development. The major source of excavated sediment comes from basement construction of the proposed residential development.

To minimize the amount of excavated sediment, the extent of the residential development basement had been reviewed and the excavation level had been optimized, with the aim to minimize the disturbance of the existing sediment. Such that the design scheme presented in this report has been evaluated with optimized basement extent to minimize excavation of excavated sediment as far as possible.

The estimated quantities of sediment to be excavated from the Project construction are shown in **Table 4.3**.

Table 4.3: Estimated Amount of Excavated Sediment

Quantity of Excavated Sediment (m^3)	Quantity of Excavated Sediment to be Reused On-Site (m^3)	Quantity of Sediment to be Disposed Off-site or Re-use in Other Projects (m^3)
77,400	77,400	0

Note:

[i]. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/ Engineer.

Reuse of Excavated Sediment

Based on the best available design, all excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials or other on-site reuse options under the Project.

Prior to commencement of construction, sampling and testing for sediment will be conducted by the Contractor for the concerned excavation area in accordance with *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment*. Based on the testing results, the sediment would be categorized in accordance with the *Administrative Guidance*.

Subjected to the testing result, excavated sediment treatment will be undertaken prior to reuse. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/Engineer.

Offsite Disposal or Offsite Re-use of Excavated Sediment

Based on the best available design, all excavated sediment will be reused onsite and no offsite disposal will be required. However, as subjected to further studies in subsequent design stage, should surplus sediment be excavated and onsite reuse option be not feasible, the project proponent will explore sediment re-use opportunities of other projects in HK. Meanwhile, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction in this area. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*.

Offsite disposal of sediment to the marine disposal facilities should be the last resort, and if required, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated materials based on their testing results in accordance with the *Administrative Guidance*.

The recommended mitigation measures for handling of excavated sediment are discussed in **Section 4.5**. No adverse waste management implications are anticipated if the recommended mitigation measures are implemented.

4.4.1.3 Chemical Waste

The maintenance and servicing of construction plant and equipment may generate some chemical wastes such as used solvents, cleaning fluids and waste lubricating oil. It is difficult to quantify the amount of chemical waste that will arise from the construction activities since it will be dependent on the Contractor's on-site maintenance requirements and the amount of plant utilised. However, it is anticipated that the quantity of chemical waste, such as waste lubricating oil and solvents produced from plant maintenance, will be small and in the order of few hundred litres per month. The amount of chemical waste to be generated will be quantified in the Waste Management Plan to be prepared by the Contractor for the site. For the disposal of chemical wastes, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

Chemical wastes arising during the construction phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as stipulated in the Waste Disposal (Chemical Waste) (General) Regulation.

The potential hazards include:

- Toxic effects to workers;
- Adverse impacts on water quality from spills and associated adverse impacts on marine biota; and
- Fire hazards.

Materials classified as chemical wastes will require special handling and storage arrangements before removal for off-site disposal/treatment at the approved Chemical Waste Treatment Centre (CWTC) or licensed chemical waste treatment facilities. Wherever possible opportunities should be taken to reuse and recycle materials. Provided that the handling, storage and disposal of

chemical wastes are in accordance with these requirements, adverse environmental impacts are not expected.

4.4.1.4 General Refuse

The construction workforce will generate refuse comprising food scraps, waste paper aluminium cans and plastic bottles during construction period.

Release of general refuse into watercourses is not permitted as introduction of these wastes is likely to have detrimental effects on water quality in the area. Effective collection of site waste would be required to prevent waste materials being blown around by wind, flushed or leached into the stream environment, and odour nuisance. The site may also attract pests and vermin if the waste storage area is not well maintained and cleaned regularly.

The number of work force to be employed for the Project is not available at this stage, but it is anticipated to be not to be over 300 staff at one time. Based on the generation rate of 0.65kg/person/day, the total refuse generated per day would be less than 200 kg.

Recyclable materials (i.e., paper, plastic bottles and aluminium cans) will be separated for recycling in order to reduce the amount of general refuse to be disposed of at landfill. Adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. Reputable waste collector should be employed to collect the general refuse for disposal at designated landfill sites on a regular basis.

Provided that the mitigation measures are adopted, the potential environmental impacts caused by the storage, handling transport and disposal of general refuse are expected to be minimal. Mitigation measures to minimise potential environmental impacts are recommended in **Section 4.5**.

With the implementation of good waste management practices at the site as detailed in **Section 4.5**, adverse environmental impacts are not expected to arise from the storage, handling and transportation of the general refuse from construction workforce.

4.4.1.5 Storage and Collection of Waste

Adoption of barging points and conveyor belt system for waste handling is not anticipated for the Project. Stockpiling areas would be set up on-site to handle waste generated during construction phase. Mitigation measures stipulated in **Section 4.5** will be implemented.

4.4.1.6 Transportation Arrangement for Waste Disposal During Construction Phase

Land transport should be used to deliver and dispose of the waste generated from the Project sites to the designated disposal outlets. It is expected that around 33 vehicle trips per day for transporting waste during the construction phase of the Project. The tentative transportation routings for the disposal of various types of wastes generated during the construction phase are shown in **Table 4.4**.

The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures (e.g. using water-tight containers and covered trucks), no adverse environmental impacts are expected due to the transportation of waste.

Table 4.4: Tentative Transportation Routings for Waste Disposal During the Construction Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing
Non-inert C&D Materials	North East New Territories (NENT) Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway
Surplus Inert C&D Materials	Public fill reception facility in Tuen Mun Area 38 (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Lung Mun Road
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway
General Refuse	NENT Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway

4.4.2 Operational Phase

In view of the uses in the operational phase of the Project, which includes residential establishment, generation of the following categories of waste are anticipated:

- General refuse; and
- Chemical waste.

4.4.2.1 General Refuse

Municipal Solid Waste (MSW) comprises of solid waste from households, commercial and industrial sources. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2022" by EPD, the MSW disposal rate was 1.51 kg/person/day in Year 2022, and the recovery rate for recycling was 32%. By calculation, the MSW generation rate, disposal rate and recycle rate were 2.22 kg/person/day, 1.51 kg/person/day and 0.71 kg/person/day in 2022 respectively.

The estimated MSW is summarised in **Table 4.5** based on planned populations.

Table 4.5: Estimated Quantities of MSW During the Operational Phase

Estimated MSW from Residential Population				
Residential Population	Generated (tpd)	Disposal (tpd)	Recycle (tpd)	Food Waste Disposal (tpd)
10,000	22.2	15.1	7.1	6.6

Notes:
[i]. Based on MSW generation, disposal and recycling rate in 2022.
[ii]. tpd = tonne per day.
[iii]. Non-Residential Population include employment population and visitors.
[iv]. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2022" by EPD, the food waste composition of MSW disposed of was 29.7%.

General refuse would be temporarily stored in refuse collection room in each building at the ground floor for localized refuse collection and the waste would be transferred to a central collection point. Waste recycling facilities / containers are recommended to be included in the central collection point so that waste could be sorted to recover materials (such as paper and cardboards, plastics, metals and glass etc.) as far as possible, before being collected by refuse transfer vehicles. Different containers should be provided for the storage of different recyclable materials. To avoid potential odour nuisance to the residents during transport of waste, enclosed waste collection vehicles should be used, and the collection route and time should be properly planned. At least daily collection should be arranged by the waste collector.

In order to facilitate recycling, a 4-bin recycling system for paper, metals, plastics and glass should be adopted together with a general refuse bin. They should be placed in prominent places to promote waste separation at source. All recyclable materials should be collected by recyclers.

To facilitate waste recovery of food waste, installation of food waste collection facilities such as food waste recycling machines for composting treatment, proper handling and delivery to Organic Resources Recovery Centre (ORRC) should be explored.

With the implementation of a proper waste handling system, environmental impacts associated with waste storage, collection and transportation are not anticipated.

4.4.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the site. It is anticipated that the total quantity of chemical waste such as acids, alkalis and organic solvent produced by maintenance activities would be insignificant with a few cubic meters per month.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

Registration as chemical waste producers with EPD should be made by the chemical waste producers prior to operation. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

With the implementation of mitigation measures described in **Section 4.5**, potential environmental impacts (including potential hazard, air and odour emissions, noise, wastewater discharge and public transport) are not expected.

4.4.2.3 Transportation Arrangement for Waste Disposal during Operation Phase

Land transport should be used to deliver and dispose of the waste generated from the Project site to the designated disposal outlets. It is expected that approximately 7 vehicle trips per day will be required to transport the generated waste during the operation phase. The tentative transportation routings for the disposal of various types of wastes generated during the operation phase are shown in **Table 4.6**. The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures provided in **Section 4.5**, no adverse environmental impacts are expected due to the transportation of waste.

Table 4.6: Tentative Transportation Routings for Waste Disposal During the Operation Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway
General Refuse	NENT Landfill (Tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway
Food Waste	O·PARK1 (Tentatively selected)	Via Castle Peak Road, Tsing Long Highway, Tsing Ma Bridge and North Lantau Highway

4.5 Mitigation Measures

4.5.1 Construction Phase

The mitigation measures for construction phase are recommended based on the waste management hierarchy principles. Recommendations of good site practices, waste reduction measures as well as the waste transportation, storage and collection are described in following sub-sections.

4.5.1.1 Good Site Practices

Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site and effective disposal to appropriate facilities;
- Training of site personnel in proper waste management and chemical handling procedures;
- Provision of sufficient waste disposal points and regular collection of waste for disposal;
- Minimisation of windblown litter and dust/odour during transportation of waste by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- An EMP should be prepared by the Contractor with reference to the requirements in ETWB TCW No. 19/2005 and should be submitted to the Architect/ Engineer for approval before construction;
- A WMP, as part of EMP, should be submitted to the Architect/ Engineer for approval prior to the commencement of construction works; and
- Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the C&D materials is not anticipated.

In order to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by the Contractor. Warning signs should also be displayed to remind the designated disposal sites. Reference shall be made to DEVB TCW No. 6/2010 for details.

4.5.1.2 Waste Reduction Measures

Good management and control could prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sort non-inert C&D materials to recover any recyclable portions;
- Segregation and storage of different types of waste in different containers or skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Maximising the use of reusable steel formwork to reduce the amount of C&D material;
- Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force;

- Prior to disposal of non-inert C&D material, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- It is recommended that yard waste shall be separated from C&D material for recycling through delivered to Y-park so as to minimise the quantity of waste to be disposed at landfill site;
- Proper storage and site practices to minimise the potential for damage or contamination of inert C&D materials;
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling;
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; and
- Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.

In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

4.5.1.3 General Refuse

General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&D materials. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

4.5.1.4 Construction and Demolition Material

In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the inert C&D materials should be reused on-site as far as practicable. Any surplus inert C&D materials will be disposed of at the Government's public fill reception facilities for beneficial use by other projects in Hong Kong.

The Contractor shall record the amount of wastes generated, recycled, and disposed of (including the disposal sites). A trip ticket system (i.e., DEVB TC(W) No. 6/2010) shall be implemented for the disposal of C&D materials and/or C&D waste to any designated public filling facility and/or landfill respectively. To prohibit illegal dumping and landfilling of C&D materials, the dump trucks engaged on-site should be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations.

Non-inert C&D materials / C&D wastes should be reused and recycled on-site as far as possible before disposal at the designated landfill site. Suitable areas should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. Within stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance:

- Covering material during heavy rainfall;
- Locating stockpiles to minimise potential air quality, water quality and visual impacts; and
- Minimising land intake of stockpile areas as far as possible.

4.5.1.5 Excavated Sediment

The sediment should be excavated, handled, transported, reused and/or disposed in a manner that would minimize adverse environmental impacts. All excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials.

Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation, reused and/or disposed of the excavated sediment.

In order to minimize the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediment. Adequate washing and cleaning facilities shall also be provided on-site.

Should offsite disposal or off-site re-use of surplus excavated sediment be required, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*. For sediment to be disposed in marine disposal facilities, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated sediment based on their testing results in accordance with the *Administrative Guidance*. The Contractor, on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal.

Stockpiling of contaminated sediment should be avoided as far as possible. If temporary stockpiling of contaminated sediment is necessary, the concerned material should be covered by tarpaulin sheet and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).

In order to minimize the potential odour / dust emissions during excavation and transportation of the excavated sediment, the concerned material shall be wetted during excavation / material handling and shall be properly covered by tarpaulin sheet.

4.5.1.6 Chemical Waste

The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.

In addition, the following measures shall be observed:

- The Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes";
- Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately;
- Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc; and
- The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

4.5.2 Operational Phase

The following measures should be implemented for the development within the Project site to minimise the amount of waste to be disposed of at landfill and to maximise the recovery of material from the waste stream.

4.5.2.1 General Refuse

Recycling bins shall be placed in prominent locations to maximise the capture of recyclables from general refuse.

General refuse from residential buildings should be collected with lidded bins and delivered to a central collection point and stored in enclosed containers to prevent windblown, vermin, water pollution and visual impact. At least daily collection should be arranged by the waste collector.

4.5.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the Project site. To prevent health hazards to operators, all such chemical wastes should be collected and handled carefully.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

The producers should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

It is recommended that the chemical wastes are disposed at licensed chemical waste treatment facilities, such as the CWTC in Tsing Yi. A licensed collector should be employed for the chemical waste collection.

4.6 Evaluation of Residual Impact

With the implementation of recommended mitigation measures for the handling, transportation and disposal of the identified waste, adverse residual waste management implications are not anticipated for both the construction and operation phases.

4.7 Environmental Monitoring and Audit

4.7.1 Construction Phase

It would be the Contractor's responsibility to ensure that any wastes produced during the construction and demolition works are handled, stored and disposed of in accordance with good waste management practices and relevant regulations and other legislative requirements. The recommended mitigation measures should form the basis of the site WMP to be developed by the Contractor in the construction stage.

It is recommended that site inspections should be undertaken each week to determine if wastes are being managed in accordance with approved procedures. The audits should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Any irregularities observed during the site inspections will be raised

promptly to the contractor for rectification. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation of the recommended good site practice and other waste management mitigation measures.

A WMP, as a part of the EMP, should be prepared in accordance with ETWB TCW No.19/2005 and submitted to the Architect/ Engineer for approval. The recommended mitigation measures should form the basis of the WMP. The monitoring and auditing requirement stated in ETWB TCW No.19/2005 should be followed with regard to the management of C&D materials.

4.7.2 Operational Phase

No EM&A requirement is considered necessary during the operation phase.

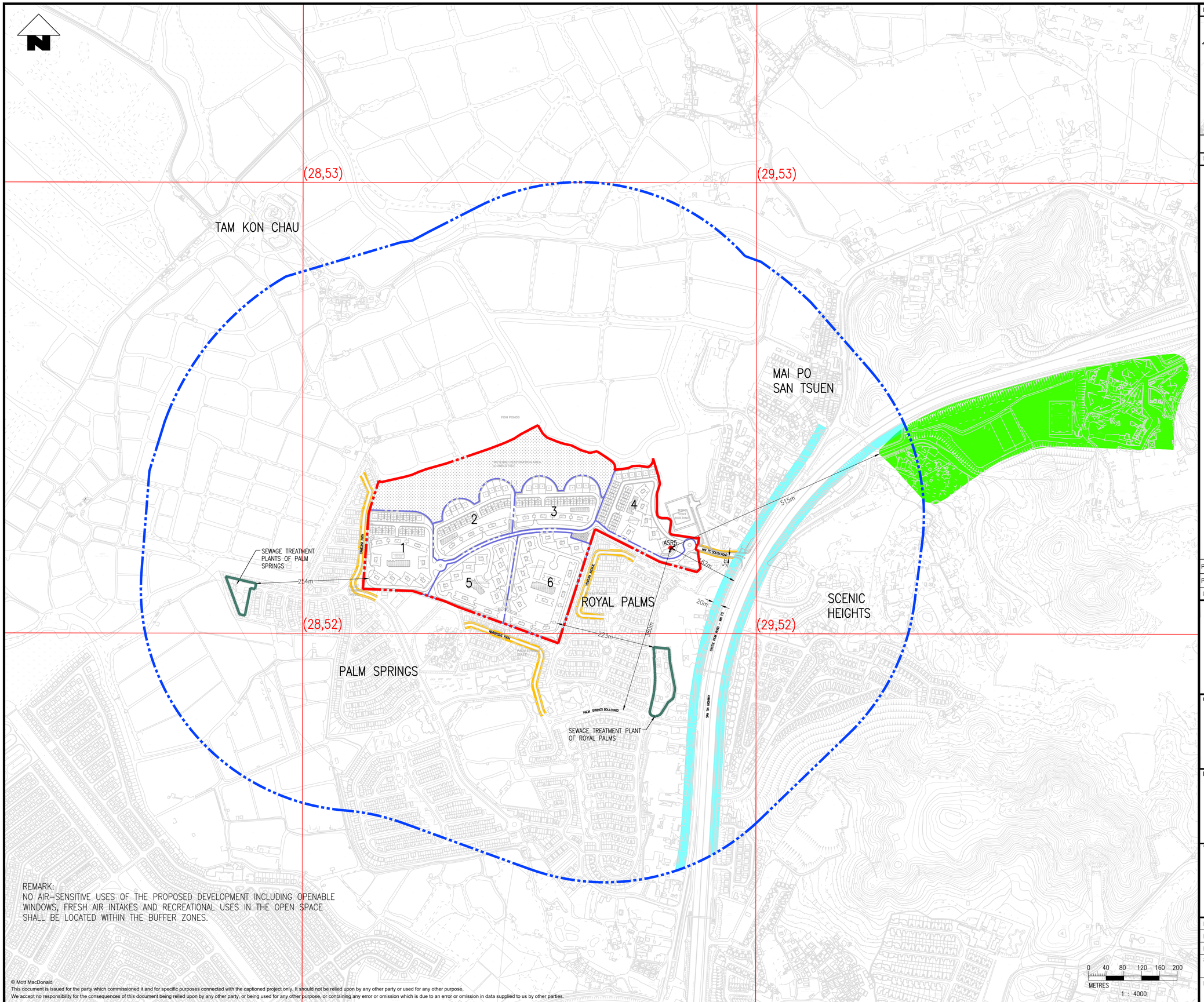
4.8 Conclusion

Potential waste management implications from the generation of waste during the construction phase have been evaluated. Measures, including the opportunity for on-site sorting, reusing C&D materials etc, have been explored to minimise the surplus materials to be disposed. Recommendations have been made for implementation by the Contractor during the construction period to minimise waste generation and off-site disposal.

The types of waste that would be generated during the operation phase have been identified. Recommendations have been made to ensure proper treatment and disposal of these waste.

With the implementation of recommended mitigation measures, the storage, handling, transportation and disposal of waste during construction and operation of the Project is not anticipated to cause adverse environmental impact.

Figures



REMARK:
NO AIR-SENSITIVE USES OF THE PROPOSED DEVELOPMENT INCLUDING OPENABLE WINDOWS, FRESH AIR INTAKES AND RECREATIONAL USES IN THE OPEN SPACE SHALL BE LOCATED WITHIN THE BUFFER ZONES.

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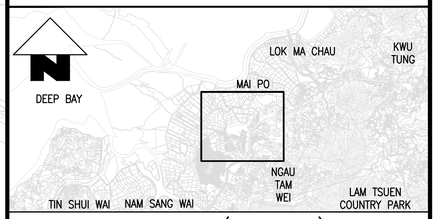

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- (28,52) REPRESENTATIVE PATH GRIDS
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE AIR SENSITIVE RECEIVERS
- BUFFER ZONES(20m)
- BUFFER ZONES(5m)
- SAN TIN /LOK MA CHAU (STLMC) EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	JAN 25	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Project

TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI ,YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Title

LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1	Status	Rev
1:4000	PRE	P2

Drawing Number

FIGURE 1.1

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WON102115

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

ROYAL PALMS

SCENIC
HEIGHTS

PALM SPRINGS

0 40 80 120 160 200
METRES
1 : 4000

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F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 2.1.dwg Jan 22, 2025 - 9:29am
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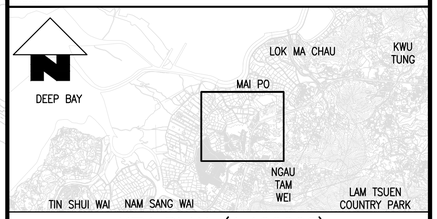

KEY PLAN (1:100000)

Key to symbols

LEGEND:

SITE BOUNDARY

ASSESSMENT AREA (300m)

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

NOISE ASSESSMENT AREA

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.1

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

PALM SPRINGS

ROYAL PALMS

SCENIC
HEIGHTS

FISH PONDS

WETLAND RESTORATION AREA
(CONSTRUCTION)

1
2
3
4
5
6

NSR1
NSR2
NSR3
NSR4
NSR5
NSR6
NSR7
NSR8
NSR9
NSR10
NSR11
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NSR13

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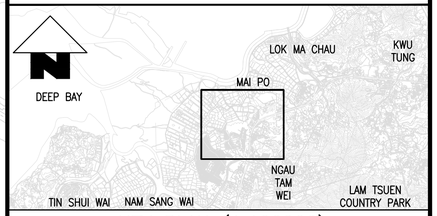
METRES
1 : 4000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.2

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E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU
MAI PO SAN TSUEN
SCENIC HEIGHTS
ROYAL PALMS
PALM SPRINGS

TN1
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TN22
TN23
TN24
TN25
E&M BUILDING
E&M BUILDING

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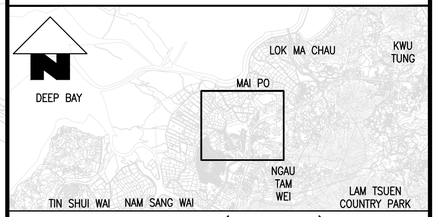
METRES
1 : 4000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

SITE BOUNDARY

ASSESSMENT AREA (300m)

REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 24	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI ,YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (TRAFFIC NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	

Scale at A1: 1:4000
Status: PRE
Rev: P2

Drawing Number

FIGURE 2.3a

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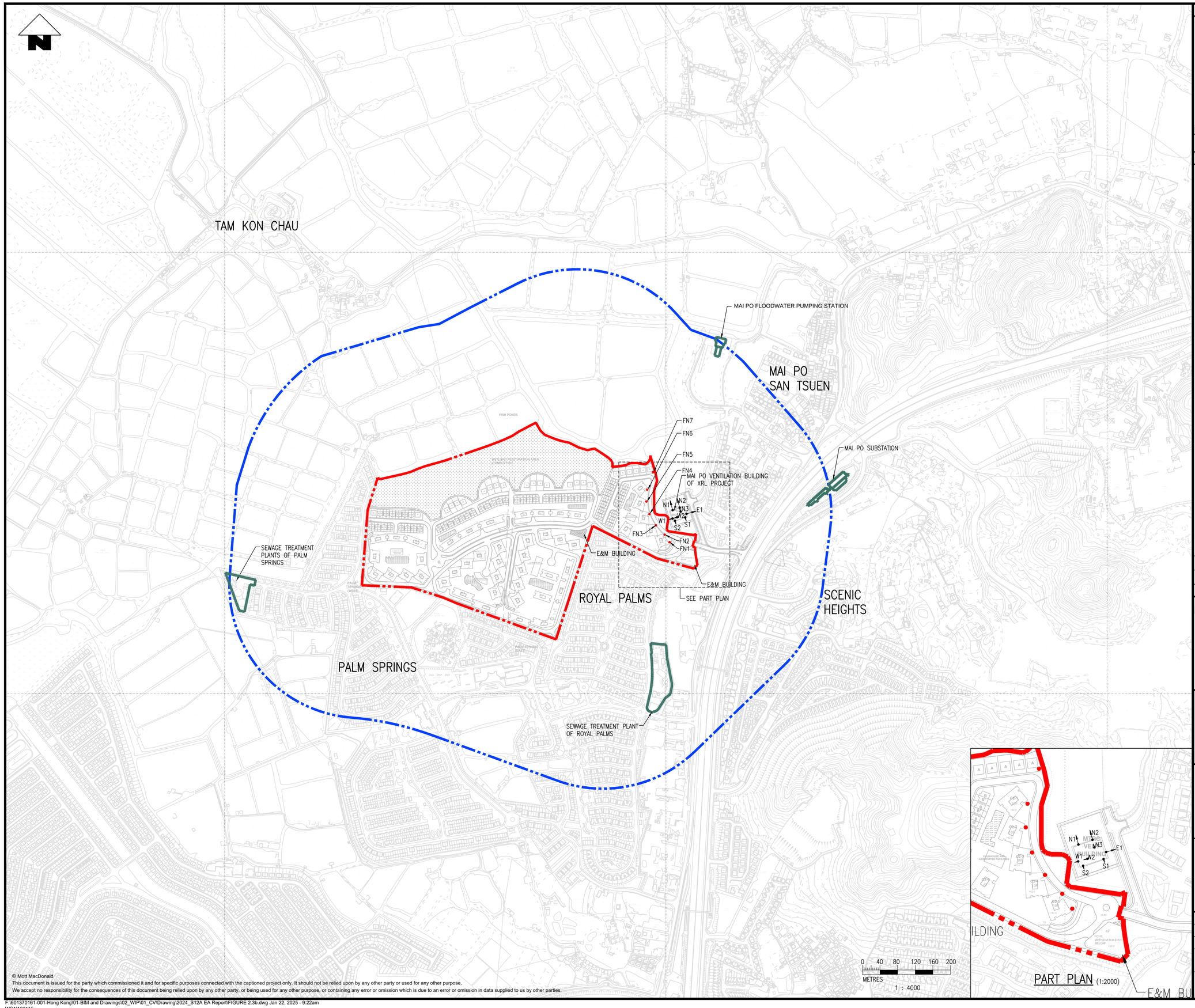
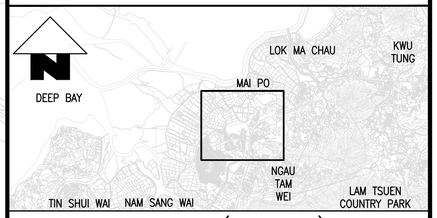


PART PLAN (1:2000)

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS
- LOUVER LOCATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 24	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI ,YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (FIXED NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1 1:4000/ 1:2000		Status PRE		Rev P2	

Drawing Number

FIGURE 2.3b

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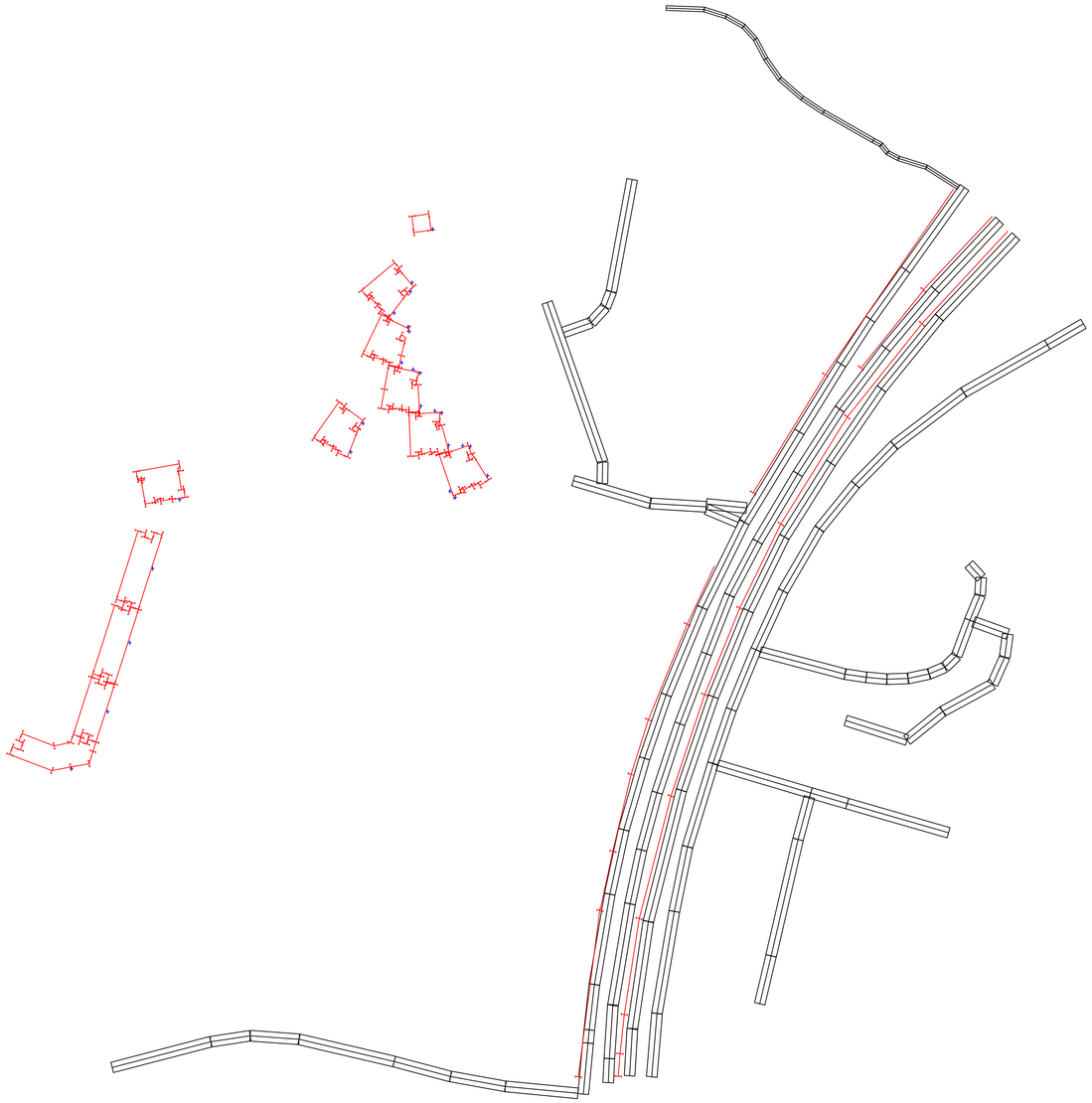
WON102115



0 20 40 60 80 100
METRES
1 : 2000

Notes

Key to symbols

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	DEC 24	TW	EA SECOND DRAFT	JC	EC
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Title

COMPUTER PLOT OF NOISE MODEL

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	

Scale at A1	Status	Rev
1:2000	PRE	P2

Drawing Number

FIGURE 2.4

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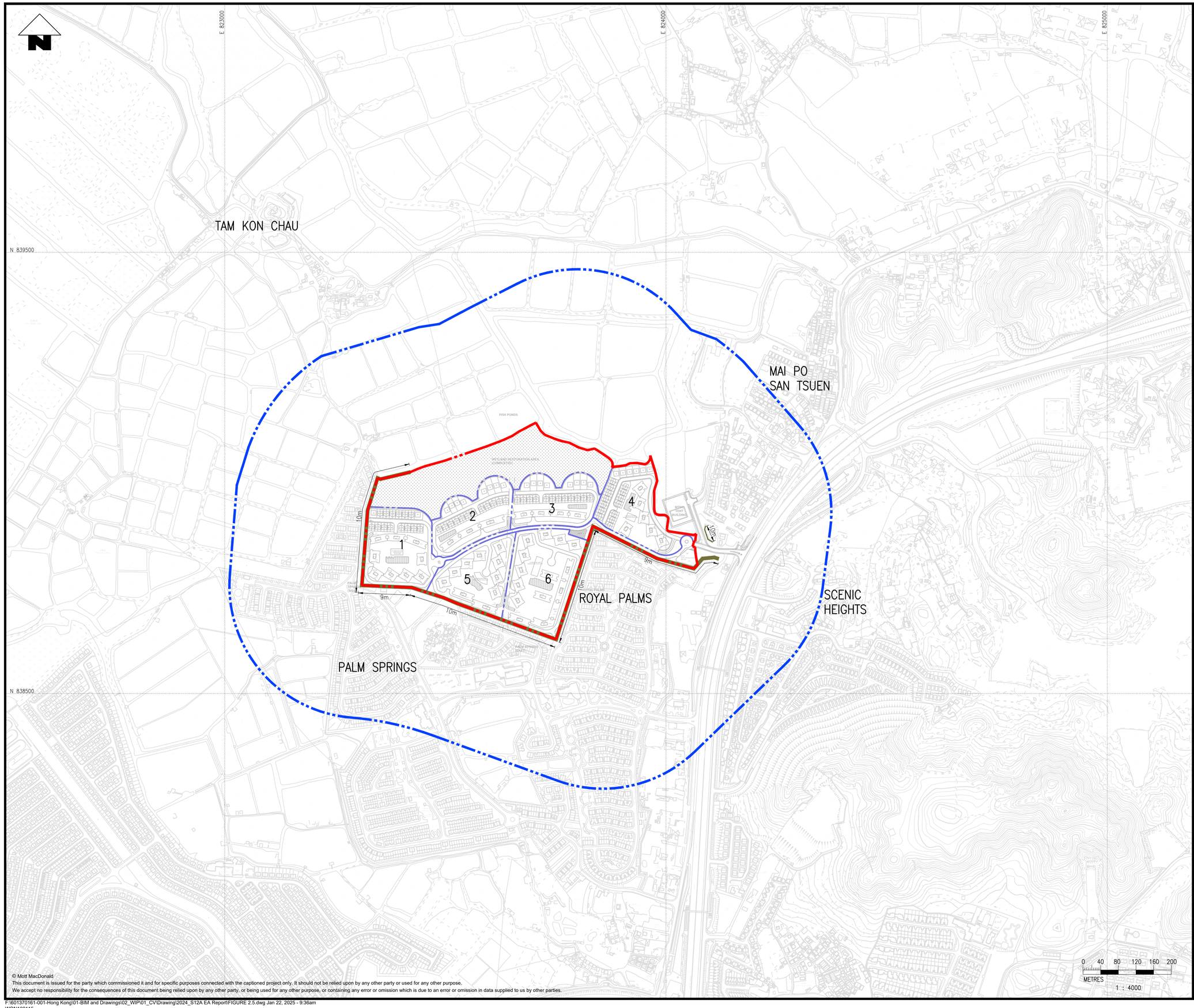

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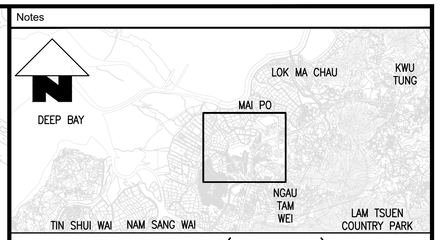
F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 2.5.dwg Jan 22, 2025 - 9:36am
WON102115

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- EXTENT OF TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

PROPOSED NOISE BARRIERS LOCATIONS FOR CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1 1:4000		Status PRE		Rev P1	

Drawing Number

FIGURE 2.5

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

ROYAL PALMS

SCENIC
HEIGHTS

PALM SPRINGS

FISH PONDS

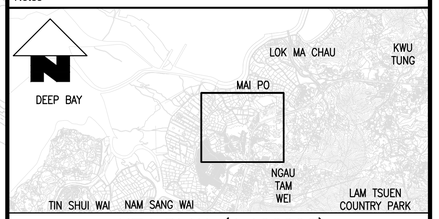
WETLAND RESTORATION AREA
(CONSOLIDATED)

TN1
TN2
TN3
TN4
TN5
TN6
TN7
TN8
TN9
TN10
TN11
TN12
TN13
TN14
TN15
TN16
TN17
TN18
TN24
TN25

E&M BUILDING
E&M BUILDING

0 40 80 120 160 200
METRES
1 : 4000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- NSR (WITHOUT EXCEEDANCE / WITH EXCEEDANCE)
- FACADE WITH THE ADOPTION OF ACOUSTIC WINDOW

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

LOCATION OF MITIGATION MEASURES FOR TRAFFIC NOISE

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.6

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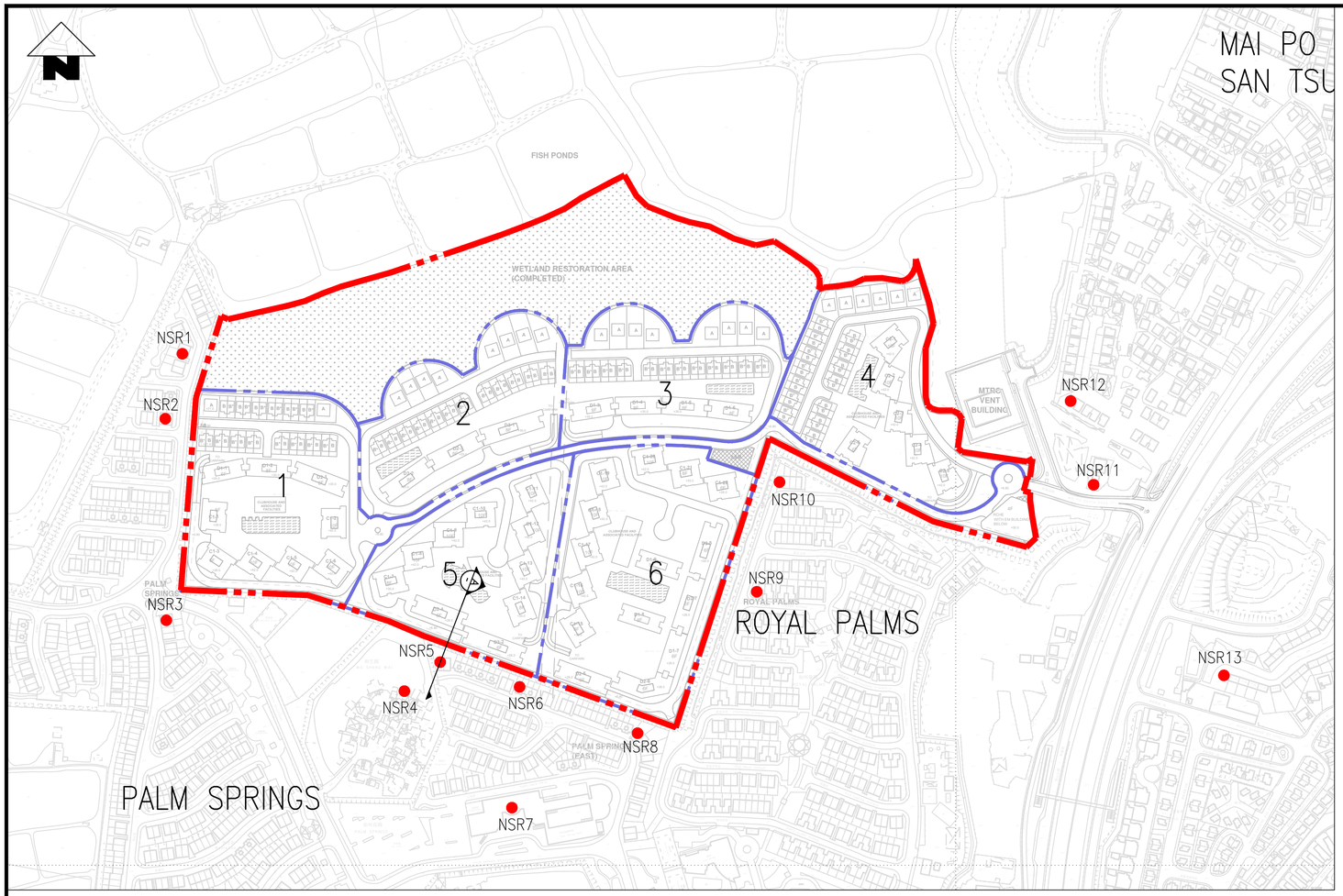
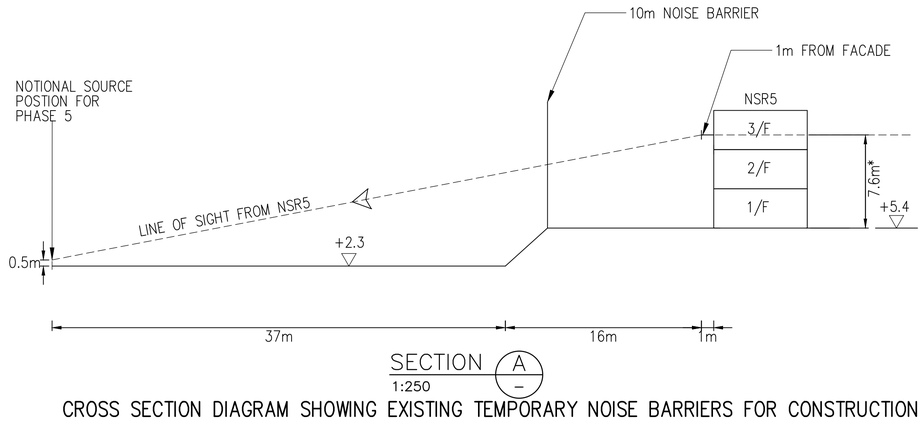


FIGURE 2.2
1:2500

0 25 50 75 100 125
METRES
1 : 2500



SECTION A
1:250

CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

* BUILDING HEIGHT INFORMATION IS OBTAINED FROM https://eiaoed-noise.epd.gov.hk/noiseapplication/. LAST ACCESSED ON 17 DEC 24

0 2.5 5 7.5 10 12.5
METRES
1 : 250

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title
CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 1 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: AS SHOWN
Status: PRE
Rev: P1

Drawing Number
FIGURE 2.7

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WON102115

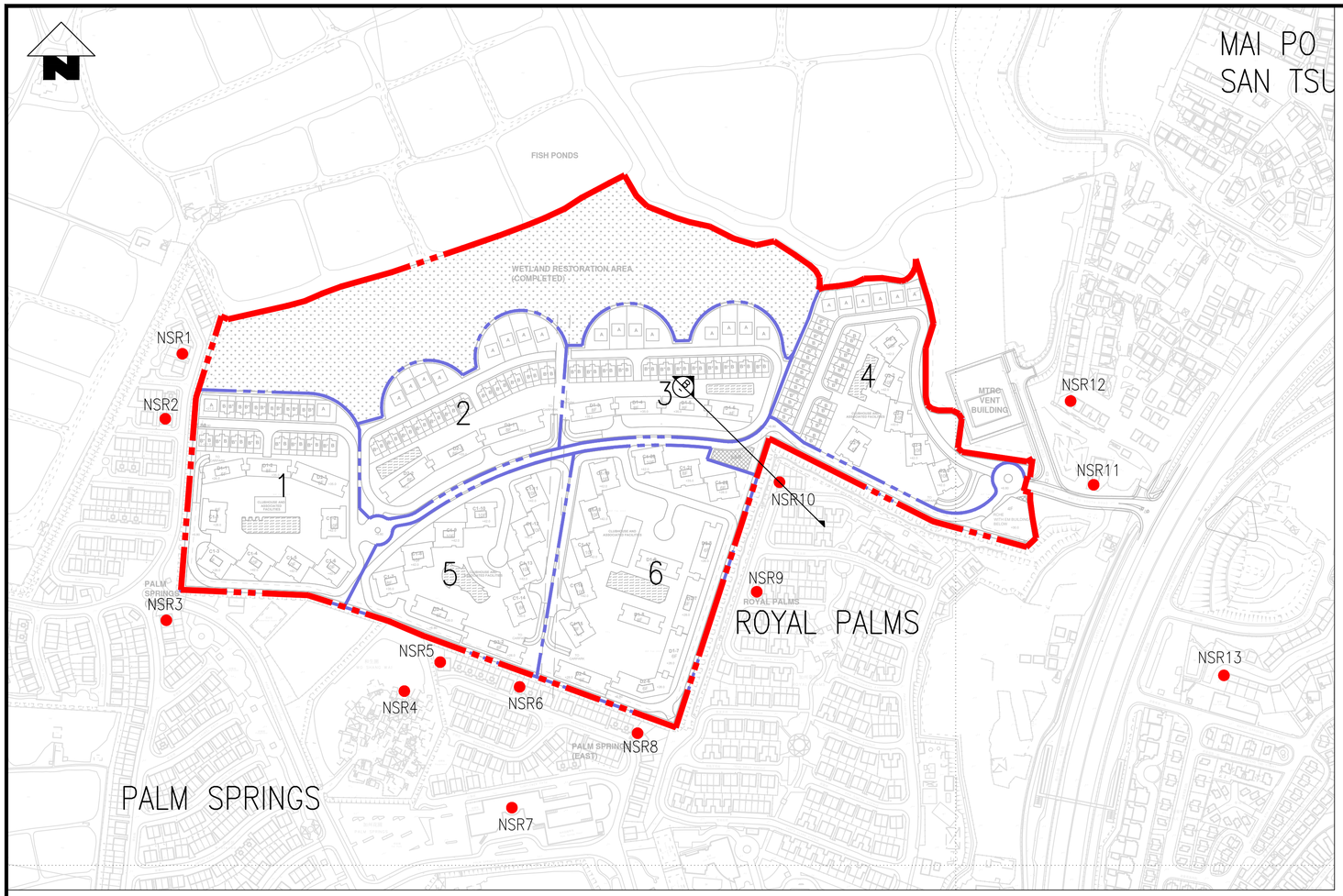
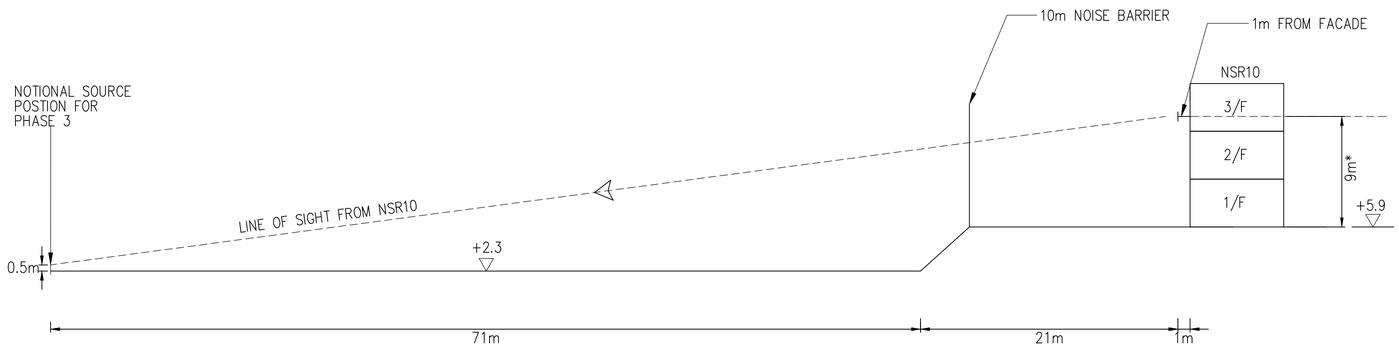


FIGURE 2.2
1:2500

0 25 50 75 100 125
METRES
1 : 2500



SECTION B
1:250

CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

* BUILDING HEIGHT INFORMATION IS OBTAINED FROM https://eiaoed-noise.epd.gov.hk/noiseapplication/. LAST ACCESSED ON 17 DEC 24

0 2.5 5 7.5 10 12.5
METRES
1 : 250

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	DEC 24	TW	EA SECOND DRAFT	JC	EC

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Title
CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 2 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: AS SHOWN
Status: PRE
Rev: P1

Drawing Number
FIGURE 2.8

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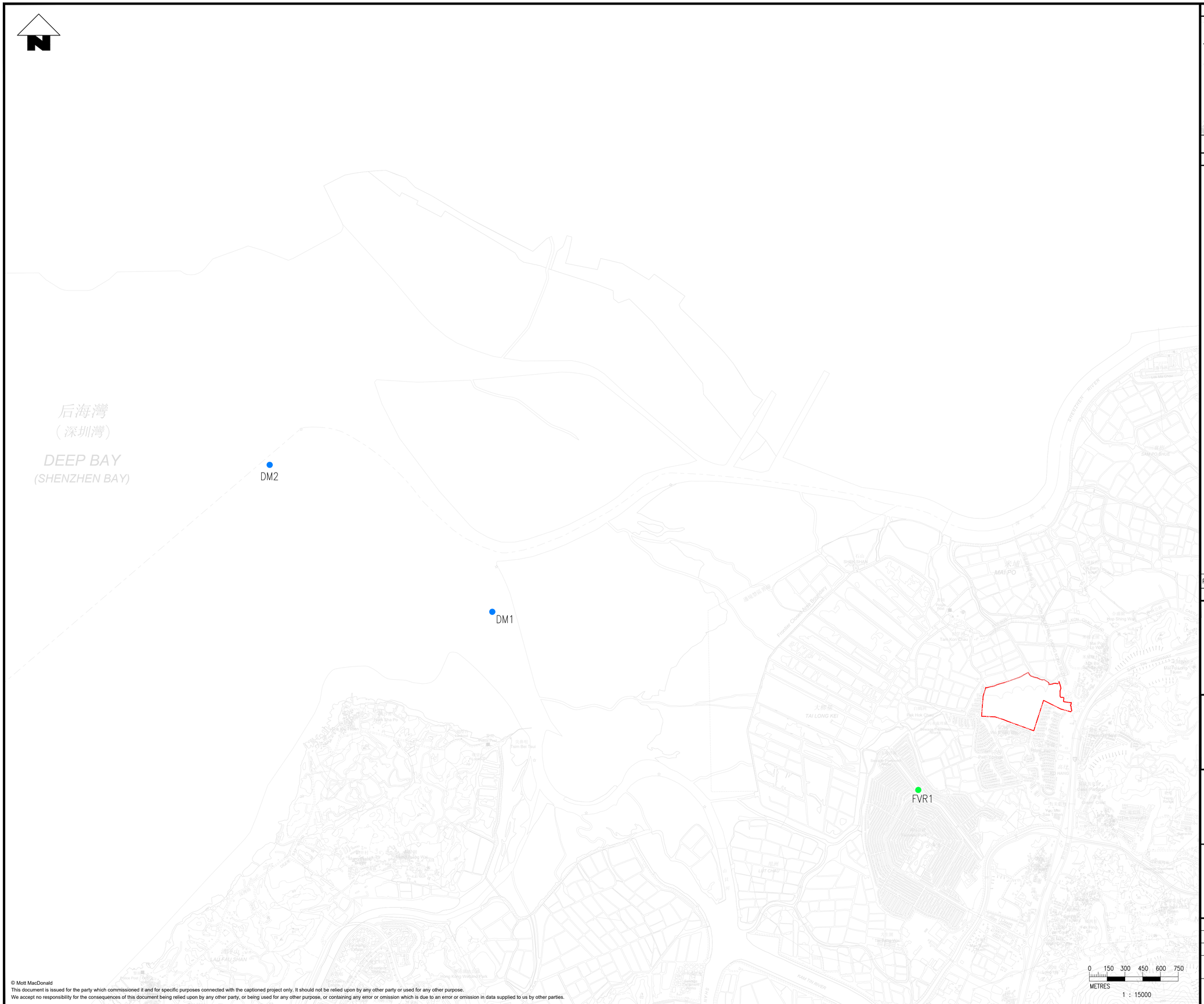
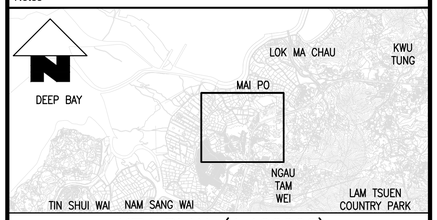


Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

SITE BOUNDARY

MARINE WATER QUALITY MONITORING STATION

RIVER WATER QUALITY MONITORING STATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

LOCATION OF REPRESENTATIVE WATER QUALITY MONITORING STATIONS

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	
Scale at A1	1:15000	Status	PRE	Rev	P1

Drawing Number

FIGURE 3.1

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WON102115

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU
MAI PO SAN TSUEN
ROYAL PALMS
SCENIC HEIGHTS
PALM SPRINGS

WSR1
WSR2
WSR3
WSR4
WSR5
WSR6
WSR7
WSR8
WSR9
WSR10
WSR11
WSR12
WSR13
WSR14

0 40 80 120 160 200
METRES
1 : 4000

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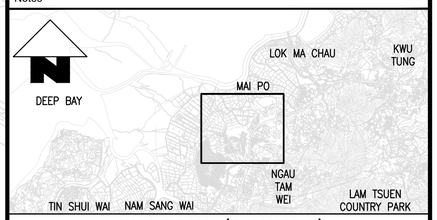
WON102115

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- WATER DITCH
- FISH POND
- POND
- CHANNEL

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

LOCATION OF REPRESENTATIVE WATER QUALITY SENSITIVE RECEIVERS

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 3.2

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

ROYAL PALMS

SCENIC
HEIGHTS

PALM SPRINGS

0 40 80 120 160 200
METRES
1 : 4000

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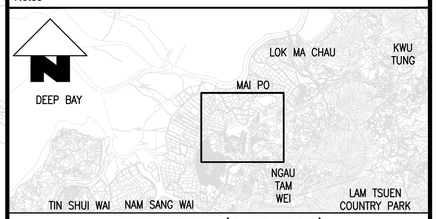

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- PROPOSED DRAINAGE SYSTEM
- PROPOSED BOX CULVERT
- PROPOSED MANHOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

PROPOSED DRAINAGE SYSTEM AND BOX CULVERT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	

Scale at A1: 1:4000
Status: PRE
Rev: P1

Drawing Number

FIGURE 3.3

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WON102115

Appendices

Appendix 1.1: Email Correspondence between the Project's Traffic Consultant and the Transport Department

Nick Sin

From: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Sent: Thursday, December 21, 2023 2:33 PM
To: CHAN Kelvin
Cc: Chi Kong LEUNG; Ming Yip TSE
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

Dear Kelvin,

Please be advised that I have no comment on your proposed classification of Mai Po South Road as "Feeder Road" from traffic engineering point of view.

Thank you very much.

Regards,

Florence KWAN
E/B2, Traffic Engineering (NTW) Division
Transport Department
Tel. No.: 2399 2727

From: CHAN Kelvin <kchan2@systra.com>
To: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Cc: Ming Yip TSE <mingyiptse@td.gov.hk>, Chi Kong LEUNG <chikongleung@td.gov.hk>
Date: 21/12/2023 12:29 PM
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

---

Dear Florence,

Thanks for your prompt reply.

Therefore, it is proposed that Mai Po South Road should be classified as **"Feeder Road"** under the road classification in rural areas.

We would be most grateful if you could reply to us at your earliest convenience. Should you have any enquiries or require further information, please do not hesitate to contact the undersigned at 2864 6462.

Regards,

Kelvin Chan
Principal Traffic Engineer
Tel: +852 2864 6462 (Direct Line) • Gen: +852 2529 7037 • Fax: +852 2527 8490

SYSTRA MVA

22nd Floor • Genesis • 33-35 Wong Chuk Hang Road • Hong Kong

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Royal Palms
Description:	No noticeable noise was heard at the side facing Castle Peak Road - Mai Po or the side facing Palm Canyon Drive.
Record Photo:	View 1: Facing Castle Peak Rod - Mai Po  View 2: Facing Palm Canyon Drive 
Remark:	

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Ventilation Building (MPVB)
Description:	No noticeable noise from Mai Po Ventilation Building was heard from the side facing Mai Po South Road.
Record Photo:	View 1: Facing Mai Po South Road  
Remark:	Mai Po Ventilation Building was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Substation
Description:	No noticeable noise from Mai Po Substation was heard from the side facing San Tam Road. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing San Tam Road 
Remark:	Mai Po Substation was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Palm Springs
Description:	No noticeable noise was heard from the side facing Springs Boulevard Road.
Record Photo:	View 1: Facing Palm Springs Boulevard Road 
Remark:	The sewage treatment plant at Palm Springs was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Floodwater Pumping Station
Description:	No noticeable noise from Mai Po Stormwater Pumping Station was heard from the side facing Mai Po Road or at the entrance of the Station. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing the brownfield land adjacent to Mai Po Road  View 2: Facing the entrance of the Floodwater Pumping Station 
Reference:	Mai Po Floodwater Pumping Station was inaccessible to public. Site photos of other angles could not be taken. 

Typical Plant Inventory (per phase)						
QPME / Quiet Consturction Method (QCM) ?	**PME**	**TM or Other Reference [1][2][3][4][5]**	**SWL, dB(A)**	**No. of PME**	**% on time**	**Total SWL, dB(A)**
Group A - Site Clearance						
Group A1 - Pavement Breaking / Excavation						
✓	Hydraulic Crusher for Concrete Breaking / Demolition Works	QME IN4	94	1	100%	94
✓	Excavator, wheeled/tracked (QPME)	QPME EPD 12299	92	1	80%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	1	100%	100
	Water pump (electric)	CNP 281	88	1	100%	88
						102
Group A2 - Compacting						
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	2	50%	105
✓	Bulldozer, tracked (QPME)	EPD- 12694	108	1	50%	105
	Roller, vibratory	CNP 186	108	1	60%	106
						110
Group B - Substructure Works						
Group B1 - Piling Works (Option A)						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
✓	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	1	80%	91
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	3	60%	108
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	2	100%	103
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Piling, large diameter bored, reverse circulation drill	CNP 166	100	2	60%	101
						115
Group B1 - Raft Foundation (Option B)						
	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	2	80%	94
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator (QPME)	QPME EPD 14730	95	2	100%	98
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Saw, circular, wood	CNP 201	108	2	50%	108
	Bar bender and cutter (electric)	CNP 021	90	4	50%	93
						115
Group C - Superstructure Works						
Group C1 - General Superstructure						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	3	60%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Compactor, vibratory	OCUPME 050	105	1	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	70%	93
	Concrete lorry mixer	CNP 044	109	2	70%	110
	Generator (QPME)	QPME EPD 14730	95	1	100%	95
	Drill/grinder, hand-held (electric)	CNP 065	98	5	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	60%	93
	Water pump (electric)	CNP 281	88	6	100%	96
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	100%	106
						115

Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

Commissioning Test Report for the Fixed Plant Noise at Mai Po (MPV), Ngau Tam Mei (NTV) and Shing Mun (SMV) Ventilation Buildings; ERS Plant Building – North (SPN) and ERS Plant Building – South (SPS)

MTR Corporation

July 2018

Location	NSR	Description
SMV	SM1	Sau Shan House, Cheung Shan Estate
	SM4	Shui Hong Nursing House
SPN	SS7	Leung Uk Tsuen Village House
	SS10	DD110 LOT 452, Wang Toi Shan
	SS15[(a)]	Abandoned village house in Shek Kong
SPS	SS11a[(a)]	Leung Uk Tsuen Squats
	SS20[(a)]	Village house in Shek Kong

Note:

(a) Certain direction of the ventilation shaft is totally or partially screened by the proposed noise barriers at Shek Kong Stabling Sidings (SSS).

3.2.4 Measurement Schedule

The noise measurements were carried out at the monitoring location for MPV, NTV, SMV, SPN and SPS, where the fixed plant items were operated steadily and continuously at their noisiest operating mode under normal scenario. The noise measurement schedule is shown in **Table 3.5**. Sample measurement photos of MPV, NTV, SMV, SPN and SPS are shown in **Appendix A3**.

Table 3.5 Measurement Schedule

Location	Date
MPV	25 – 26 Apr 2018
NTV	17 – 18 May 2018
SMV	8 – 9 Jun 2018
SPN	24 – 25 May 2018
SPS	24 – 25 May 2018

4 Measurement Results

4.1 The Noise Levels of Fixed Plant Noise Sources

The noise levels measured under the worst case scenario are determined and presented in **Table 4.1**. Details of the measurement results are shown in **Appendix A3**.

Table 4.1 Summary of Sound Power Levels for Fixed Plants

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
MPV	North N1 [(a)]	67
	North N2	69
	North N3	72
	East E1	74
	South S1	74
	South S2	75
	West W1	70
	West W2 [(a)]	69
NTV	North N1	72

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	North N2	69
	North N3	61
	North N4 [(a)]	73
	East E1	77
	East E2	72
	South S1	78
	South S2	78
	South S3 [(a)]	71
	South S4 [(a)]	71
	South S5 [(a)]	76
	South S6 [(a)]	88
	West W1 [(a)]	82
SMV	North N1	80
	North N2	63
	North N3	77
	North N4	61
	North N5 [(a)]	74
	East E1 [(a)]	89
	East E2	81
	East E3	62
	East E4 [(a)]	74
	East E5 [(a)]	67
	South S1	89
	South S2	84
	South S3	86
	South S4	86
	South S5 [(a)]	68
	West W1	76
	West W2	76
	West W3 [(a)]	97
	West W4	78
SPN	North N1	84
	North N2	84
	North N3	66
	East E1	85
	East E2	64
	East E3	68
	South S1	90
	South S2	89
	West W1	87
	West W2	72
SPS	North N1	88
	North N2	90
	North N3	71

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	East E1	84
	East E2	90
	East E3	89
	East E4	78
	East E5	76
	South S1	82
	South S2	84
	South S3	82
	West W1	84
	West W2	76
	West W3	80
	West W4	74

Note:

(a) The plant would be operated during day and evening time only under normal scenario.

A compliance check against the fixed plant noise criteria at NSR was conducted. The cumulative noise levels from noise sources were assessed to ensure the compliance with the noise criterion. **Table 4.2** shows the results, details of the calculation are also given in **Appendix A3**.

Table 4.2 Cumulative Fixed Plant Noise at NSR

NSR	Source Location	Cumulative SPL, dB(A)		Noise Criteria, dB(A)		Compliance (Y/N)	
		Day and Evening Time	Night-time	Day and Evening Time	Night-time	Day and Evening Time	Night-time
MP1	Ventilation Shaft and Building Service	29	28	60	50	Y	Y
MP5	Ventilation Shaft and Building Service	34	33	51	45	Y	Y
MP6	Ventilation Shaft and Building Service	35	35	60	50	Y	Y
NT1	Ventilation Shaft for N/B [(a)] and Building Service	42	36	55	44	Y	Y
	Ventilation Shaft for S/B [(a)] and Building Service	43	40	55	44	Y	Y
NT1a	Ventilation Shaft for N/B [(a)] and Building Service	43	40	55	44	Y	Y
	Ventilation Shaft	44	42	55	44	Y	Y

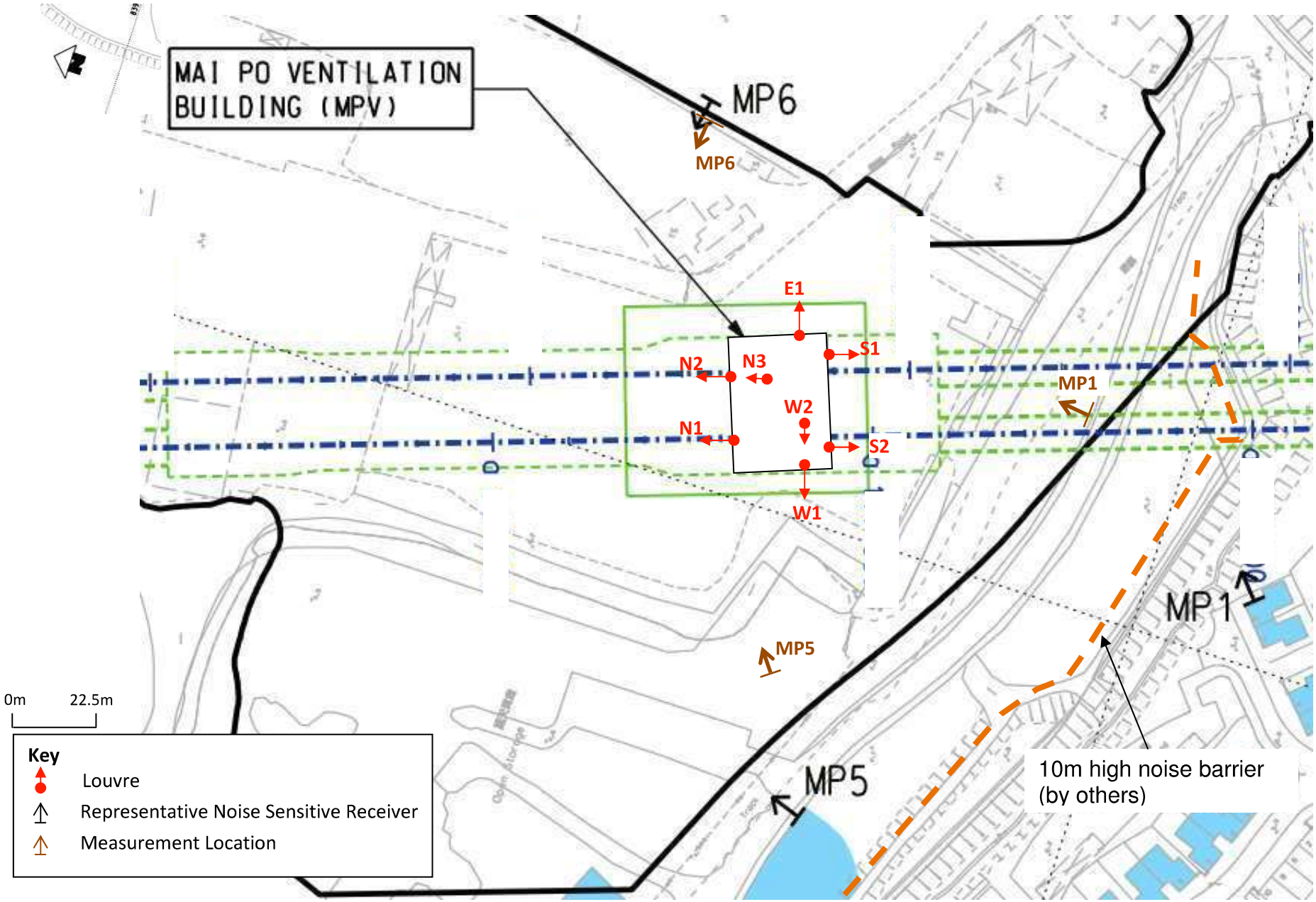


Figure 2.1 – Representative Noise Sensitive Receiver (NSR), Noise Measurement Location and Fixed Plant Sources at MPV

Appendix 2.3 - Construction Noise Assessment

NSR: NSR13

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	721	-65	-10	3	43	
Phase 2	115	669	-65	-10	3	43	
Phase 3	115	513	-62	-10	3	46	
Phase 4	115	311	-58	-10	3	50	
Phase 5	115	637	-64	-10	3	44	
Phase 6	115	491	-62	-10	3	46	
					WSW (max spl)	**54**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR1

	[1] Max. SWL	[3] Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	84	-46	-10	3	62	
Phase 2	115	220	-55	-10	3	53	
Phase 3	115	389	-60	-10	3	48	
Phase 4	115	577	-63	-10	3	45	
Phase 5	115	287	-57	-10	3	51	
Phase 6	115	414	-60	-10	3	48	
					WSW (max spl)	**63**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR2

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	73	-45	-10	3	63	
Phase 2	115	223	-55	-10	3	53	
Phase 3	115	402	-60	-10	3	48	
Phase 4	115	591	-63	-10	3	45	
Phase 5	115	262	-56	-10	3	52	
Phase 6	115	404	-60	-10	3	48	
					WSW (max spl)	**64**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR3

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	85	-47	-10	3	61	
Phase 2	115	259	-56	-10	3	52	
Phase 3	115	439	-61	-10	3	47	
Phase 4	115	626	-64	-10	3	44	
Phase 5	115	218	-55	-10	3	53	
Phase 6	115	386	-60	-10	3	48	
					WSW (max spl)	**63**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR4

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	154	-52	-10	3	56	
Phase 2	115	211	-54	-10	3	54	
Phase 3	115	329	-58	-10	3	50	
Phase 4	115	456	-61	-10	3	47	
Phase 5	115	89	-47	-10	3	61	
Phase 6	115	190	-54	-10	3	54	
					WSW (max spl)	**64**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR5

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	133	-50	-10	3	58	
Phase 2	115	187	-53	-10	3	55	
Phase 3	115	289	-57	-10	3	51	
Phase 4	115	418	-60	-10	3	48	
Phase 5	115	54	-43	-10	3	65	
Phase 6	115	150	-52	-10	3	56	
					WSW (max spl)	**67**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR6

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	184	-53	-10	3	55	
Phase 2	115	217	-55	-10	3	53	
Phase 3	115	278	-57	-10	3	51	
Phase 4	115	375	-59	-10	3	49	
Phase 5	115	65	-44	-10	3	64	
Phase 6	115	67	-45	-10	3	63	
					WSW (max spl)	**67**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR7

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	278	-57	-10	3	51	
Phase 2	115	321	-58	-10	3	50	
Phase 3	115	381	-60	-10	3	48	
Phase 4	115	457	-61	-10	3	47	
Phase 5	115	173	-53	-10	3	55	
Phase 6	115	167	-52	-10	3	56	
					WSW (max spl)	**60**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR8

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	282	-57	-10	3	51	
Phase 2	115	294	-57	-10	3	51	
Phase 3	115	292	-57	-10	3	51	
Phase 4	115	335	-59	-10	3	49	
Phase 5	115	162	-52	-10	3	56	
Phase 6	115	66	-44	-10	3	64	
					WSW (max spl)	**65**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR9

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	301	-58	-10	3	50	
Phase 2	115	269	-57	-10	3	51	
Phase 3	115	175	-53	-10	3	55	
Phase 4	115	173	-53	-10	3	55	
Phase 5	115	216	-55	-10	3	53	
Phase 6	115	69	-45	-10	3	63	
					WSW (max spl)	**65**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR10

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	294	-57	-10	3	51	
Phase 2	115	243	-56	-10	3	52	
Phase 3	115	93	-47	-10	3	61	
Phase 4	115	82	-46	-10	3	62	
Phase 5	115	239	-56	-10	3	52	
Phase 6	115	82	-46	-10	3	62	
					WSW (max spl)	**67**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR11

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	577	-63	-10	3	45	
Phase 2	115	519	-62	-10	3	46	
Phase 3	115	340	-59	-10	3	49	
Phase 4	115	167	-52	-10	3	56	
Phase 5	115	518	-62	-10	3	46	
Phase 6	115	368	-59	-10	3	49	
					WSW (max spl)	**58**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.4 Construction Noise Assessment

NSR: NSR12

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	548	-63		3	55	
Phase 2	115	498	-62		3	56	
Phase 3	115	304	-58		3	60	
Phase 4	115	148	-51		3	67	
Phase 5	115	510	-62		3	56	
Phase 6	115	366	-59		3	59	
					WSW (max spl)	**69**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.3 - Construction Noise Assessment

NSR: NSR13

	(1) Max. SWL	Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	721	-65	-10	3	43	
Phase 2	115	669	-65	-10	3	43	
Phase 3	115	513	-62	-10	3	46	
Phase 4	115	311	-58	-10	3	50	
Phase 5	115	637	-64	-10	3	44	
Phase 6	115	491	-62	-10	3	46	
					WSW (max spl)	**54**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

Appendix 2.5 - Fixed Plant Noise Assessment

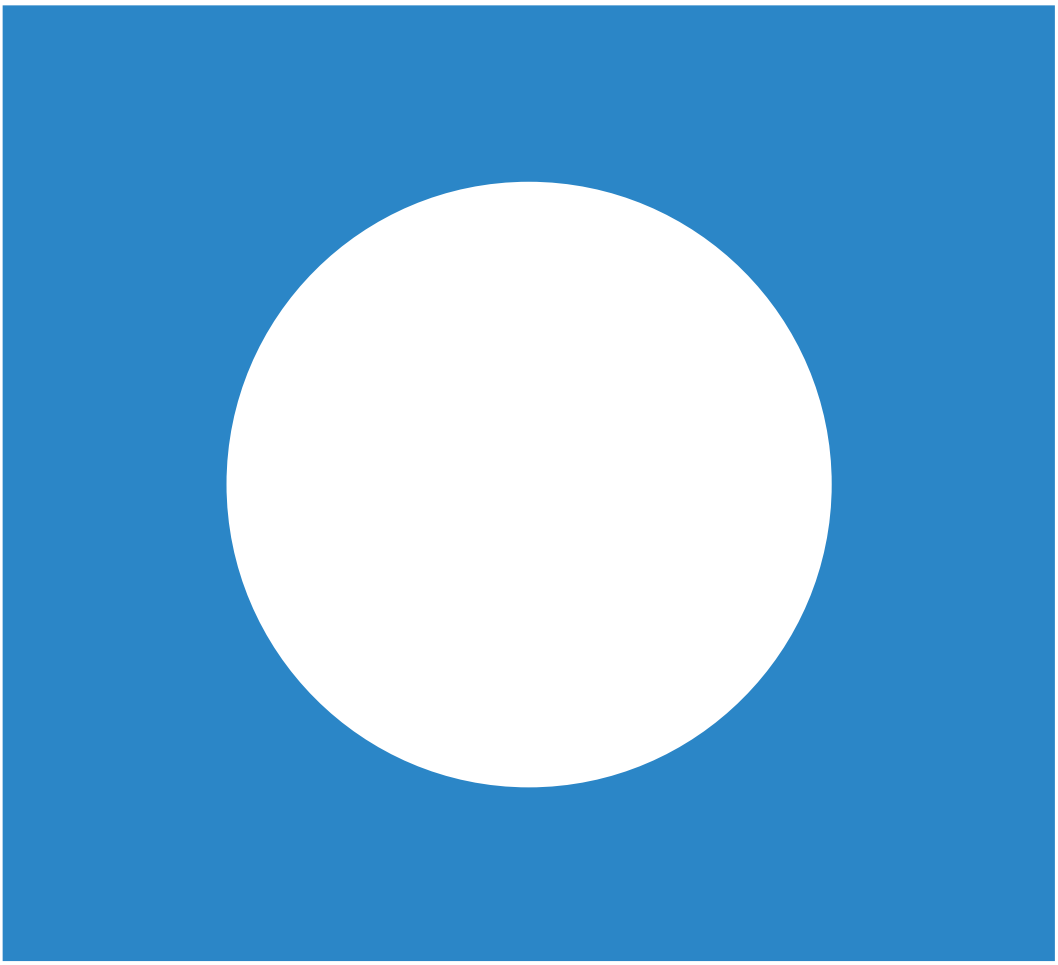
Daytime Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Daytime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	67	81	-46	0	0	3	0	24	39	65
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	67	62	-44	0	0	3	0	26	41	65
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	69	51	-42	0	0	3	0	30		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	67	54	-43	0	0	3	0	27	41	65
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	69	52	-42	0	0	3	0	30		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	67	51	-42	0	0	3	0	28	40	65
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	69	59	-43	0	0	3	0	29		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	67	56	-43	0	0	3	0	27	39	65
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	71	-45	0	0	3	0	27		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	67	68	-45	0	0	3	0	25	37	65
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	69	86	-47	0	0	3	0	25		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	67	97	-48	0	0	3	0	22	35	65
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	69	116	-49	0	0	3	0	23		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.

Appendix 2.5 - Fixed Plant Noise Assessment

Night time Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Nighttime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	0	81	-46	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	0	62	-44	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	0	51	-42	0	0	3	0	0		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	0	54	-43	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	0	52	-42	0	0	3	0	0		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	0	51	-42	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	0	59	-43	0	0	3	0	0		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	0	56	-43	0	0	3	0	0	38	55
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	71	-45	0	0	3	0	0		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	0	68	-45	0	0	3	0	0	36	55
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	0	86	-47	0	0	3	0	0		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	0	97	-48	0	0	3	0	0	34	55
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	0	116	-49	0	0	3	0	0		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.



Appendix 5: Drainage Impact Assessment

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

(REVISION 1)
DATE: 20 JANURARY 2025

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Issue/revision	0	1	2	3
Remarks				
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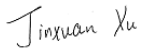
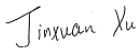
Signature				
Checked by	Connie Chan	Connie Chan		
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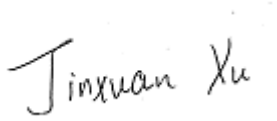
Authorised by	Kau, Paul	Kau, Paul		
Signature				
Project number				
Report number	0	1	2	3

Signatures

Prepared by



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Reviewed by

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1 INTRODUCTION

1.1 BACKGROUND AND PREVIOUS APPROVED DIAS

1.1.1 WSP (Asia) Limited (hereinafter "WSP") was commissioned by Profit Point Enterprises Limited to carry out a Drainage Impact Assessment (DIA) for the proposed Comprehensive Residential Development at Wo Shang Wai, Yuen Long.

1.1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan (**"**OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio (**"**PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height (**"**BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current **"**Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" (**"**OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.1.5 Under the approval condition (d) of the approved Section 16 Planning Application (Planning Application No. A/YL-MP/229) for proposed comprehensive development at Wo Shang Wai, DIAs were considered to have satisfactorily discharged the condition requirement in Town Planning Board's letters dated 13 March 2015, 12 May 2021 and 1 March 2024 (**Appendix A**).

1.1.6 The proposed comprehensive residential development comprises a revised mixture of residential buildings and ancillary residential facilities including swimming pools, car parks, club house and landscaped open spaces. The total site area is approximately 20.74ha. The revised MLP of the development is shown in **Appendix B.**

1.1.7 According to the latest MLP, the key data for the proposed development on the Application Site is summarized in **Table 1-1** below.

Table 1-1 Key Data for the Application Site

1. Site Data	
Application Site Area	207,408 m^2 (approx..)
Paved Area plus Pool Area (53.6%) [incl. Residential Houses, Club House & Roads]	111,292 m^2
As-Built Restored Wetland (22.9%)	47,400 m^2
Vegetated Area +(23.5%) [incl. Amenity Planting & Garden]	48,716 m^2
2. Residential Development	
Domestic Plot Ratio	1.28
Domestic GFA	265,847 m^2

2 OBJECTIVES OF THIS DRAINAGE IMPACT ASSESSMENT REPORT

2.1.1 The purpose of this DIA is to review the previous approved DIAs with respect to the revised MLP and the previous agreed drainage mitigation measures. This DIA also includes the followings:

a) Review the existing drainage condition and flooding susceptibility of the Application Site, which is a requirement introduced subsequent to the previous approval.

b) Outline the methodology for the assessment.

- Susceptibility to flooding of neighbouring areas of the Application Site;
- Exacerbation to existing flooding issue during the construction period;
- Exacerbation to existing flooding issue upon completion of the development; and
- Effect on existing drainage conditions.

c) Outline changes to the drainage characteristics and potential drainage impacts in the following aspects.

d) Propose drainage impact mitigation measures, if necessary, to mitigate the potential drainage impact due to the revision of the MLP.

e) Discuss the responsibility of the maintenance aspects of the proposed drainage system and drainage impact mitigation measures.

3 EXISTING DRAINAGE CHARACTERISTICS

3.1 EXISTING DRAINAGE CONDITION WITHIN THE APPLICATION SITE

3.1.1 The Application Site is located at two drainage basins, namely San Tin Basin and Ngau Tam Mei Basin as shown in **Figure 2**. However, as concluded in the previous approved DIAs, the runoff generated from the Application Site is discharged merely to San Tin Basin through a ditch along the Application Site's perimeter and thus no runoff is discharged to Ngau Tam Mei Basin. In this regard, the drainage impact to Ngau Tam Mei Basin will not be assessed.

3.1.2 An existing ditch around the western peripheral of the Application Site collects runoff from Wo Shang Wai Village and the Application Site before discharging to a tributary of Mai Po River (thereafter named as Mai Po Tributary). According to topographic data, the Mai Po Tributary is trapezoidal in shape with average dimensions of 2m deep by 10m base width. Mai Po Tributary joins Mai Po River at its downstream end. Mai Po River further merges with Shenzhen River and then discharges into Deep Bay.

3.1.3 There is another ditch at the eastern portion of the Application Site. In additional to the site runoff, the drainage ditch serves conveying runoff from the vacant lots between Castle Peak Road and Royal Palms as shown in **Figure 3**.

3.1.4 San Tin basin is characterized by flat agricultural land with a large amount of fishponds at the downstream portion with some village developments along San Tin Highway. Hilly vegetated areas exist on the upland in the basin. The existing drainage features and the overland flow path within the Application Site are shown in **Figure 3**.

3.2 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – WO SHANG WAI VILLAGE

3.2.1 To the south of the Application Site is Wo Shang Wai Village (i.e. sub-catchment MP02A-a4 as shown in **Figure 4**). Wo Shang Wai Village is a low-lying area with ground level ranges from 2.4mPD to 2.8mPD. It is surrounded by Royal Palms, Palm Springs and the Application Site. According to drainage record plans and building record plans, runoff from Royal Palms and Palm Springs are intercepted and discharged to Ngau Tam Mei Basin. Runoff from the surroundings developments will not drain into Wo Shang Wai Village therefore it is independent from the surrounding developments.

3.2.2 Drainage of Wo Shang Wai Village is currently achieved by an existing flood storage pond and an associated pumping system. The pump lifts and discharges the stormwater to the western ditch within the Application Site via two 250mm dia pipes.

3.3 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS

3.3.1 The vacant lots between Castle Peak Road and Royal Palms would drain to the Application Site via 3 x 1350mm dia. pipes while runoff from the northern portion of Royal Palms is discharged to Ngau Tam Mei Basin. The runoff from the said vacant lots eventually discharges into Mai Po Tributary via the eastern ditch across the Application Site.

3.4 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – NORTH-EASTERN SIDE OF THE APPLICATION SITE

3.4.1 Based on the topographical survey information, the southern portion of the area (i.e., sub-catchment MP02A-a7 as shown in **Figure 4**) dips toward the existing eastern ditch along the northeast boundary of the Application Site. On the other hand, the northern portion of the area (i.e., MP02A-a8) dips northward and is discharged directly to Mai Po Tributary.

3.5 FLOODING BLACKSPOTS AROUND THE APPLICATION SITE

3.5.1 According to the Drainage Services Department (DSD) – Location of DSD Flooding Blackspots in **Appendix C**, no flooding blackspots exists in the sub-catchment of the Mai Po River for which the Application Site is located in. The nearest flooding blackspot in the same basin as the proposed development is at Shek Wu Wai (ID No.1) of San Tin which was recorded to be a medium[1] flooding blackspot. Moreover, this village is located within the "San Tin Western Drainage Channel" catchment, which is independent from Mai Po Tributary and Mai Po River, therefore it will not be discussed in this DIA.

[1] Definition of Medium as per DSD - affecting area of more than 10 hectares or resulting in significant property damage or serious traffic disruption

4 POTENTIAL ADVERSE DRAINAGE IMPACTS

4.1.1 The potential adverse drainage impacts incurred by the proposed development in relation to the previous approved DIAs which have addressed the following:

- Loss in flood storage volume due to filling up the Application Site;
- Increase in total runoff and peak discharge due to change in land use and the corresponding increase in CN value; and
- Blockage of existing drainage flow paths through the Application Site.

4.1.2 The proposed mitigation measures recommended in the previous approved DIAs are detailed in **Section 8** of this report and the adequacy of the previous agreed mitigation measures is discussed in **Section 9**.

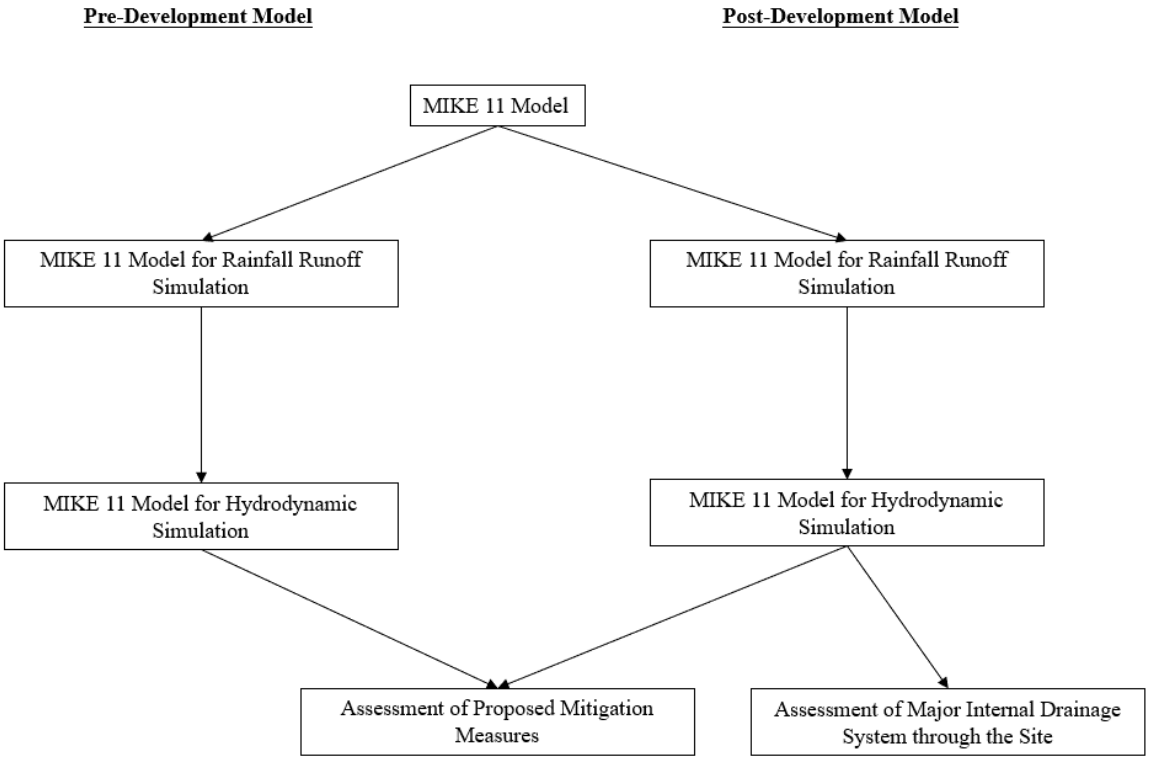
5 METHODOLOGY FOR ASSESSMENT

5.1 OVERVIEW OF METHODOLOGY

5.1.1 This DIA is carried out in accordance with the requirements of "Advice Note No. 1 – Application of the Drainage Impact Assessment Process to Private Sector Projects" issued by DSD, as well as the Stormwater Drainage Manual - Fifth Edition (SDM).

5.1.2 The methodology for the hydrological and hydraulic assessment has been established and agreed in the previous approved DIAs. In this regard, the same methodology and principle are adopted in this assessment for the sake of consistency.

5.1.3 The logic flow of the analysis which agreed in the previous approved DIAs is illustrated by the following flow chart diagram:



5.2 UPDATE THE MODEL SETTING

5.2.1 This assessment follows the approach of the previous approved DIAs, takes the previous approved model as a basis and refines to facilitate hydraulic assessment for the proposed development in the San Tin Basin.

5.2.2 Having reviewed the aerial photos and property information of San Tin Basin, the land use of this area is almost unchanged from last approved DIA in March 2024. The areas in the

Santin Basin, such as Wo Shang Wai, Rolling Hills, Noble Villas, Maple Gardens, Mai Po San Tsuen and Mai Po Lo Wai, are mostly developed 20 years ago, which is much earlier than the approval of last DIA. Meanwhile, the developments in the San Tin Basin mostly are low-density, which suggests the minor changes in runoff generation between pre-development and post-development. In addition, there should not be many changes to the Mai Po Tributary and Mai Po River since last approved DIA which was completed this year. Thus, the previous approved model is still reliable for this drainage impact assessment.

5.2.3 The catchment boundary with sub-catchment delineation for the pre-development and post-development scenarios are shown in **Figure 4** and **Figure 5**, respectively. Sub-catchments MP02A-a2 and MP02A-a3 under pre-development as shown in are delineated to MP02A-a9, MP02A-aa, -ab, -ac, -ad and -ae to simulate the drainage condition of the proposed development under post-development scenario. The sub-catchments under post-development scenario are refined based on the land use change within the Application Site as mentioned in the **Section 7** and **Appendix B**.

5.2.4 To simulate the flood plains, the approved assessment model used virtual side branches which have connections to river courses. The virtual side branches and the connections were named STS and STW in their prefixes, respectively.

5.2.5 For the pre-development model, due to the existing topography, the Application Site would become a flood plain under extreme rainfall and tidal events. To reflect the flood storage characteristics of the Application Site, the virtual side branches mentioned above is extended and connections are made to ch690 and ch490 in the pre-development model. These side branches and the connections at ch490 and ch690 are removed in the post-development scenario since the Application Site will be filled up by the proposed development and therefore will not be characterized as a flood plain.

5.3 RAINFALL – RUNOFF SIMULATION

5.3.1 In this DIA, a 4-hr synthetic rainfall profile, as shown in **Appendix D** was updated using the formulation mentioned in Section 4.3.5(b) in the DSD-SDM with parameters specified for HKO area referring to the Table 3a in the Stormwater Drainage Manual-Corrigendum No. 1/2024.

5.3.2 In addition, the potential drainage impact will consider the climate change effects up to end of 21st century. Referring to the Table 28 and 31 in the Stormwater Drainage Manual-Corrigendum No. 1/2022, 28.1 % rainfall increase due to climate change, including 16% rainfall increase and 12.1% design allowance, has been added into the 4-hr synthetic rainfall profiles.

5.3.3 The catchment MP02A-a2 and a3 under the pre-development scenario is re-delineated for the purpose of this development to develop the pre-development scenario to incorporate the latest information as mentioned below.

5.3.4 The increase in CN value due to the proposed development is reflected in the post-development model.

5.4 HYDRODYNAMIC SIMULATION

5.4.1 The hydrodynamic model performs the hydrodynamic run to assess the hydraulic performance of river courses and drains.

5.4.2 The boundary condition (i.e. Tide level) adopted in this assessment is referred to the Table 8, Table 29, Table 30b and Table 31 in the Stormwater Drainage Manual- Corrigendum No. 1/2022, as shown in the following table:

Table 5-1 Design Tide level at Tsim Bei Tsui

Return period (Years)	Design extreme sea level (mPD)	Mean Sea Level Rise due to Climate Change (mPD)	Storm Surge Increase in End of 21st century (mPD)	Design Allowance in End of 21st century (mPD)	Design extreme sea level considering climate change effect (mPD)
	A	B	C	D	E=A+B+C+D
2	3.07	0.47	0.09	0.20	3.83
10	3.52	0.47	0.15	0.23	4.37
50	4.09	0.47	0.20	0.25	5.01
200	4.78	0.47	0.26	0.27	5.78

5.5 SCENARIOS FOR IMPACT ASSESSMENT

5.5.1 It is confirmed in the previous approved DIAs that the impacts to river courses other than Mai Po Tributary and Mai Po River are very minimal and therefore only the impacts to Mai Po Tributary and Mai Po River are assessed in this assessment.

5.5.2 Both the High and Low antecedent moisture conditions (AMC2[2] and AMC3[3] are adopted in this assessment model in consistency with the previous approved DIAs. The worst-case scenario amongst the two conditions will be used in the analysis for the proposed mitigation measures.

[2] AMC2 = average condition

[3] AMC3 = heavy rainfall occurred within last 5 days; saturated soil

5.5.3 Hydraulic impact incurred by rainfall profiles with areal reduction factors of 0.82 and 1.0 are analysed in consistency with the previous approved DIAs. Areal reduction factor of 1.0 was used for the San Tin Basin to estimate peak flood levels for all areas in the San Tin Basin. Whilst an aerial reduction factor of 0.82 was used for the entire Shenzhen River Basin including the catchments draining from Chinese Mainland to estimate peak flood levels for the Shenzhen River. The worst-case scenario from the two conditions will be used in the analysis for the proposed mitigation measures.

5.5.4 Hydraulic performance for 2, 10, 50 and 200yr ARI events for the Application Site, Mai Po Tributary and Mai Po River will be assessed in accordance with the requirement stipulated in the Advice Note No.1. A, B and C scenarios under respective ARI event are simulated according to the following table:

Table 5-2 Summary of Assessment Scenarios

ARI Event	Abbreviation	Areal Reduction Factor	Rainfall	Tide Level
2	2A	0.82	2 yr	2 yr
	2C	1.00	2 yr	2 yr
10	10A	0.82	10 yr	2 yr
	10B	0.82	2 yr	10 yr
	10C	1.00	10 yr	2 yr
50	50A	0.82	50 yr	10 yr
	50B	0.82	10 yr	50 yr
	50C	1.00	50 yr	10 yr
200	200A	0.82	200 yr	10 yr
	200B	0.82	10 yr	200 yr
	200C	1.00	200 yr	10 yr

Note: same as the previous approved DIAs

6 DESIGN ASSUMPTIONS AND PARAMETERS

6.1.1 Design assumptions and parameters agreed in the previous approved DIAs would be adopted in this assessment. The rationale of adopting the set of parameters in the assessment is reiterated in the sections below.

6.1.2 The manning's n to be adopted in this assessment is referred to the previously approved DIAs while the Colebrook White K_S roughness is referred to DSD-SDM. The surface roughness coefficients adopted in this assessment are summarized in:

Table 6-1 Surface's Roughness Coefficient

Surface Type	**Manning's n**	**CW's ks**
Engineered channels (Smooth Concrete surfacing)	0.015	N/A
Engineered channels (Rough Concrete surfacing)	0.020	N/A
Engineered channels (Smooth Natural bed)	0.020	N/A
Engineered channels (Rough Natural bed)	0.025	N/A
Natural Channel	0.035	0.6
One culvert system with rough natural bed in MAI PO River CH1625	0.040	1.5
Concrete Pipe (Fair Condition)	0.015	N/A
Concrete Pipe (Bad Condition)	0.016	3.0

Note: same as the previous approved DIAs

7 PROPOSED CHANGES TO THE DRAINAGE CHARACTERISTICS

7.1 CHANGES IN LAND USE

7.1.1 The Application Site is a vacant lot with a combination of greenfield, access road and other impervious areas. The approved developments will lead to increase in paved surface and thus the CN value. The current amendment scheme will largely maintain the impervious and pervious coverage. The CN value for the Application Site under post-development scenario is estimated to be 90. The land use coverage and the corresponding CN values are detailed in **Table 7-1**.

Table 7-1 CN Values of Pre & Post Developments for the Application Site

Land Use	Area (m^2)	CN Value
Pre-Development		
Vacant Lot (Northern portion of Application Site – MP02A-a2)		
Wetland Restoration Area	47,400	100
Vacant Lot	98,000	85
- Sub-total	145,400	90
Vacant Lot (Southern Portion of Application Site – MP02A-a3)	62,000	85
Total	207,400	88.4
Post-Development (Previous Approved DIA in 2015)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	82,700	95
Vegetated Area	74,300	80
Pool Area	3,000	100
- Sub-total	160,000	88
Total	207,400	90.8
Post-Development (Previous Approved DIA in 2021)		
Wetland Restoration Area (MP02A-a9)		

Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	83,098	95
Vegetated Area	71,475	80
Pool Area	5,435	100
- Sub-total	160,008	88
Total	207,408	91.1
Post-Development (Previous Approved DIA in March 2024)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	97,776	95
Vegetated Area	62,232	80
Pool Area	730	100
- Sub-total	160,008	90
Total	**207,408**	**92**
Post-Development (Current Arrangement)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	106,189	95
Vegetated Area	48,716	80
Pool Area	5,103	100
- Sub-total	160,008	91
Total	**207,408**	**93**

7.1.2 CN value of abandoned ponds adopted in both the pre-development and post-development models is revised to 100 to reflect its hydrological characteristic. **Table 7-2 and**

Table 7-3 present the detailed CN values applied for both the pre- and post-development model.

Table 7-2 CN Values Applied for the Pre-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m^2)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a2	Vacant Lot and Wetland Restoration Area – Northern Portion of proposed Development	18.8%	145,400	90
MP02A-a3	Vacant Lot – Southern Portion of proposed Development	8.1%	62,000	85
MP02A-a4	WSW Village	1.8%	13,700	90
MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**93.4**

Table 7-3 CN Values Applied for the Post-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m^2)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a4	WSW Village	1.8%	13,700	90
MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
MP02A-a9	Wetland Restoration Area	6.2%	47,400	100
MP02A-aa	Western Residential Portion of the Application Site	3.6%	27,580	91
MP02A-ab	Southern Residential Portion of the Application Site	7.8%	60,139	91
MP02A-ac	Mid-Western Residential Portion of the Application Site	2.8%	21,776	91
MP02A-ad	Mid-Eastern Residential Portion of the Application Site	2.7%	20,825	91
MP02A-ae	Eastern Residential Portion of the Application Site	3.9%	29,698	91
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**95**

Note: The land-use information for post-development is the same as the previous approved DIAs

7.1.3 The model network illustrating the chainage along Mai Po River is shown in **Figure 1**. The hydrological model parameters for the re-delineated MP02A-a for both the pre- and post-development models is attached in **Appendix E**.

8 PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1 OVERVIEW OF PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1.1 Following the previous approved DIAs, the proposed drainage system will mainly comprise of an approximate 300m long 3.5m(W) x 2.5m(H) box culvert and a drainage pipe network of pipe size ranging from 1050mm to 2100mm dia as shown in **Figure 6**. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) as well as the runoff from the vacant lots between Castle Peak Road and Royal Palms while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ab and ac). The runoff from catchment MP02A-ad within the Application Site will be drained via the 1350mm drainage pipe next to the 2100mm pipe.

8.1.2 All these drains will be discharged to Mai Po Tributary at the northern site boundary. This drainage arrangement within the Application Site is indicated in **Figure 6**.

8.2 DETENTION BY THE AS-BUILT WETLAND RESTORATION AREA

8.2.1 Wetland Restoration Area has been constructed, in accordance with the town planning approvals. It will attenuate the discharge from the proposed development to mitigate the potential adverse drainage impact due to loss in flood storage volume and increase in CN values. The drainage system of Wetland Restoration Area (i.e.MP02A-a9) is totally independent from the drainage system of the residential areas of the development.

8.2.2 The Wetland Restoration Area only collects runoff generated within itself. No runoff generated from residential areas of development is discharged to WRA or vice versa even during the severe rainstorm event.

8.2.3 To attenuate the discharge from Wetland Restoration Area, it is designed to be a large detention pond. The attenuation effect of the Wetland Restoration Area has been achieved by its large buffer volume in conjunction with the outlet structures that control the discharge flow rate.

8.2.4 The outlet structures compose of twin 225mm pipes and a 4m wide emergency bypass spillway with invert level at 4.2mPD and 4.65mPD respectively. The twin 225mm pipes are for control of normal water level and the spillway is for relieving excessive flow. The rating curves for outlet structures and discharge hydrographs under various scenarios are shown in **Appendix F**. As illustrated on the hydrographs, the runoff from Wetland Restoration Area has been significantly attenuated and the peak discharges from WRA will be trimmed to about 10% of the peak inflow.

8.2.5 According to the assessment result, the freeboards of Wetland Restoration Area (i.e., measured from the embankment level at 5.0mPD) under 50yr and 200yr ARI events are both more than 200mm.

8.2.6 After passing of a 50yr ARI rainstorm, it would take approximate 1 day to drain back to normal water level which is at 4.2mPD. Penstocks will be installed, so that the drain-off process can speed up if necessary.

8.3 RE-PROVISION OF DRAINAGE PATH – WO SHANG WAI VILLAGE

8.3.1 The runoff within WSW Village is currently discharged to the Application Site via a storage pond and pumping system maintained by the local villagers, then discharges to Mai Po Tributary through the western ditch in the Application Site, as shown in **Figure 3**. Upon completion of the development, the existing western ditch will be backfilled and a designated drain with diameter 1050mm to 2100mm will be re-provided for conveying the flow from the outlets of the pump to Mai Po Tributary. This drainage pipe will also convey the runoff from western and central portions of the Application Site (MP02A-aa, ac and ad). The arrangements of the inlets and outlets are the same as the previous approved DIAs.

8.3.2 The discharge from WSW Village will be collected by an inlet chamber within the Application Site. Openings will be provided at the existing invert level of the discharge pipes, which is at +4.2mPD, for connection. The runoff will be conveyed to Mai Po Tributary by a designated drainage system mentioned above. Therefore, the proposed development would not change the discharge pattern of Wo Shang Wai Village drainage system as approved.

8.3.3 Consideration is also given to the scenario that the existing pumps at Wo Shang Wai Village become malfunction during severe rainstorm event. Under such scenario, runoff from Wo Shang Wai Village cannot discharge to the surrounding area and will be cumulated within the village. According to Table 4 of Stormwater Drainage Manual, a total of 446mm depth of rainfall will be incurred under a 200yr return period 4-hour rainfall event. In this connection, the water level at Wo Shang Wai Village will reach approximately +3.3mPD. However, the water will not overflow to the Application Site as there is a bund at the northern boundary of Wo Shang Wai Village which at the level of +3.7mPD. In this regard, a 1.7m wide emergency bypass channel with invert level of +3.6mPD would be provided at the boundary of WSW Village and connected to the proposed inlet chamber. The emergency bypass channel serves to collect discharge from other emergency pumps that operated under the abovementioned emergency scenario. This arrangement is the same as the previous approved DIAs.

8.3.4 A flap valve will be installed at the outfall of the designated pipe to prevent backwater effect from Mai Po Tributary. Since no proposed measures will be carried out in Wo Shang Wai Village, the existing pumping configuration from WSW Village will be unchanged.

8.4 RE-PROVISION OF DRAINAGE PATH - VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS, SAME AS PREVIOUS APPROVED DIAS

8.4.1 Since the existing eastern ditch and the 2x2m dia pipes will be backfilled by the previous approved development, a 3.5m(W) x 2.5m(H) box culvert is proposed in the previous approved DIAs to convey the runoff from the area between Royal Palms and Castle Peak Road – Mai Po (MP02A-a5), a section south of Royal Palms (MP02A-a6) and parts of the Application Site. The box culvert will have a larger hydraulic capacity than the existing ditch.

8.4.2 The box culvert is sized for the 1 in 50-year design return period according to the recommendation in Table 10 of the DSD-SDM. The box culvert has been designed to capture the discharge from the existing triple 1.35m diameter culvert as discussed in **Section 3.3**. This arrangement is the same as the previous approved DIAs. A trash grille and outlet will be provided at the final discharge point of the box culvert that connects to Mai Po Tributary.

8.5 MISCELLANEOUS, SAME AS PREVIOUS APPROVED DIAS

8.5.1 Bank protection measures will be provided at the outfalls of the proposed drainage system to minimize the risk of scouring and erosion of the riverbed.

9 ASSESSMENT ON DRAINAGE IMPACT

9.1 ASSESSMENT OF MAI PO TRIBUTARY AND MAI PO RIVER

9.1.1 With the incorporation of the proposed mitigation measures stipulated in **Section 8** following the previous approved DIAs, hydraulic performance of the Application Site, Mai Po Tributary and Mai Po River is assessed according to the methodology stipulated in **Section 5**. The results of peak runoff, total runoff and max water level under 50ARI event are summarized in **Table 9-1**, **Table 9-2** and **Table 9-3**, respectively.

Table 9-1 Change in Peak Discharge from the Application Site

Rainfall return-periods (Yr)	Pre-development peak discharge (m^3/s)	Post-development peak discharge (m^3/s)	Change in peak discharge (m^3/s)	Change in peak discharge (%)
2yr	9.76	9.98	0.23	2.32%
10yr	12.78	12.98	0.20	1.57%
50yr	14.76	14.95	0.19	1.31%
200yr	16.10	16.29	0.18	1.14%

Note: Values based on scenario C, AMC 3

Table 9-2 Change in Total Runoff from the Application Site

Rainfall return-periods (Yr)	Total Runoff from Pre-Developed Application Site (m^3)	Total Runoff from Post-Developed Application Site (m^3)	Change in Total Runoff (m^3)	Change in Total Runoff (%)
2yr	34,456	35,899	1,443	4.19%
10yr	55,381	56,876	1,495	2.70%
50yr	73,530	75,050	1,520	2.07%
200yr	89,269	90,805	1,537	1.72%

Note: Values based on scenario C, AMC 3

Table 9-3 Change in Water Level along Mai Po River and Mai Po Tributary under 50yr ARI

River chainage (m)	Water level(mPD) Pre-development			Water level(mPD) Post-development			Change in water level(m)		
	50A	50B	50C	50A	50B	50C	50A	50B	50C
0	3.778	3.934	3.835	3.771	3.934	3.833	-0.007	0.000	-0.002
690	3.772	3.929	3.827	3.763	3.928	3.823	-0.009	-0.001	-0.004

980	3.767	3.926	3.822	3.759	3.926	3.818	-0.008	0.000	-0.004
1150	3.757	3.922	3.812	3.747	3.922	3.807	-0.010	0.000	-0.005
1620	3.750	3.927	3.809	3.739	3.927	3.804	-0.011	0.000	-0.005
1880	3.574	3.890	3.657	3.560	3.890	3.647	-0.014	0.000	-0.010

9.1.2 The change in water level along Mai Po Tributary and Mai Po River under 2yr, 10yr, 50yr and 200yr ARI events are summarized in **Appendix H**.

9.1.3 Although there will be loss in flood storage and increase in CN value, by the detention effect of the as-built Wetland Restoration Area at the northern part of the Application Site independent from the drainage system of the residential areas, the peak discharge and total runoff from the Application Site will be slightly increased and there will be no adverse drainage impacts to the Application Site, Mai Po Tributary and Mai Po River under 50yr ARI event. This arrangement is the same as the previous approved DIAs.

9.1.4 The water level at Mai Po River and Mai Po Tributary would not increase due to the change. The simulation results indicated a slight decrease in water level under the post-development scenarios under case 50A, B and C, as shown in **Table 9-3**. It is concluded that the recommendation made in the previous approved DIAs is adequate to mitigate the potential drainage impact due to the revised master layout.

9.2 ASSESSMENT OF DESIGNATED DRAIN FOR WESTERN PORTION

9.2.1 As revealed by the model simulation results in **Appendix I**, the water level at the outlet of the designated drain for Wo Shang Wai is much lower than the ground level of the Application Site (7.4mPD). In this regard, the designated drain will not incur adverse impact to the Application Site.

9.3 ASSESSMENT OF PROPOSED 3.5M(W) X 2.5M(H) BOX CULVERT

9.3.1 Since the current proposal following the previous approved DIAs will have a larger hydraulic capacity than the existing ditch, there will be no adverse drainage impact to Application Site. The freeboard of the box culvert at the outlet is shown in **Appendix J**.

9.4 ASSESSMENT OF IMPACT OF ADDITIONAL TREATED EFFLUENTS

9.4.1 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,732.04m^3/day of treated water after tertiary treatment of Membrane Bioreactor process by a temporary on-site sewage treatment plant which will be discharged to Mai Po Tributary. Assume the worst case that this water will be discharged to Mai Po Tributary in 4 hours per day (same as the rainfall duration under assessment), so the additional flow rate of the treated water is 0.26m^3/s. The flow rate of the treated water from the on-site sewage treatment plant will only increase by about 1.7% of the peak flow rate from Application Site under 50-year return period, which has insignificant impact on assessment results mentioned in **Section 9.1** and water level of Mai Po River.

10 TEMPORARY DRAINAGE ARRANGEMENT

10.1.1 Due to previous XRL project developed by MTRC, the existing ditch along the eastern boundary of the Application Site together with the portion of the Application Site was diverted. The completed diversion channel continues to collect the runoff from the Application Site and the area to the south of the Application Site. The proposal for the Temporary Drainage Diversion Scheme has been submitted to DSD in May 2009 and has since been approved by DSD/MN on the 11 June 2009 with no further comment. Please refer to **Appendix K** for the proposed temporary drainage diversion scheme.

10.1.2 The runoff from Mai Po Lo Wai and Mai Po San Tsuen was collected by the existing 1350mm diameter and 600mm diameter pipes and discharged to Mai Po Tributary via the aforesaid ditch (**Appendix K**). Currently, the aforesaid ditch had been filled up. As confirmed with MTRCL, some temporary drainages were constructed by them to divert the flow bypassing the ditch to the Mai Po Tributary.

11 MAINTENANCE RESPONSIBILITIES

11.1.1 Following the previous approved DIAs, the Applicant will be responsible for the maintenance of all surface channels, underground drainage system and stormwater retention facilities within the Application Site, including designated drainage facilities for conveying runoff generated from Wo Shang Wai Village and the area between Royal Palms and Castle Peak Road – Mai Po.

11.1.2 The designated drainage system serving Wo Shang Wai Village within the Application Site will be maintained by the Applicant while the storage pond and the pumps within Wo Shang Wai Village will be maintained by the villagers.

11.1.3 The maintenance responsibility of all drainage facilities outside the Application Site will remain unchanged.

12 SUMMARY AND CONCLUSIONS

12.1.1 The previous approved residential development comprises of residential buildings, a communal garden area, a restored wetland and residential facilities. The total site area is approximately 207,408m².

12.1.2 To offset the loss in storage volume after development, a Wetland Restoration Area has been built, which has a sufficient detention effect to mitigate the potential drainage impacts. The drainage system of the Wetland Restoration Area (i.e.MP02A-a9) is totally independent on the drainage system of the residential areas of the proposed development.

12.1.3 The permanent drainage system for the proposed development will comprise of an approximately 300m (L) x 2.5m(H) x 3.5m(W) box culvert and a drainage pipe network of pipe sizes ranging from 1050mm to 2100mm in diameter. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) and the runoff from the vacant lots between Castle Peak Road and Royal Palms, while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ac and ad). The runoff from catchment MP02A-ab within the Application Site will be drained via a 1350mm drainage pipe next to a 2100mm pipe.

12.1.4 The DIA for the previously approved Section 16 Planning Application was approved for all the ground work. The mitigation measures outlined in **Section 8** above are in line with the previous approved DIAs. Subsequent to the currently proposed revision of the Master Layout Plan, the DIA has been updated and the same mitigation measures are incorporated. These proposed mitigation measures are sufficient to mitigate the potential drainage impacts of the change in master layout. It is concluded that the completion of the proposed development will not aggravate the flooding conditions around the Application Site.

12.1.5 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,732.04m^3/day of treated water from a temporary on-site sewage treatment plant within the Application Site will be discharged to Mai Po Tributary. Even under the worst case that this water will be discharged to Mai Po Tributary in 4 hours per day, the flow rate of the treated water of 0.26m^3/s from the on-site sewage treatment plant will only increase by about 1.7% of the peak discharge from Application Site under 50-year return period, which has insignificant impact on assessment results and water level of Mai Po River.

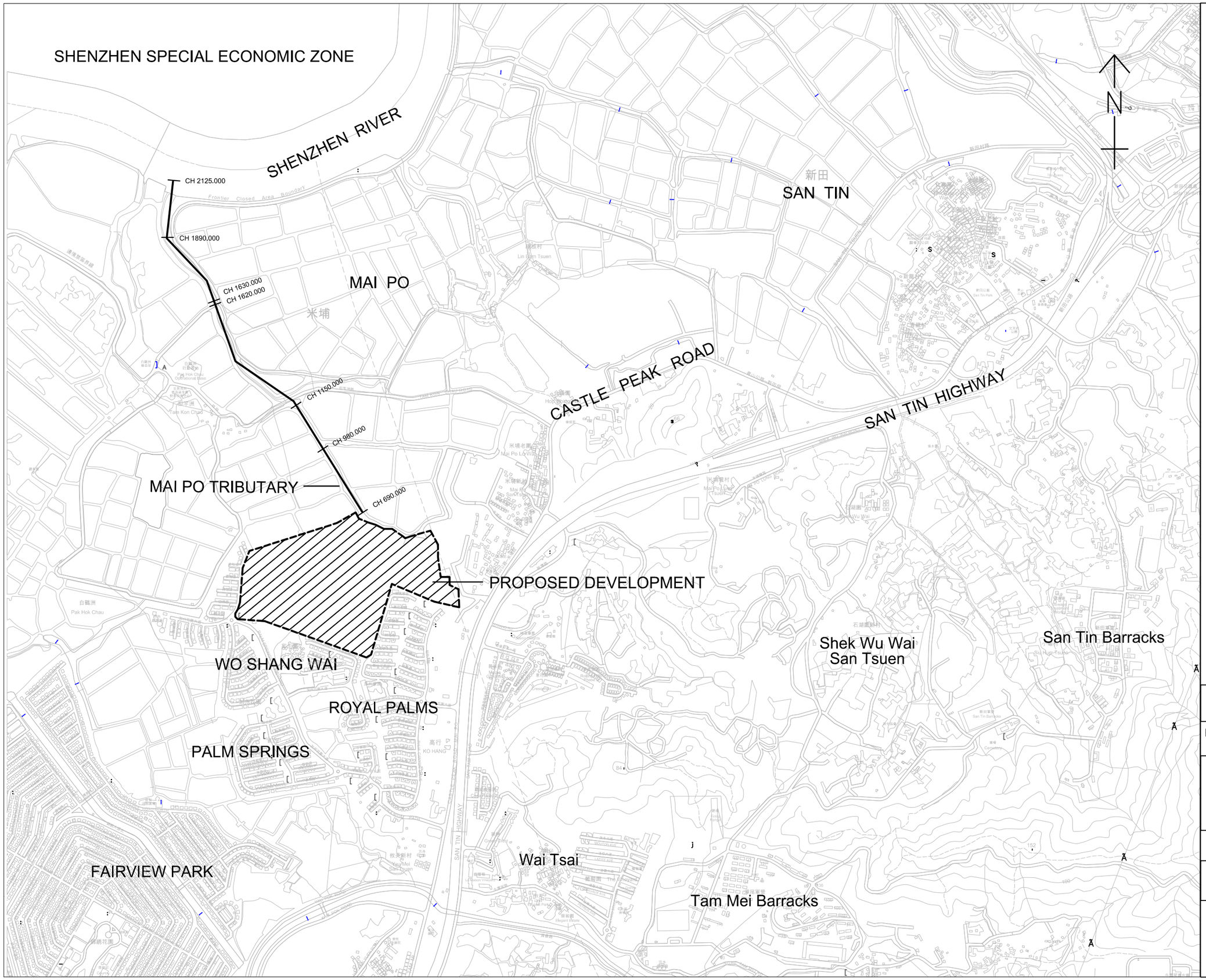
12.1.6 Temporary drainage arrangement within the site will be implemented during construction stage to avoid imposing unacceptable flood risk to the adjacent areas.

12.1.7 Temporary drainage diversion of the existing ditch channel trespasses through the Application Site had been completed out to cater for the existing discharge from area between Royal Palms and Castle Peak Road. The runoff from the above-mentioned area and the runoff collected by the existing channel along the southern side of the Application Site will be

completely intercepted into the proposed temporary drainage system before discharging into the Mai Po Tributary.

12.1.8 The Applicant will take up the maintenance responsibilities for the proposed drainage system inside the Application Site including the proposed main trunk box-culvert and designated drainage system for WSW Village and its outfall structure.

Figures



LEGEND

	PROPOSED DEVELOPMENT
CH690	RIVER CHAINAGE OF MAI PO RIVER DEFINED IN MIKE 11 MODEL

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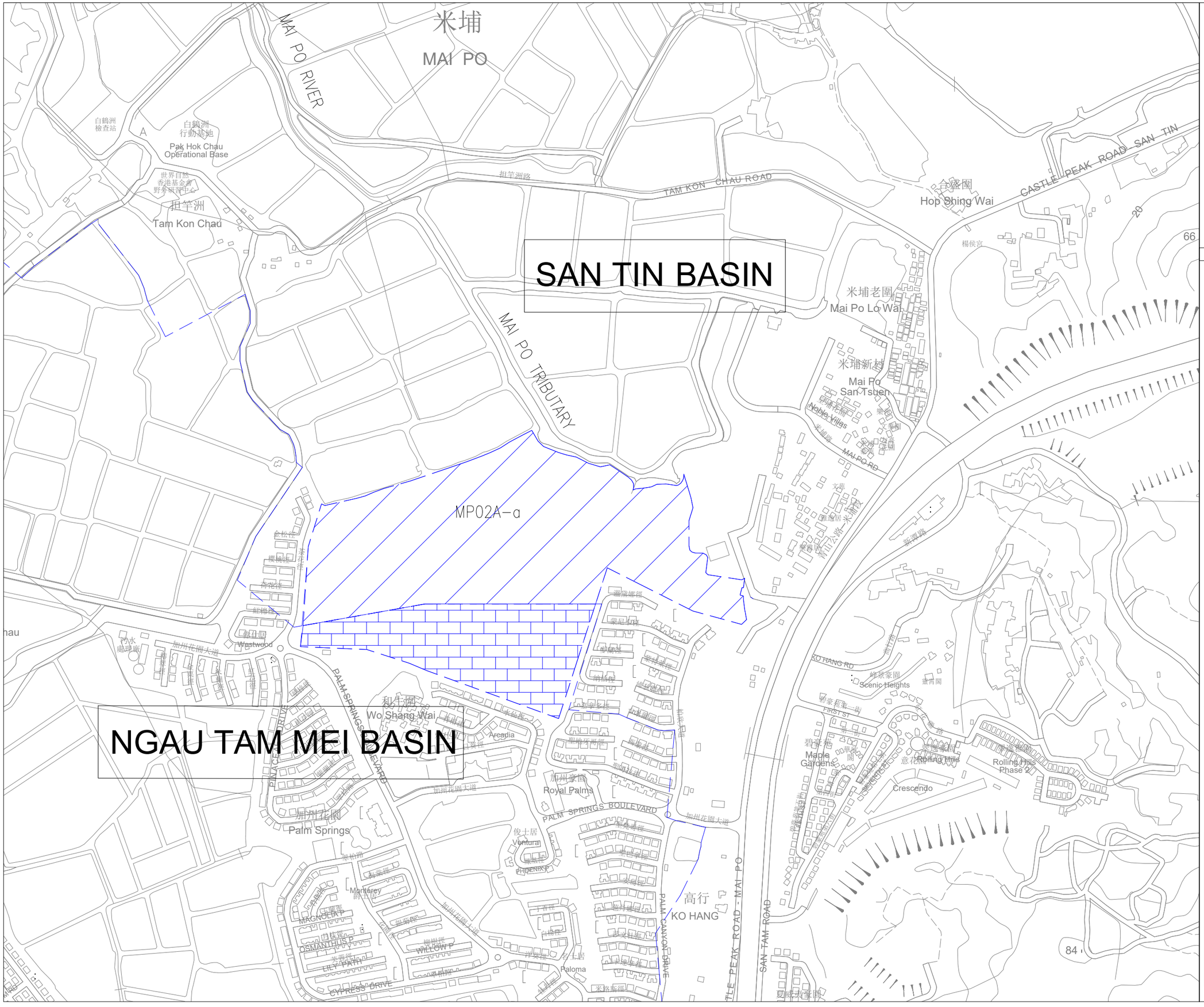
PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

LOCATION PLAN OF PROPOSED DEVELOPMENT

FIGURE 1



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LOCATION PLAN

LEGENDS:

- SUB–CATCHMENT MP02A–a AS PER NORTHERN NEW TERRITORY DRAINAGE MASTER PLAN
- APPLICATION SITE WITHIN SAN TIN BASIN
- APPLICATION SITE WITHIN NGAU TAM MEI BASIN

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB–CATCHMENT PLAN OF MP02A–a

Drawing no.		Rev.
Figure 2		0
Drawn: JX	Date: AUG2024	Checked: – / Approved: –
Scale: 1:3000	Status:	

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MAI PO TRIBUTARY

EXISTING OUTFALL TO MAI PO TRIBUTARY

EXISTING Ø1350 DRAIN

EXISTING WATER DITCH

EXISTING Ø600 DRAIN

EXISTING DITCH

EXISTING 2 x 2m DIA. PIPES

EXISTING 3 x 1.35m DIA. PIPES FROM VACANT LOTS VIA ROYAL PALMS

LOCATION OF CRITICAL SECTION

EXISTING DITCH

EXISTING 2 x 250mm DIA. OUTFALL FROM WO SHANG WAI VILLAGE

米埔老圍
MAI PO LO WAI

米埔新村
MAI PO SAN TSUEN

和生圍
WO SHANG WAI VILLAGE

加州豪園
ROYAL PALMS

碧豪苑
MAPLE GARDENS

SAN TAM HIGHWAY

SAN TAM ROAD

LEGEND

- PROPOSED DEVELOPMENT SITE
- EXISTING OVERLAND FLOW PATH
- EXISTING OPEN CHANNEL
- CHANNEL/DITCH FLOW DIRECTION
- +3.9 EXISTING GROUND LEVEL
- EXISTING PIPE

WSP HONG KONG LIMITED

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

EXISTING DRAINAGE IN THE VICINITY OF THE PROPOSED DEVELOPMENT

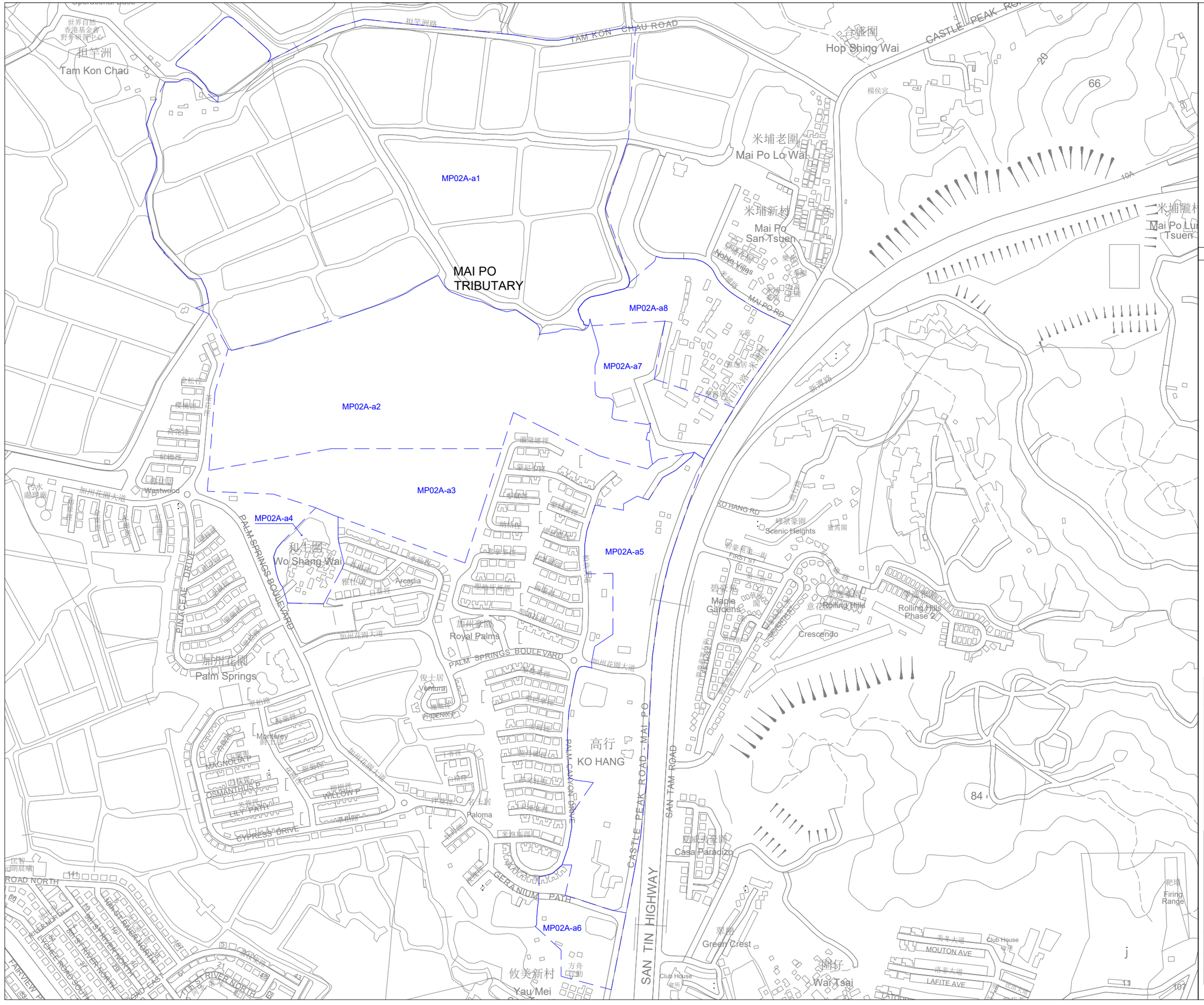
DRG. NO. 圖紙編號: FIGURE 3

CLIENT:

DRAWN BY 繪圖

APPROVED 批准人

SCALE 比例



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LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR PRE-DEVELOPMENT MODEL

Drawing no.		Rev.
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Drawn: JX	Date: AUG2024	Checked: –	Approved: –
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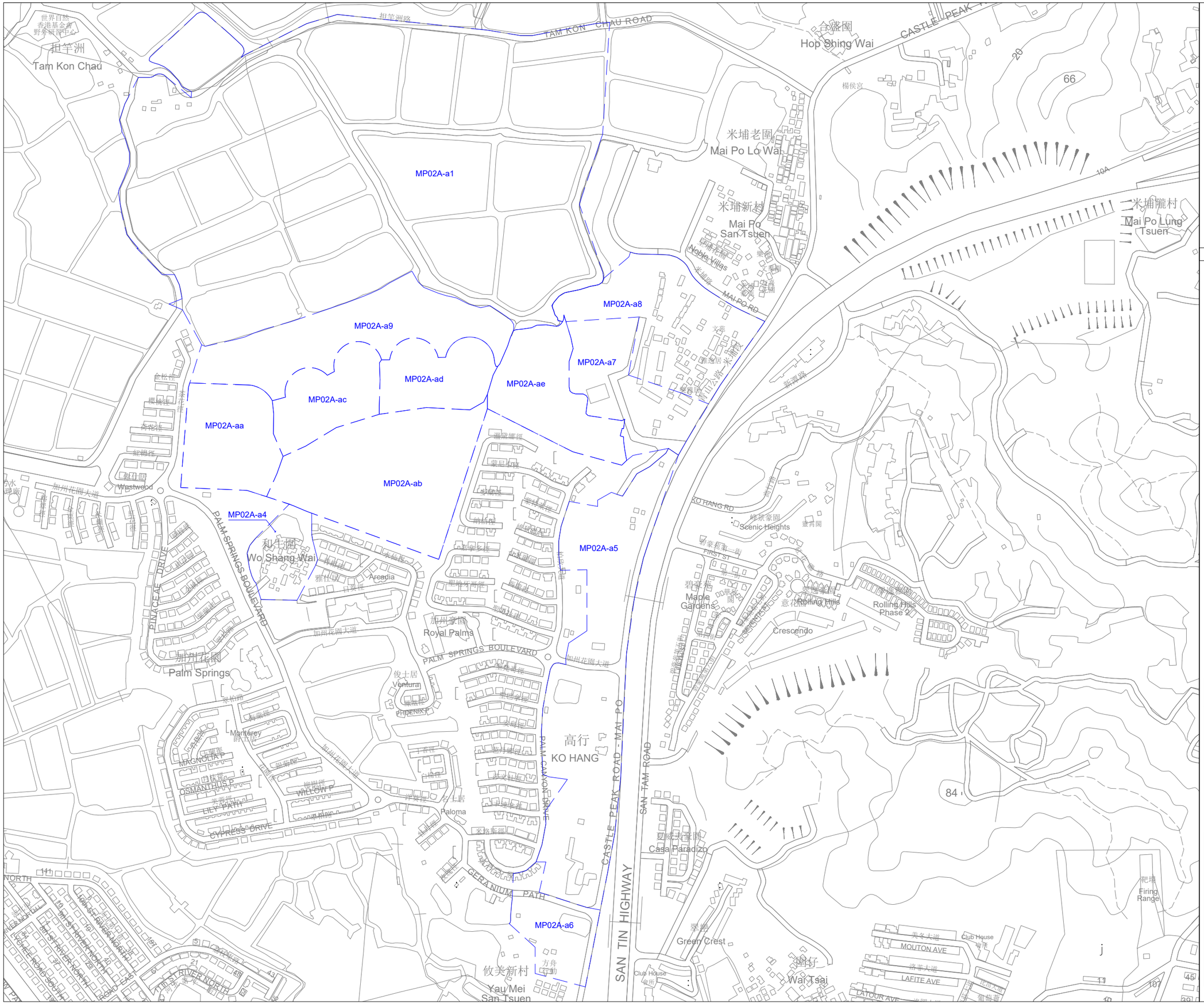

LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR POST-DEVELOPMENT MODEL

Drawing no.	Rev.
Figure 5	–

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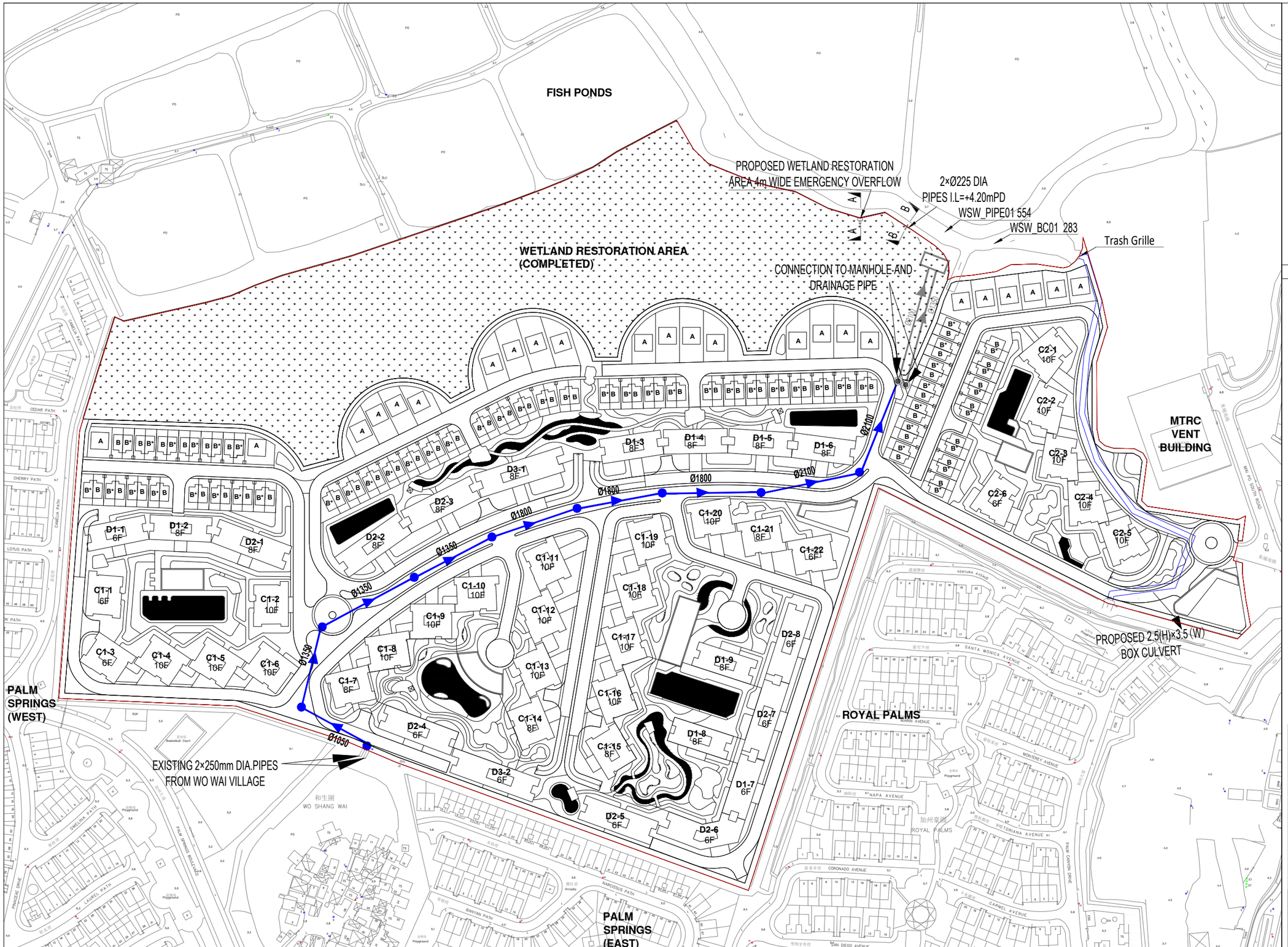
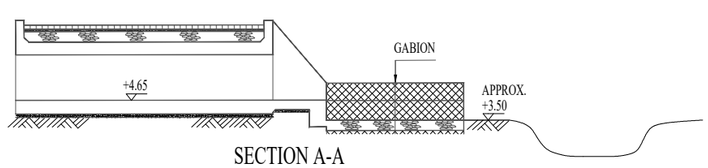
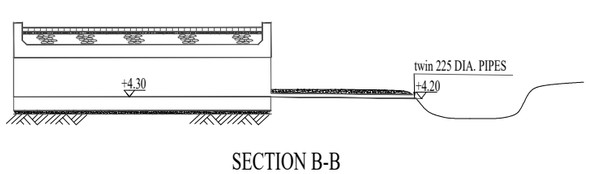




SECTION A-A



SECTION B-B

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- EXISTING MANHOLE
- PROPOSED MANHOLE
- Ø1800 — PROPOSED DRAINAGE SYSTEM
- PROPOSED 2.5(H)×3.5(W) BOX CULVERT
- Ø2100 — DRAINAGE SYSTEM

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

PROPOSED DRAINAGE

Drawing no.		Rev.
Figure 6		
Drawn	Date	Checked / Approved
Scale 1:1200		Status

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Appendices

Appendix A

Approval Letters of Previous DIAs
in 2015, 2021 and 2024

規劃署

粉嶺、上水及元朗東規劃處
新界沙田上禾輋路1號
沙田政府合署12樓

By Post and Fax (2587 7068)
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
12/F., Sha Tin Government Offices,
1 Sheung Wo Che Road, Sha Tin, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/229

電話號碼 Tel. No. : 2158 6284

傳真機號碼 Fax No. : 3105 0057

17 December 2015

Masterplan Limited
Room 3516B, 35/F
China Merchants Tower, Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Mr. Ian Brownlee)

Dear Sir,

Planning Application No. A/YL-MP/229
Compliance with Approval Condition (d)

I refer to your submissions dated 13.4.2015, 6.7.2015 and 10.7.2015 for compliance with the approval condition (d) of the captioned application on "the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the Town Planning Board". The relevant departments have been consulted on your submission. Your submission is considered:

☑ Acceptable. The captioned condition **has been complied with**. Please find detailed comments of the Chief Engineer/Mainland North, Drainage Services Department (CE/MN, DSD), District Lands Officer/Yuen Long, Lands Department (DLO/YL, LandsD), Director of Agriculture, Fisheries and Conservation (DAFC) and Director of Environmental Protection (DEP) at **Appendix**.

☐ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement the accepted proposal for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Simon CHEUNG (Tel: 2158 6289) direct.

Yours faithfully,

(K.T. NG)
for District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

Encl.

城市規劃委員會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳 真 Fax: 2877 0245 / 2522 8426
電 話 Tel: 2231 4810
來函檔號 Your Reference:
覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/229

By Registered Post & Fax (2587 7068)

13 March 2015

Masterplan Ltd.
Rm 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: I.T. Brownlee)

Dear Sir/Madam,

Proposed Filling and Excavation of Land for House Development with Wetland Habitat in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots No. 43 S.A RP, 50 S.A and 50 RP in D.D. 101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 20.1.2015.

After giving consideration to the application, the Town Planning Board (the TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 27.2.2019; and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (q) below to the satisfaction of the Director of Planning or of the TPB;

(b) the interface arrangement for the Express Rail Link (XRL) project in terms of the permanent land take for Express Rail Link tunnels and structures and temporary land take for related construction to the satisfaction of the Director of Highways or of the TPB;

(c) the submission and implementation of a revised Landscape Master Plan including a tree preservation proposal to the satisfaction of the Director of Planning or of the TPB;

(d) the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the TPB;

(e) in relation to (d) above, the implementation of a drainage proposal and other necessary flood relief mitigation measures identified in the revised DIA to the satisfaction of the Director of Drainage Services or of the TPB;

(f) the implementation of mitigation measures identified therein in the revised Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(g) the submission and implementation of a maintenance and management plan which covers implementation details and the estimated annual recurrent costs with breakdown required for maintaining the restored wetland area to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(h) the submission and implementation of a funding arrangement proposal for ensuring the long-term maintenance and management of the restored wetland area to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(i) as proposed by you, land exchange and/or lease modification for the proposed development if considered and approved by the Director of Lands, should not be executed prior to the compliance with condition (h) to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(j) the design and provision of improvement measures at the junction of Palm Springs Boulevard and Castle Peak Road – Mai Po section to the satisfaction of the Commissioner for Transport or of the TPB;

(k) the design and provision of vehicle parking, motorcycle parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(l) the design and provision of the access connection between the development and the public road to the satisfaction of the Commissioner for Transport or of the TPB;

(m) the provision of emergency vehicular access, water supplies for fire-fighting and fire service installations to the satisfaction of the Director of Fire Services or of the TPB;

(n) the design and provision of mitigation measures to alleviate the visual impact of the noise barriers to the satisfaction of the Director of Planning or of the TPB;

(o) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB;

(p) the implementation of mitigation measures identified in the revised SIA to the satisfaction of the Director of Environmental Protection or of the TPB; and

(q) the implementation of sewage disposal arrangement including the interim on-site sewerage treatment plant, the reuse of treated effluent and the irrigation system, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you of the following:

(a) to note the suggestion of Members on the provision of a tree belt at the interface of the development portion and the wetland restoration area of the scheme to create a buffer area in between. As part of the Landscape Master Plan, you should liaise with the Planning Department regarding the design and implementation of the tree belt;

(b) the approval of the application does not imply that the proposed building design elements can fulfil the requirements under the Sustainable Building Design Guidelines and the relevant requirements under the lease, and that the proposed gross floor area (GFA) concession for the proposed development will be approved/granted by the Building Authority (BA). You should approach the Buildings Department (BD) and the Lands Department (LandsD) direct to obtain the necessary approval. If the building design elements and the GFA concession are not approved/granted by the BA and the Lands Authority and major changes to the current scheme are required, a fresh planning application to the TPB may be required;

(c) to note the comments of the District Lands Officer/Yuen Long, LandsD that with reference to Figure A3 of the Wetland Restoration and Creation Scheme, the Wetland Restoration Area boundary is modified. A proposed land exchange is being processed for the lots within the site based on the previous Application No. A/YL-MP/185. Should the TPB approve the application which cause amendments to the proposed land exchange, you are required to apply to LandsD for the proposed development in current scheme. However, there is no guarantee that such application (including the granting of any additional government land (GL)) will be approved. Such application will be dealt with by his department acting in the capacity as the landlord at his discretion, and if it is approved under such discretion, the approval would be subject to such terms and conditions including among others, the payment of premium and administrative fee as may be imposed by his department. The proposed storm water drain will connect to outfall beyond the site boundary. Should such drains encroach upon private land and GL, you should clearly indicate the whole alignment of such storm water drain connection, in particular the one connecting the existing outfall to Mai Po Tributary, and then obtain prior approval/consent from the relevant authorities before carrying out of the works. According to the layout plan of the preliminary interim sewage system design, there is no GL involved. However, you should consult his department if there is any works to be carried out on GL, if unavoidable;

(d) to note the comments of the Director of Environmental Protection (DEP) that this is a revised residential development scheme different from the layout shown in the Environmental Permit No. EP-311/2008/D issued under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). The proposed on-site wastewater treatment does not conform with Condition 5.13 of the Environmental Permit. You should be reminded to go through the statutory EIAO process should the current development scheme goes ahead;

(e) to note the comments of the Commissioner for Transport that you should take account of the segregation of vehicles and pedestrian in the detailed design during submission of the general building plan stage. He has no objection to the proposed basement carpark but the Transport Department's comment will be provided at the detailed design stage;

(f) to note the comments of the Chief Engineer/Railway Development, Railway Development Office, Highways Department that the site, in particular the site portion within Lot 43 S.A RP in D.D. 101, falls within the railway protection boundary of the Hong Kong Section of the XRL, which is now under construction. You should consult MTR Corporation Limited on the full details of the proposal and comply with their requirements with respect to the construction, operation, maintenance and safety of the XRL;

(g) to note the comments of the Chief Building Surveyor/New Territories West, BD that the access road linking the site and the Castle Peak Road shall be completed before the Occupation Permit application. In view of the size of the site, any internal streets/roads required under the Buildings Ordinance (BO) s.16(1)(p) may have to be deducted from site area for plot ratio/site coverage calculations under the BO. Recreational facilities and the proposed noise barriers, unless exempted, are accountable for GFA calculation under the BO. Filtration plant rooms for swimming pool at private houses are accountable for GFA calculation under the BO. Each phase of the proposed development should be self-sustainable under the BO. Your attention is drawn to the requirements on the provision of emergency vehicle access to all buildings to be erected on the site under Building (Planning) Regulations (B(P)R) 41D. The proposed open space should not be less than the requirements as stipulated in the second schedule of B(P)R. Application for exemption of carparking spaces from GFA calculation under the BO will be considered on the basis of the PNAP APP-2 during plan submission stage. The new quality and sustainable built environment (QBE) requirements are applicable to the site. In accordance with the Government's committed policy to implement building design to foster a QBE, the sustainable building design requirements (including building separation, building setback and greenery coverage) should be included, where possible, in the planning approval;

(h) to note the comments of the Chief Engineer/Mainland North, Drainage Services Department that he would reserve his comments until specific drainage proposal is submitted. You should be reminded that the SIA for the current application needs to meet the full satisfaction of DEP;

(i) to note the comments of the Chief Town Planner/Urban Design and Landscape, Planning Department (PlanD) that regarding communal open space calculation, you should be advised that the ancillary pedestrian route should be "within" the open space to be counted as part of the open space as per the Hong Kong Planning Standards and Guidelines (HKPSG). You should maximize the provision of greening, especially at-grade tree and shrub planting along roadside and clubhouses to improve the landscape and visual amenity of the development;

(j) to note the comments of the Chief Engineer/Development (2), Water Supplies Department (WSD) that for the provision of water supply to the development, you may need to extend your inside services to the nearest suitable government water mains for connection. You shall resolve any land matter (such as private lots) associated with the provision of water supply and shall be responsible for the construction, operation and maintenance of the inside services within the private lots to WSD's standard. Fresh water from government mains shall not be used for watering plant nurseries or landscape features purposes except with the written consent of the Water Authority. Consent to use fresh water from the mains for such purposes may be given on concessionary supply basis if an alternative supply is impracticable and evidence to that effect is offered to and accepted by the Water Authority. Such permission will be withdrawn if in the opinion of the Water Authority the supply situation requires it; and

(k) to note the comments of the Director of Electrical and Mechanical Services that for electricity safety, you shall approach the electricity supplier for the requisition of cable plans to find out whether there is any underground cable (and/or overhead line) within or in the vicinity of the site. For the site within the preferred working corridor of high voltage overhead lines at transmission voltage level 132kV and above as stipulated in the HKPSG published by PlanD, prior consultation and arrangement with the electricity supplier is necessary. Prior to establishing any structure within the site, you and/or your contractors shall liaise with the electricity supplier and, if necessary, ask the electricity supplier to divert the underground cable (and/or overhead line) away from the vicinity of the proposed structure. The "Code of Practice on Working near Electricity Supply Lines" established under the Electricity Supply Lines (Protection) Regulation shall be observed by you and your contractors when carrying out works in the vicinity of the electricity supply lines. For town gas safety, there is a high pressure town gas pipeline running along San Tin Highway and the site is in close proximity to the existing high pressure gas pipeline. He considers that given the application is a low density residential development (i.e. plot ratio is 0.4) and the minimum proximity distance of the proposed houses to the concerned gas pipeline is about 150m, it should not be a mandatory requirement for you to submit a risk assessment. Nevertheless, given that there is a town gas pipeline near to the proposed development, the project proponent should maintain liaison/coordination with the Hong Kong and China Gas Company Limited in respect of the exact location of existing or planned gas pipe routes/gas installations in the vicinity of the proposed works area and the minimum setback distance away from the gas pipes/gas installations if any excavation work is required during the design and construction stages of the development. The project proponent shall also note the requirements of the Electrical and Mechanical Services Department's 'Code of Practice on Avoiding Danger from Gas Pipes'.

If you wish to seek an extension of the validity of this permission, you may submit an application to the TPB for renewal of the permission no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider any application for renewal of permission if the time limit for commencement of development specified in the permission has already

expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35B and 36A for details. The Guidelines and application forms are available at the TPB's website (www.info.gov.hk/tpb/), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved scheme that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36A for details.

A copy of the TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) and the relevant extract of minutes of the TPB meeting held on 27.2.2015 are enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 8.4.2015). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. K.T. Ng of Fanling, Sheung Shui & Yuen Long East District Planning Office at 2158 6284. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Michael CHIU)
for Secretary, Town Planning Board

MC/DY/el

規劃署

粉嶺、上水及元朗東規劃處
新界荃灣青山公路388號
中染大廈22樓2202室

By Fax (2587 7068) and Post
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
Unit 2202, 22/F., CDW Building,
388 Castle Peak Road, Tsuen Wan, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/291

電話號碼 Tel. No.: 3168 4072

傳真機號碼 Fax No.: 3168 4074

12 May 2021

Masterplan Limited
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre, 200 Connaught Road Central
Hong Kong
(Attn: Mr. Ian BROWNLEE)

Dear Mr. BROWNLEE,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots 43 S.A RP, 50 S.A and 50 RP in D.D.101, Wo Shang Wai, Mai Po, Yuen Long
(Planning Application No. A/YL-MP/291)
Compliance with Approval Condition (c)

I refer to your submission dated 27.4.2021 for compliance with the captioned approval condition regarding the submission of a revised Drainage Impact Assessment (DIA). The relevant department has been consulted on your submission. Your submission is considered:

☐ Acceptable. The captioned condition **has been complied with**.

☑ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement and maintain the flood mitigation measures and provision of drainage facilities identified in the DIA for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Joshua YUEN (Tel: 2300 1235) of DSD directly.

Yours sincerely,

(Anthony LUK)
District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

c.c.
CE/MN, DSD (Attn: Mr. Joshua YUEN)
CTP/TPB(2)

Internal
Site Record

AL/AC/AP

城 市 規 劃 委 員 會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳　真 Fax: 2877 0245 / 2522 8426
電　話 Tel: 2231 4810
來函檔號 Your Reference:

覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/344

By Post & Fax (2587 7068)

1 March 2024

Masterplan Ltd.
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Benson Poon)

Dear Sir/Madam,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" Zone, Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 15.2.2024.

After giving consideration to the application, the Town Planning Board (TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 16.2.2028, and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (i) below to the satisfaction of the Director of Planning or of the TPB;

(b) the submission and implementation of a Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB;

(c) the implementation of drainage proposal identified in the accepted Drainage Impact Assessment to the satisfaction of the Director of Drainage Services or of the TPB;

(d) the implementation of the mitigation measures identified in the Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(e) the design and provision of vehicular access, parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(f) the design and provision of improvement measures at the junction of Castle Peak Road - San Tin and Shek Wu Wai Road before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(g) the design and provision of improvement measures at the junction of Fairview Park Interchange, if deemed required by Transport Department, before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(h) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB; and

(i) the implementation of sewage disposal arrangement identified in the revised SIA including the on-site sewerage treatment plant and the reuse of treated effluent, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you to note the advisory clauses as set out at the Appendix attached.

Regarding the determination on commencement of an approved development, please refer to TPB Guidelines No. 35D for details. If you wish to seek an extension of the validity of this permission, you may submit an application under 16A of the Town Planning Ordinance to the TPB no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider the application if the time limit for commencement of development specified in the permission has already expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35D and 36C for details. The Guidelines and application forms are available at the TPB's website (https://www.tpb.gov.hk/en/resources/index.html), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved development that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36C for details.

The TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) is available at this link (https://www.tpb.gov.hk/en/meetings/RNTPC/Agenda/736_rnt_agenda.html) and the relevant extract of minutes of the TPB meeting held on 16.2.2024 is enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 22.3.2024). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. Kimson Chiu of Fanling, Sheung Shui & Yuen Long East District Planning Office at 3168 4033. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Leticia LEUNG)
for Secretary, Town Planning Board

LL/CN/cl

List of Government Department Contacts

(Application No. A/YL-MP/344)

部門 Department	辦事處 Office	聯絡人姓名 Name of Contact Person	電話號碼 Telephone No.	傳真號碼 Facsimile No.
漁農自然護理署 Agriculture, Fisheries and Conservation Department	自然護理組(元朗) Nature Conservation Section (Yuen Long)	黃金欣博士 Dr. WONG Kam Yan, Azaria	2150 6932	2377 4427
渠務署 Drainage Services Department	新界北渠務部 Mainland North Division	梁長政先生 Mr. LEONG Cheung Ching	2300 1432	2770 4761
環境保護署 Environmental Protection Department	環境評估科 Environmental Assessment Division	陳麗薇女士 Ms. CHAN Lai Mei, Jolitta	2835 1112	2591 0558
運輸署 Transport Department	交通工程(新界西)部 Traffic Engineering (NTW) Division	梁志江先生 Mr. LEUNG Chi Kong, Donald	2399 2778	2381 3799

Appendix B

Master Layout Plan of the Proposed Development

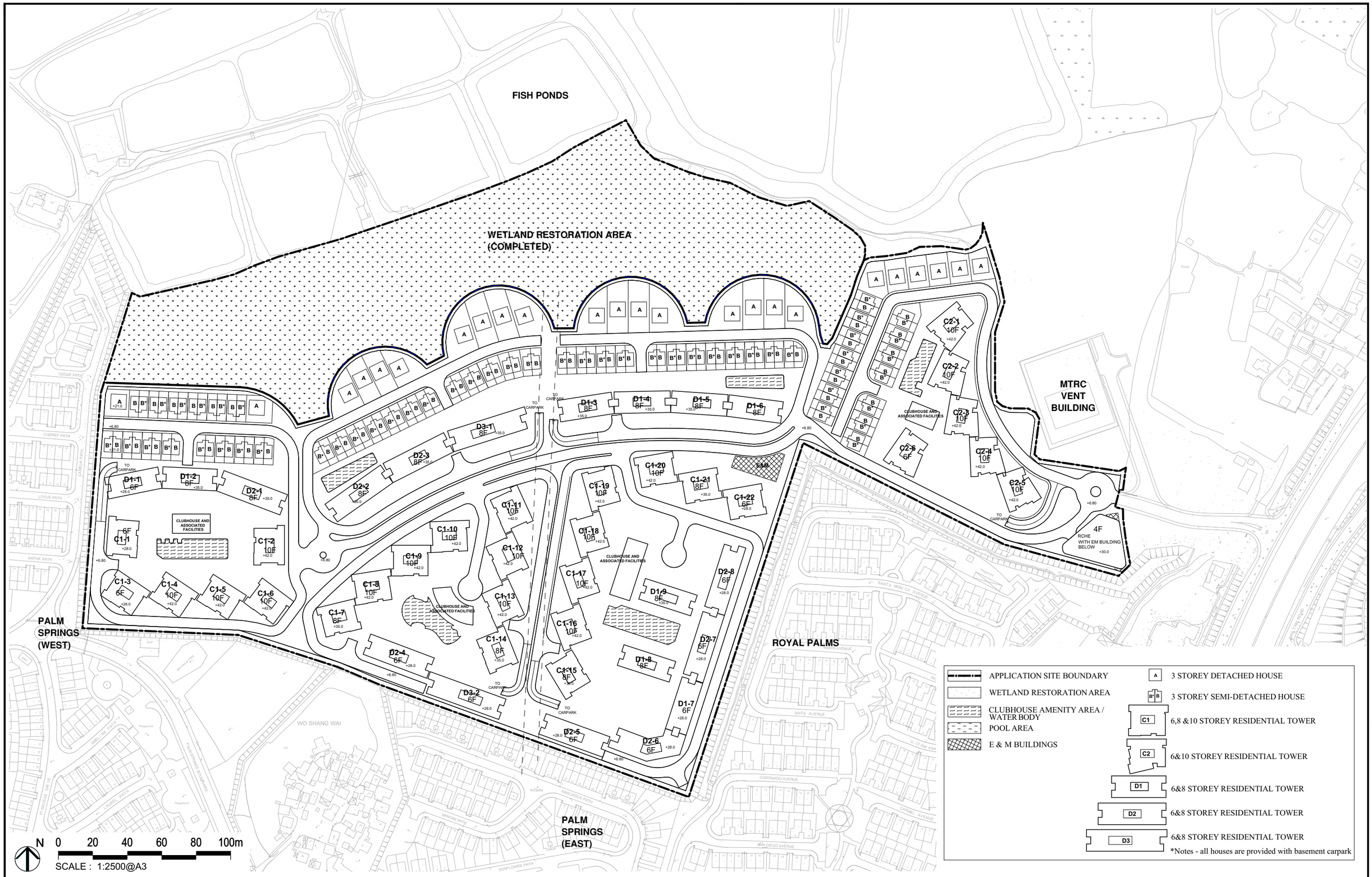


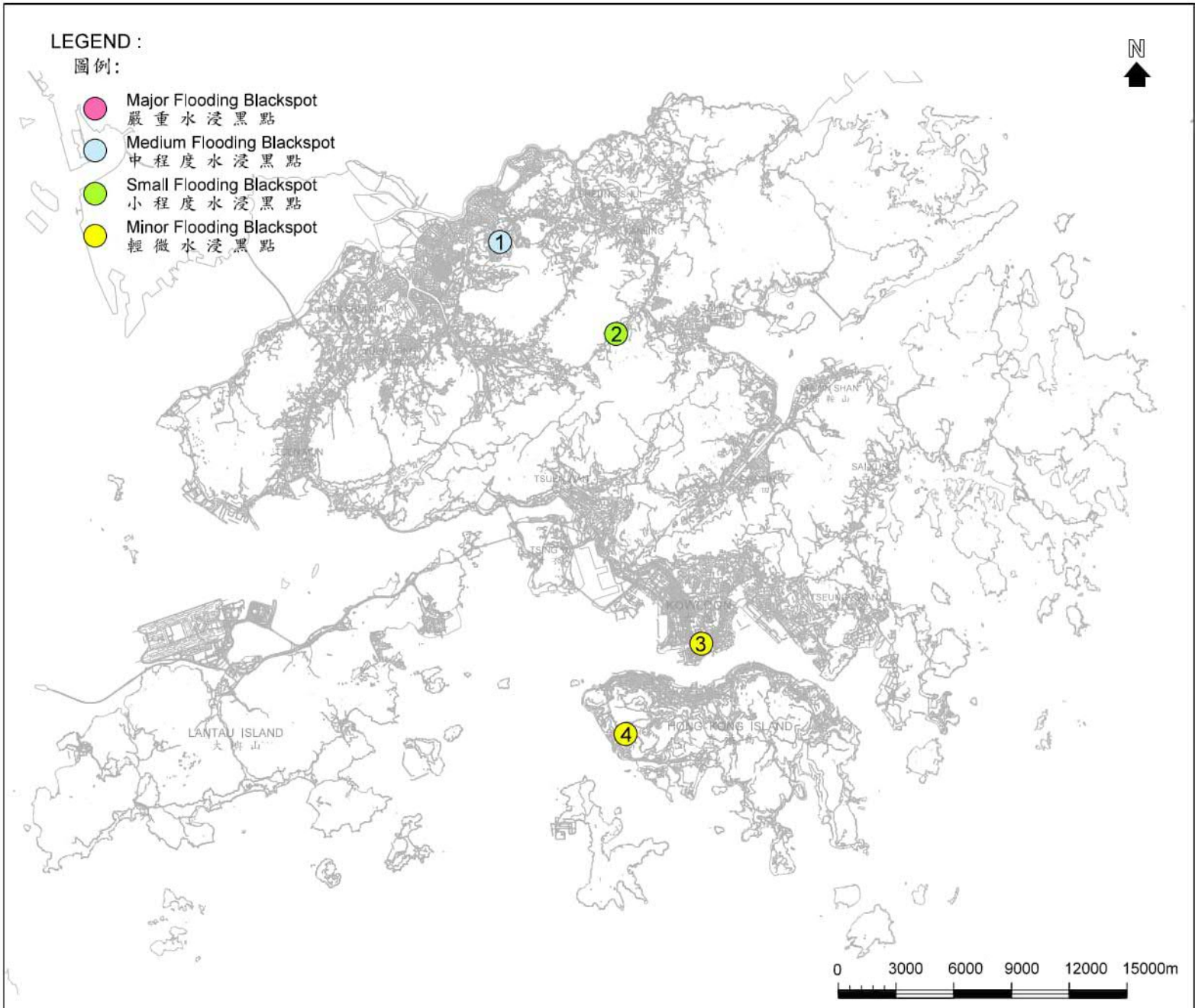
Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

1:2500 in A3
DWG. No. : 3809-003

Appendix C

Location of DSD Flooding Blackspots
(Information Extracted from DSD Website)



Flooding Blackspots
水浸黑點

No. 編號	Location 地點
1	Shek Wu Wai, San Tin 新田石湖圍
2	Lam Tsuen Valley Basin 林村谷盆地
3	Chatham Road South (Granville Road to Austin Avenue) 漆咸道南 (加連威老道和柯士甸路之間)
4	Pok Fu Lam Village 薄扶林村

Remarks :

The DSD blackspots list and location map are produced based on previous flooding records and complaints received by DSD for monitoring the maintenance and mitigation measures to alleviate flooding at the blackspots. Locations susceptible to flooding problems dominated by tidal influence were not included. The blackspots list and maps should not be used as an indication of the actual or hidden flood risk at any particular location in Hong Kong.

備註：

渠務署水浸黑點名單及位置圖是根據我們以往的水浸記錄及收到的水浸投訴編制而成，用以監察該地點維修及防洪措施的進展，一些純粹因潮漲引發水浸的地點並未包括在內。水浸黑點名單及位置圖並不適用於顯示本港任何地方的實際或隱藏水浸風險。

Drawing title

Flooding Blackspots as at March 2023

水浸黑點(2023年3月情況)

Drawing no.	Scale	Date
DLD 4012C	A4 (1:300000)	Mar 2023

Office

LAND DRAINAGE DIVISION

DRAINAGE SERVICES DEPARTMENT
HONG KONG

Appendix D

Synthetic Rainfall Profile and
Its Calculation Example

Design 4-hr Rainfall Profile

Rainfall intensity is calculated according to Section 4.3.5 of SDM as below

Rain Storm Return / Period Storm Constant[i]	2yr	10yr	50yr	200yr
a=	446.1	485	505.5	508.6
b=	3.38	3.11	3.29	3.38
c=	0.463	0.397	0.355	0.338

Rainfall Intensity(mm/hr) $F(t)=\begin{cases}\frac{a[b+2(1-c)t]}{(2t+b)^{1+c}} & 0\le t\le\frac{t_d}{2}\\ F(-t) & -\frac{t_d}{2}\le t\le 0\end{cases}$

Rainfall Depth (mm) =28.1%*[Rainfall Intensity/60]

t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)			
		2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr
120	0:00:00	0.41	0.71	1.00	1.26	70	0:50:00	0.52	0.88	1.21	1.51	20	1:40:00	0.95	1.47	1.90	2.27	30	2:30:00	0.78	1.24	1.64	1.99	80	3:20:00	0.49	0.84	1.15	1.44
119	0:01:00	0.41	0.71	1.00	1.27	69	0:51:00	0.53	0.89	1.22	1.51	19	1:41:00	0.98	1.50	1.94	2.31	31	2:31:00	0.77	1.23	1.62	1.96	81	3:21:00	0.49	0.83	1.15	1.44
118	0:02:00	0.41	0.72	1.00	1.27	68	0:52:00	0.53	0.89	1.22	1.52	18	1:42:00	1.00	1.53	1.98	2.35	32	2:32:00	0.76	1.21	1.60	1.94	82	3:22:00	0.49	0.83	1.14	1.43
117	0:03:00	0.41	0.72	1.01	1.27	67	0:53:00	0.53	0.90	1.23	1.53	17	1:43:00	1.03	1.57	2.02	2.39	33	2:33:00	0.75	1.20	1.59	1.92	83	3:23:00	0.48	0.82	1.14	1.42
116	0:04:00	0.41	0.72	1.01	1.28	66	0:54:00	0.54	0.90	1.24	1.53	16	1:44:00	1.06	1.61	2.07	2.44	34	2:34:00	0.74	1.18	1.57	1.91	84	3:24:00	0.48	0.82	1.13	1.42
115	0:05:00	0.41	0.72	1.01	1.28	65	0:55:00	0.54	0.91	1.24	1.54	15	1:45:00	1.10	1.65	2.11	2.50	35	2:35:00	0.73	1.17	1.55	1.89	85	3:25:00	0.48	0.82	1.13	1.41
114	0:06:00	0.42	0.73	1.02	1.28	64	0:56:00	0.55	0.92	1.25	1.55	14	1:46:00	1.13	1.70	2.17	2.55	36	2:36:00	0.72	1.15	1.54	1.87	86	3:26:00	0.48	0.81	1.12	1.41
113	0:07:00	0.42	0.73	1.02	1.29	63	0:57:00	0.55	0.92	1.26	1.56	13	1:47:00	1.18	1.75	2.23	2.62	37	2:37:00	0.71	1.14	1.52	1.85	87	3:27:00	0.47	0.81	1.12	1.40
112	0:08:00	0.42	0.73	1.02	1.29	62	0:58:00	0.55	0.93	1.26	1.57	12	1:48:00	1.22	1.81	2.30	2.69	38	2:38:00	0.70	1.13	1.51	1.84	88	3:28:00	0.47	0.81	1.11	1.40
111	0:09:00	0.42	0.73	1.03	1.30	61	0:59:00	0.56	0.93	1.27	1.57	11	1:49:00	1.28	1.88	2.37	2.76	39	2:39:00	0.69	1.12	1.49	1.82	89	3:29:00	0.47	0.80	1.11	1.39
110	0:10:00	0.42	0.74	1.03	1.30	60	1:00:00	0.56	0.94	1.28	1.58	10	1:50:00	1.34	1.95	2.45	2.85	40	2:40:00	0.68	1.11	1.48	1.81	90	3:30:00	0.47	0.80	1.11	1.39
109	0:11:00	0.43	0.74	1.03	1.30	59	1:01:00	0.57	0.95	1.29	1.59	9	1:51:00	1.41	2.04	2.55	2.95	41	2:41:00	0.67	1.10	1.47	1.79	91	3:31:00	0.46	0.79	1.10	1.38
108	0:12:00	0.43	0.74	1.04	1.31	58	1:02:00	0.57	0.95	1.29	1.60	8	1:52:00	1.49	2.14	2.66	3.07	42	2:42:00	0.67	1.08	1.45	1.78	92	3:32:00	0.46	0.79	1.10	1.38
107	0:13:00	0.43	0.74	1.04	1.31	57	1:03:00	0.58	0.96	1.30	1.61	7	1:53:00	1.59	2.26	2.80	3.21	43	2:43:00	0.66	1.07	1.44	1.76	93	3:33:00	0.46	0.79	1.09	1.37
106	0:14:00	0.43	0.75	1.04	1.32	56	1:04:00	0.58	0.97	1.31	1.62	6	1:54:00	1.72	2.41	2.96	3.37	44	2:44:00	0.65	1.06	1.43	1.75	94	3:34:00	0.46	0.78	1.09	1.37
105	0:15:00	0.43	0.75	1.05	1.32	55	1:05:00	0.59	0.97	1.32	1.63	5	1:55:00	1.87	2.60	3.16	3.58	45	2:45:00	0.65	1.05	1.42	1.74	95	3:35:00	0.45	0.78	1.08	1.36
104	0:16:00	0.43	0.75	1.05	1.32	54	1:06:00	0.59	0.98	1.33	1.64	4	1:56:00	2.08	2.84	3.42	3.84	46	2:46:00	0.64	1.05	1.41	1.73	96	3:36:00	0.45	0.78	1.08	1.36
103	0:17:00	0.44	0.76	1.05	1.33	53	1:07:00	0.60	0.99	1.34	1.65	3	1:57:00	2.38	3.18	3.77	4.19	47	2:47:00	0.63	1.04	1.40	1.71	97	3:37:00	0.45	0.77	1.08	1.35
102	0:18:00	0.44	0.76	1.06	1.33	52	1:08:00	0.60	1.00	1.35	1.66	2	1:58:00	2.83	3.69	4.29	4.71	48	2:48:00	0.63	1.03	1.39	1.70	98	3:38:00	0.45	0.77	1.07	1.35
101	0:19:00	0.44	0.76	1.06	1.34	51	1:09:00	0.61	1.00	1.36	1.67	1	1:59:00	3.62	4.58	5.17	5.55	49	2:49:00	0.62	1.02	1.38	1.69	99	3:39:00	0.44	0.77	1.07	1.35
100	0:20:00	0.44	0.76	1.06	1.34	50	1:10:00	0.61	1.01	1.37	1.68	0	2:00:00	5.42	6.60	7.07	7.28	50	2:50:00	0.61	1.01	1.37	1.68	100	3:40:00	0.44	0.76	1.06	1.34
99	0:21:00	0.44	0.77	1.07	1.35	49	1:11:00	0.62	1.02	1.38	1.69	1	2:01:00	3.62	4.58	5.17	5.55	51	2:51:00	0.61	1.00	1.36	1.67	101	3:41:00	0.44	0.76	1.06	1.34
98	0:22:00	0.45	0.77	1.07	1.35	48	1:12:00	0.63	1.03	1.39	1.70	2	2:02:00	2.83	3.69	4.29	4.71	52	2:52:00	0.60	1.00	1.35	1.66	102	3:42:00	0.44	0.76	1.06	1.33
97	0:23:00	0.45	0.77	1.08	1.35	47	1:13:00	0.63	1.04	1.40	1.71	3	2:03:00	2.38	3.18	3.77	4.19	53	2:53:00	0.60	0.99	1.34	1.65	103	3:43:00	0.44	0.76	1.05	1.33
96	0:24:00	0.45	0.78	1.08	1.36	46	1:14:00	0.64	1.05	1.41	1.73	4	2:04:00	2.08	2.84	3.42	3.84	54	2:54:00	0.59	0.98	1.33	1.64	104	3:44:00	0.43	0.75	1.05	1.32
95	0:25:00	0.45	0.78	1.08	1.36	45	1:15:00	0.65	1.05	1.42	1.74	5	2:05:00	1.87	2.60	3.16	3.58	55	2:55:00	0.59	0.97	1.32	1.63	105	3:45:00	0.43	0.75	1.05	1.32
94	0:26:00	0.46	0.78	1.09	1.37	44	1:16:00	0.65	1.06	1.43	1.75	6	2:06:00	1.72	2.41	2.96	3.37	56	2:56:00	0.58	0.97	1.31	1.62	106	3:46:00	0.43	0.75	1.04	1.32
93	0:27:00	0.46	0.79	1.09	1.37	43	1:17:00	0.66	1.07	1.44	1.76	7	2:07:00	1.59	2.26	2.80	3.21	57	2:57:00	0.58	0.96	1.30	1.61	107	3:47:00	0.43	0.74	1.04	1.31
92	0:28:00	0.46	0.79	1.10	1.38	42	1:18:00	0.67	1.08	1.45	1.78	8	2:08:00	1.49	2.14	2.66	3.07	58	2:58:00	0.57	0.95	1.29	1.60	108	3:48:00	0.43	0.74	1.04	1.31
91	0:29:00	0.46	0.79	1.10	1.38	41	1:19:00	0.67	1.10	1.47	1.79	9	2:09:00	1.41	2.04	2.55	2.95	59	2:59:00	0.57	0.95	1.29	1.59	109	3:49:00	0.43	0.74	1.03	1.30
90	0:30:00	0.47	0.80	1.11	1.39	40	1:20:00	0.68	1.11	1.48	1.81	10	2:10:00	1.34	1.95	2.45	2.85	60	3:00:00	0.56	0.94	1.28	1.58	110	3:50:00	0.42	0.74	1.03	1.30
89	0:31:00	0.47	0.80	1.11	1.39	39	1:21:00	0.69	1.12	1.49	1.82	11	2:11:00	1.28	1.88	2.37	2.76	61	3:01:00	0.56	0.93	1.27	1.57	111	3:51:00	0.42	0.73	1.03	1.30
88	0:32:00	0.47	0.81	1.11	1.40	38	1:22:00	0.70	1.13	1.51	1.84	12	2:12:00	1.22	1.81	2.30	2.69	62	3:02:00	0.55	0.93	1.26	1.57	112	3:52:00	0.42	0.73	1.02	1.29
87	0:33:00	0.47	0.81	1.12	1.40	37	1:23:00	0.71	1.14	1.52	1.85	13	2:13:00	1.18	1.75	2.23	2.62	63	3:03:00	0.55	0.92	1.26	1.56	113	3:53:00	0.42	0.73	1.02	1.29
86	0:34:00	0.48	0.81	1.12	1.41	36	1:24:00	0.72	1.15	1.54	1.87	14	2:14:00	1.13	1.70	2.17	2.55	64	3:04:00	0.55	0.92	1.25	1.55	114	3:54:00	0.42	0.73	1.02	1.28
85	0:35:00	0.48	0.82	1.13	1.41	35	1:25:00	0.73	1.17	1.55	1.89	15	2:15:00	1.10	1.65	2.11	2.50	65	3:05:00	0.54	0.91	1.24	1.54	115	3:55:00	0.41	0.72	1.01	1.28
84	0:36:00	0.48	0.82	1.13	1.42	34	1:26:00	0.74	1.18	1.57	1.91	16	2:16:00	1.06	1.61	2.07	2.44	66	3:06:00	0.54	0.90	1.24	1.53	116	3:56:00	0.41	0.72	1.01	1.28
83	0:37:00	0.48	0.82	1.14	1.42	33	1:27:00	0.75	1.20	1.59	1.92	17	2:17:00	1.03	1.57	2.02	2.39	67	3:07:00	0.53	0.90	1.23	1.53	117	3:57:00	0.41	0.72	1.01	1.27
82	0:38:00	0.49	0.83	1.14	1.43	32	1:28:00	0.76	1.21	1.60	1.94	18	2:18:00	1.00	1.53	1.98	2.35	68	3:08:00	0.53	0.89	1.22	1.52	118	3:58:00	0.41	0.72	1.00	1.27
81	0:39:00	0.49	0.83	1.15	1.44	31	1:29:00	0.77	1.23	1.62	1.96	19	2:19:00	0.98	1.50	1.94	2.31	69	3:09:00	0.53	0.89	1.22	1.51	119	3:59:00	0.41	0.71	1.00	1.27
80	0:40:00	0.49	0.84	1.15	1.44	30	1:30:00	0.78	1.24	1.64	1.99	20	2:20:00	0.95	1.47	1.90	2.27	70	3:10:00	0.52	0.88	1.21	1.51	120	4:00:00	0.41	0.71	1.00	1.26
79	0:41:00	0.49	0.84	1.16	1.45	29	1:31:00	0.80	1.26	1.66	2.01	21	2:21:00	0.93	1.44	1.87	2.23	71	3:11:00	0.52	0.88	1.20	1.50						
78	0:42:00	0.50	0.85	1.16	1.45	28	1:32:00	0.81	1.28	1.68	2.03	22	2:22:00	0.91	1.41	1.84	2.20	72	3:12:00	0.52	0.87	1.20	1.49						
77	0:43:00	0.50	0.85	1.17	1.46	27	1:33:00	0.82	1.30	1.71	2.06	23	2:23:00	0.89	1.39	1.81	2.17	73	3:13:00	0.51	0.87	1.19	1.48						
76	0:44:00	0.50	0.85	1.17	1.47	26	1:34:00	0.84	1.32	1.73	2.08	24	2:24:00	0.87	1.36	1.78	2.14	74	3:14:00	0.51	0.86	1.19	1.48						
75	0:45:00	0.51	0.86	1.18	1.47	25	1:35:00	0.86	1.34	1.75	2.11	25	2:25:00	0.86	1.34	1.75	2.11	75	3:15:00	0.51	0.86	1.18	1.47	**4-hr Total Rainfall Depth(mm)**		**180.44**	**281.91**	**369.83**	**446.05**
74	0:46:00	0.51	0.86	1.19	1.48	24	1:36:00	0.87	1.36	1.78	2.14	26	2:26:00	0.84	1.32	1.73	2.08	76	3:16:00	0.50	0.85	1.17	1.47						
73	0:47:00	0.51	0.87	1.19	1.48	23	1:37:00	0.89	1.39	1.81	2.17	27	2:27:00	0.82	1.30	1.71	2.06	77	3:17:00	0.50	0.85	1.17	1.46						
72	0:48:00	0.52	0.87	1.20	1.49	22	1:38:00	0.91	1.41	1.84	2.20	28	2:28:00	0.81	1.28	1.68	2.03	78	3:18:00	0.50	0.85	1.16	1.45						
71	0:49:00	0.52	0.88	1.20	1.50	21	1:39:00	0.93	1.44	1.87	2.23	29	2:29:00	0.80	1.26	1.66	2.01	79	3:19:00	0.49	0.84	1.16	1.45						

Noted:

i. The storm constants are based on the SDM Corrigendum No. 1/2024

ii. The climate change effect is adopted in accordance with the DSD-SDM. A total increase of 28.1% in rainfall is added to above four design rainfall profiles, including 16% increase due to climate change up to end of 21st Century as per Table 28 of the SDM Corrigendum No. 1/2022 and 12.1% increase for design allowance as per Table 31 of the SDM Corrigendum No. 1/2022.

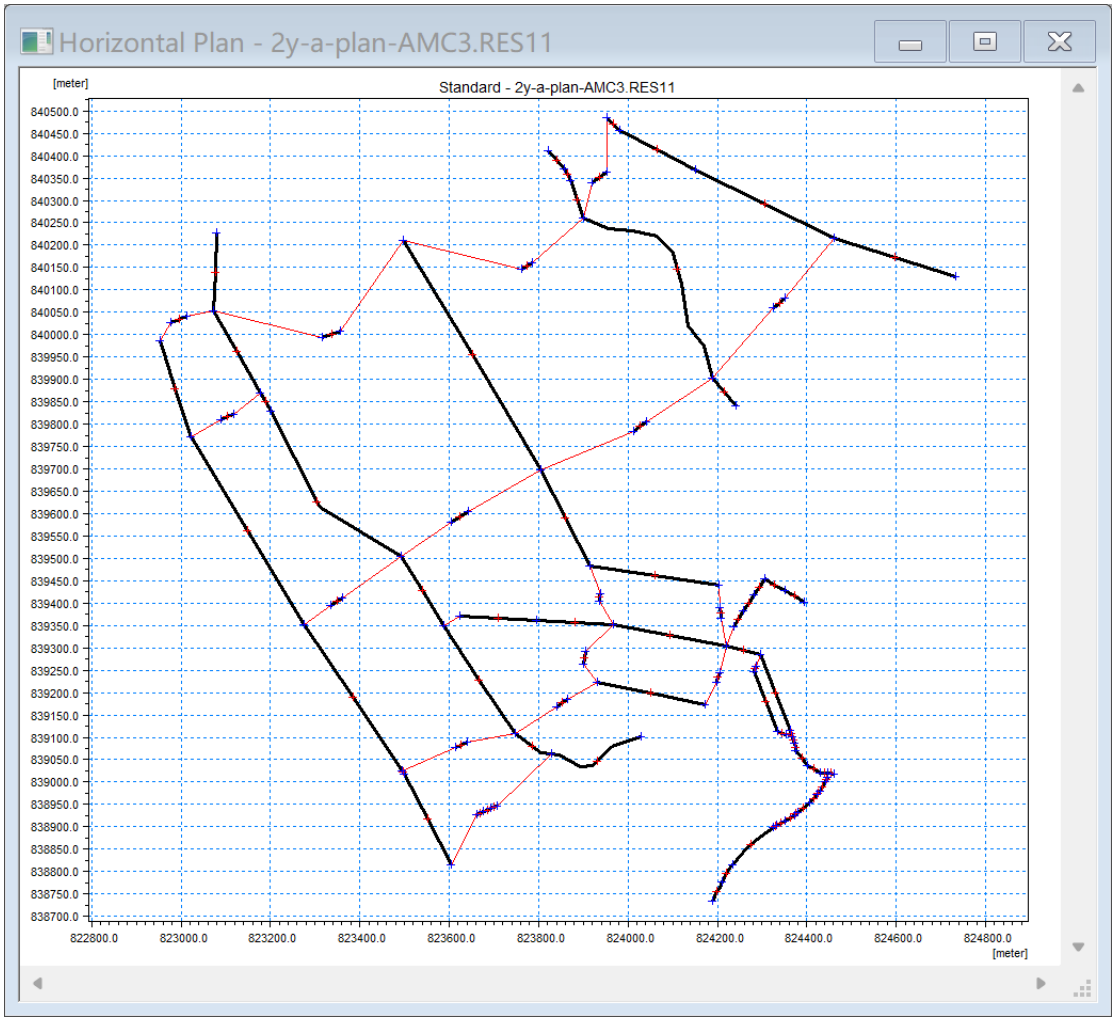
Calculational Examples：1 in 2yr 0:00:00(t=120) Rainfall Depth =28.1%*[446.1*[3.38+2*(1-0.463)*120]/(2*120+3.38)$^{0.463+1}$]/60=0.41 (mm)

Appendix E

Catchment Characteristic Input for
MP02A-A1 to A8 and AA-AE
(Information Extracted from Mike11 RR Model)
&
Modelling settings in Mike 11 for Wetland
Restoration Area

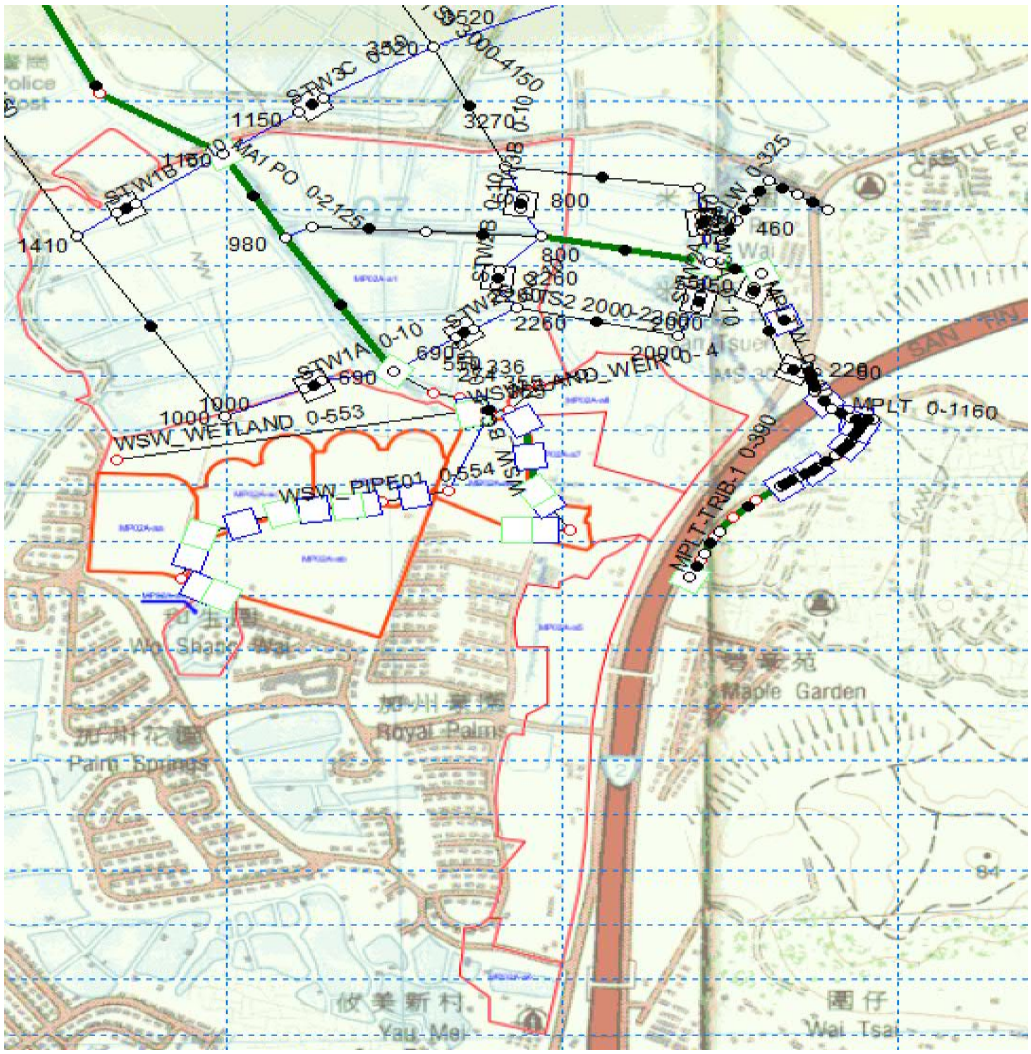
Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Drainage Network



Catchment Characteristic Input in Mike 11 Hydraulic Model

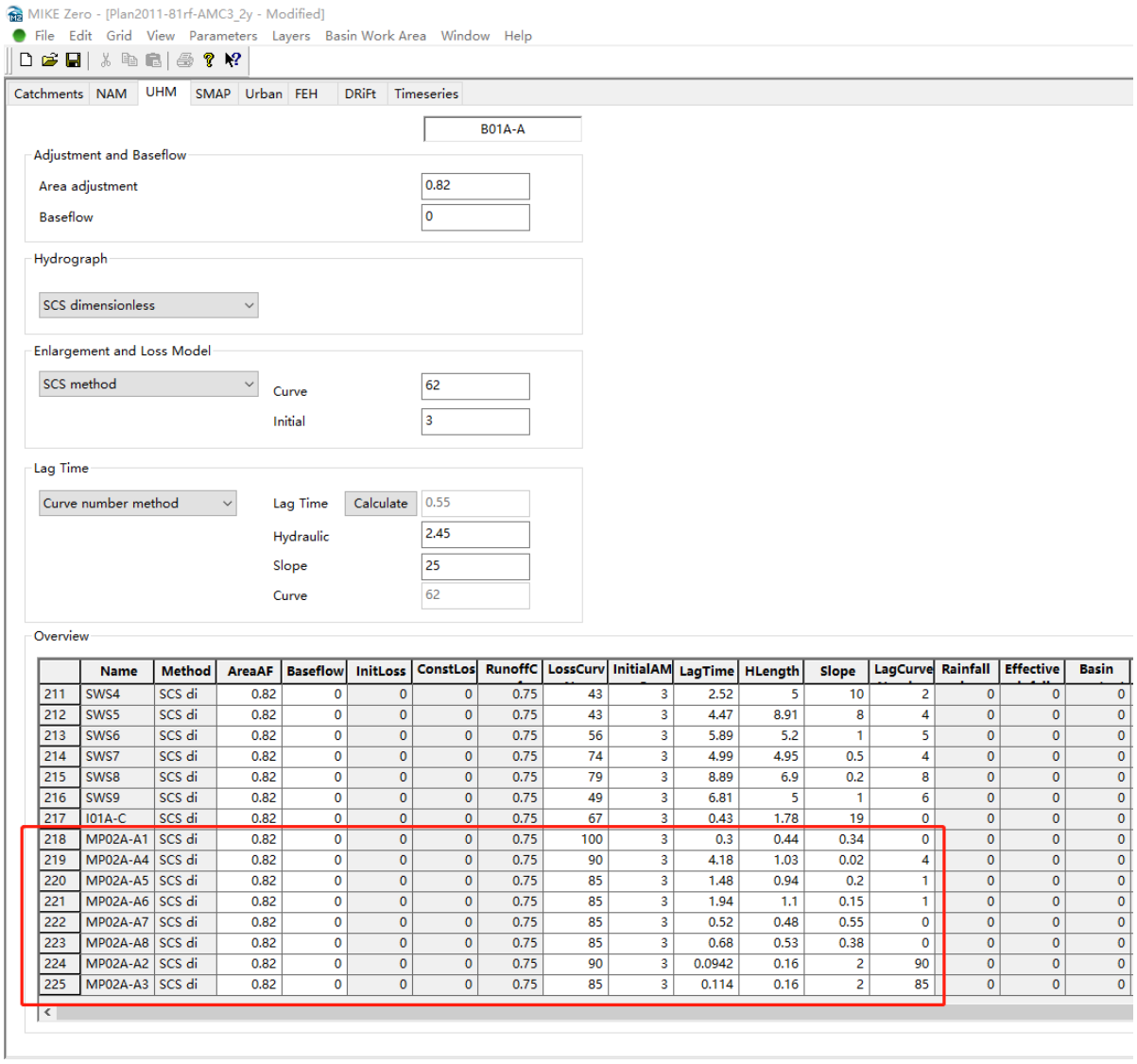
Post-Development Drainage Network



Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Condition of Catchment MP02A-A1 to A8

(Areal reduction factors of 0.82 and AMC 3 as example)

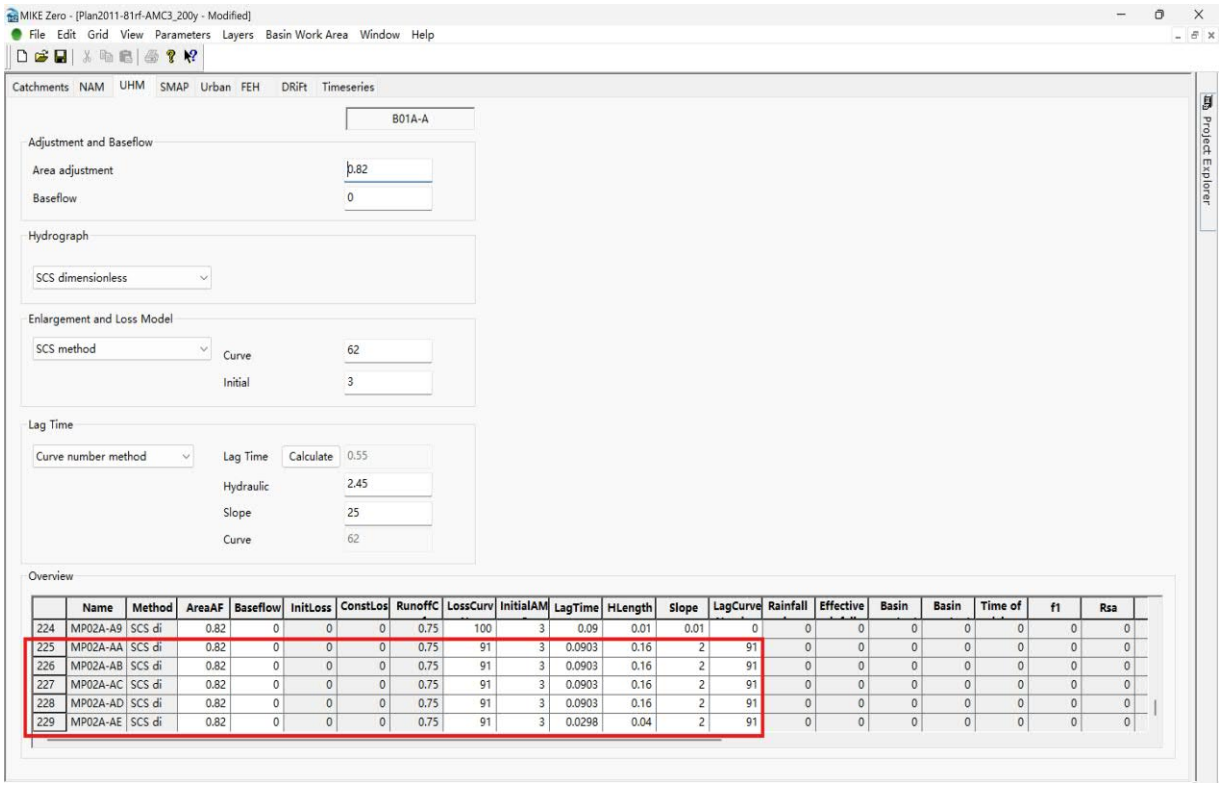


	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin
211	SWS4	SCS di	0.82	0	0	0	0.75	43	3	2.52	5	10	2	0	0	0
212	SWS5	SCS di	0.82	0	0	0	0.75	43	3	4.47	8.91	8	4	0	0	0
213	SWS6	SCS di	0.82	0	0	0	0.75	56	3	5.89	5.2	1	5	0	0	0
214	SWS7	SCS di	0.82	0	0	0	0.75	74	3	4.99	4.95	0.5	4	0	0	0
215	SWS8	SCS di	0.82	0	0	0	0.75	79	3	8.89	6.9	0.2	8	0	0	0
216	SWS9	SCS di	0.82	0	0	0	0.75	49	3	6.81	5	1	6	0	0	0
217	I01A-C	SCS di	0.82	0	0	0	0.75	67	3	0.43	1.78	19	0	0	0	0
218	MP02A-A1	SCS di	0.82	0	0	0	0.75	100	3	0.3	0.44	0.34	0	0	0	0
219	MP02A-A4	SCS di	0.82	0	0	0	0.75	90	3	4.18	1.03	0.02	4	0	0	0
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0
224	MP02A-A2	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
225	MP02A-A3	SCS di	0.82	0	0	0	0.75	85	3	0.114	0.16	2	85	0	0	0

Catchment Characteristic Input in Mike 11 Hydraulic Model

Post-Development Condition of Catchment MP02A-AA to AE

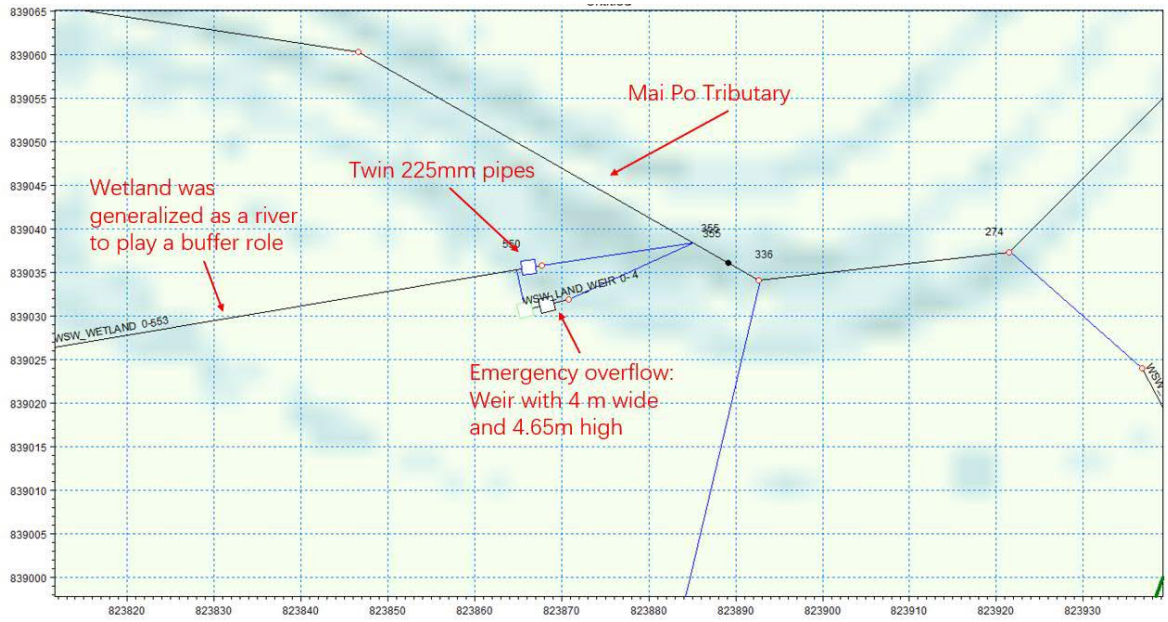
(Areal reduction factors of 0.82 and AMC 3 as example)



	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin	Basin	Time of	f1	Rsa
224	MP02A-A9	SCS di	0.82	0	0	0	0.75	100	3	0.09	0.01	0.01	0	0	0	0	0	0	0	0
225	MP02A-AA	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
226	MP02A-AB	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
227	MP02A-AC	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
228	MP02A-AD	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
229	MP02A-AE	SCS di	0.82	0	0	0	0.75	91	3	0.0298	0.04	2	91	0	0	0	0	0	0	0

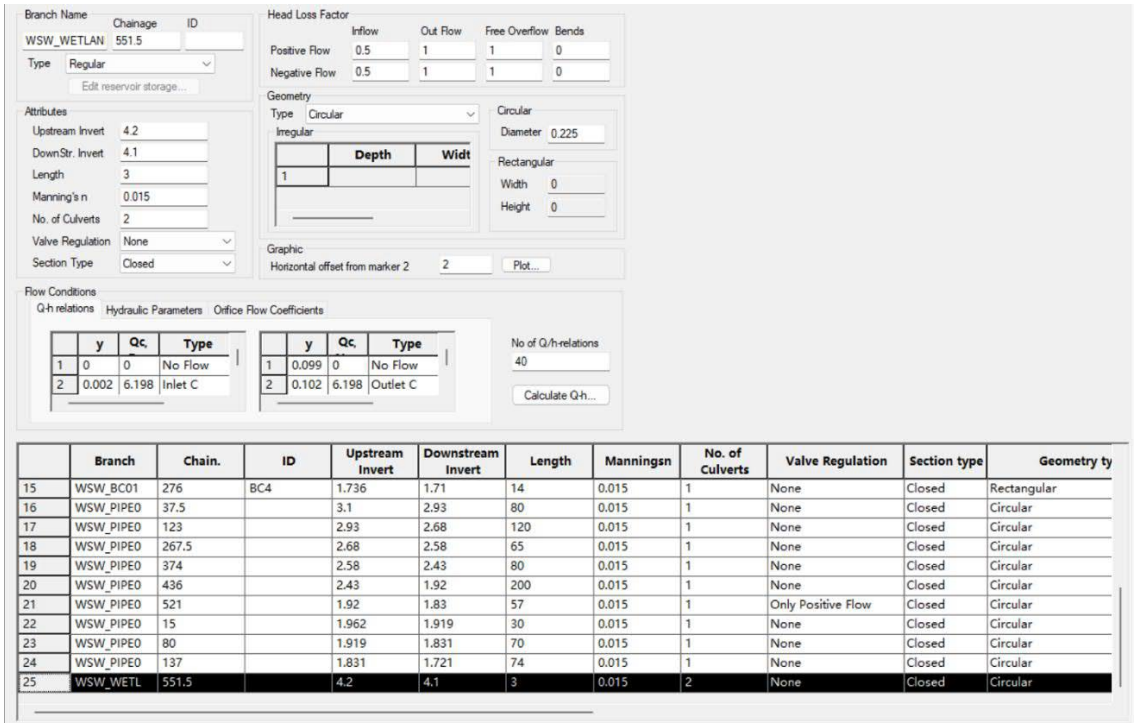
Modelling settings in Mike 11 for Wetland Restoration Area

Wetland Network



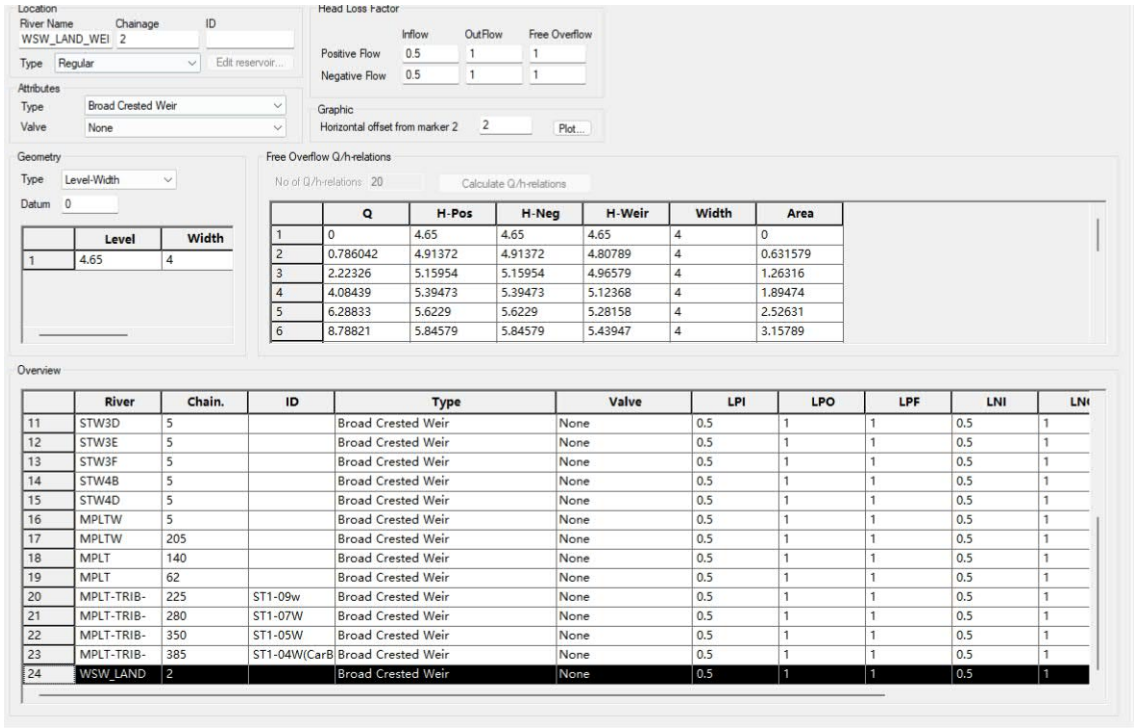
Modelling settings in Mike 11 for Wetland Restoration Area

a. Twin 225mm pipes



	Branch	Chain.	ID	Upstream Invert	Downstream Invert	Length	Manningsn	No. of Culverts	Valve Regulation	Section type	Geometry ty
15	WSW_BC01	276	BC4	1.736	1.71	14	0.015	1	None	Closed	Rectangular
16	WSW_PIPE0	37.5		3.1	2.93	80	0.015	1	None	Closed	Circular
17	WSW_PIPE0	123		2.93	2.68	120	0.015	1	None	Closed	Circular
18	WSW_PIPE0	267.5		2.68	2.58	65	0.015	1	None	Closed	Circular
19	WSW_PIPE0	374		2.58	2.43	80	0.015	1	None	Closed	Circular
20	WSW_PIPE0	436		2.43	1.92	200	0.015	1	None	Closed	Circular
21	WSW_PIPE0	521		1.92	1.83	57	0.015	1	Only Positive Flow	Closed	Circular
22	WSW_PIPE0	15		1.962	1.919	30	0.015	1	None	Closed	Circular
23	WSW_PIPE0	80		1.919	1.831	70	0.015	1	None	Closed	Circular
24	WSW_PIPE0	137		1.831	1.721	74	0.015	1	None	Closed	Circular
25	WSW_WETL	551.5		4.2	4.1	3	0.015	2	None	Closed	Circular

b. Emergency Overflow: Weir



	Q	H-Pos	H-Neg	H-Weir	Width	Area
1	0	4.65	4.65	4.65	4	0
2	0.786042	4.91372	4.91372	4.80789	4	0.631579
3	2.22326	5.15954	5.15954	4.96579	4	1.26316
4	4.08439	5.39473	5.39473	5.12368	4	1.89474
5	6.28833	5.6229	5.6229	5.28158	4	2.52631
6	8.78821	5.84579	5.84579	5.43947	4	3.15789

Overview

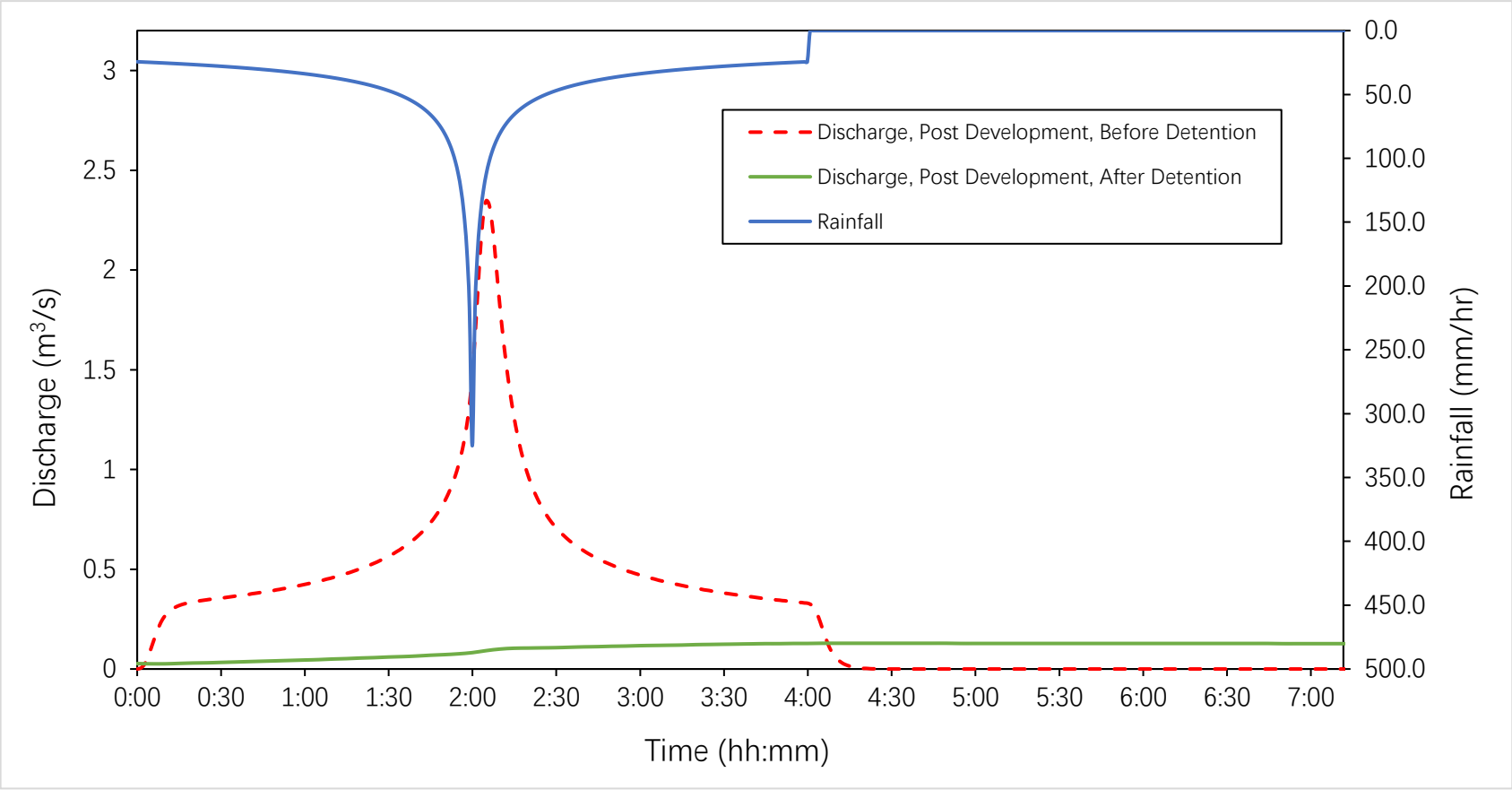
	River	Chain.	ID	Type	Valve	LPI	LPO	LPF	LNI	LN
11	STW3D	5		Broad Crested Weir	None	0.5	1	1	0.5	1
12	STW3E	5		Broad Crested Weir	None	0.5	1	1	0.5	1
13	STW3F	5		Broad Crested Weir	None	0.5	1	1	0.5	1
14	STW4B	5		Broad Crested Weir	None	0.5	1	1	0.5	1
15	STW4D	5		Broad Crested Weir	None	0.5	1	1	0.5	1
16	MPLTW	5		Broad Crested Weir	None	0.5	1	1	0.5	1
17	MPLTW	205		Broad Crested Weir	None	0.5	1	1	0.5	1
18	MPLT	140		Broad Crested Weir	None	0.5	1	1	0.5	1
19	MPLT	62		Broad Crested Weir	None	0.5	1	1	0.5	1
20	MPLT-TRIB-	225	ST1-09w	Broad Crested Weir	None	0.5	1	1	0.5	1
21	MPLT-TRIB-	280	ST1-07W	Broad Crested Weir	None	0.5	1	1	0.5	1
22	MPLT-TRIB-	350	ST1-05W	Broad Crested Weir	None	0.5	1	1	0.5	1
23	MPLT-TRIB-	385	ST1-04W(CarB	Broad Crested Weir	None	0.5	1	1	0.5	1
24	WSW_LAND	2		Broad Crested Weir	None	0.5	1	1	0.5	1

Appendix F

Hydrograph of Wetland Restoration Area

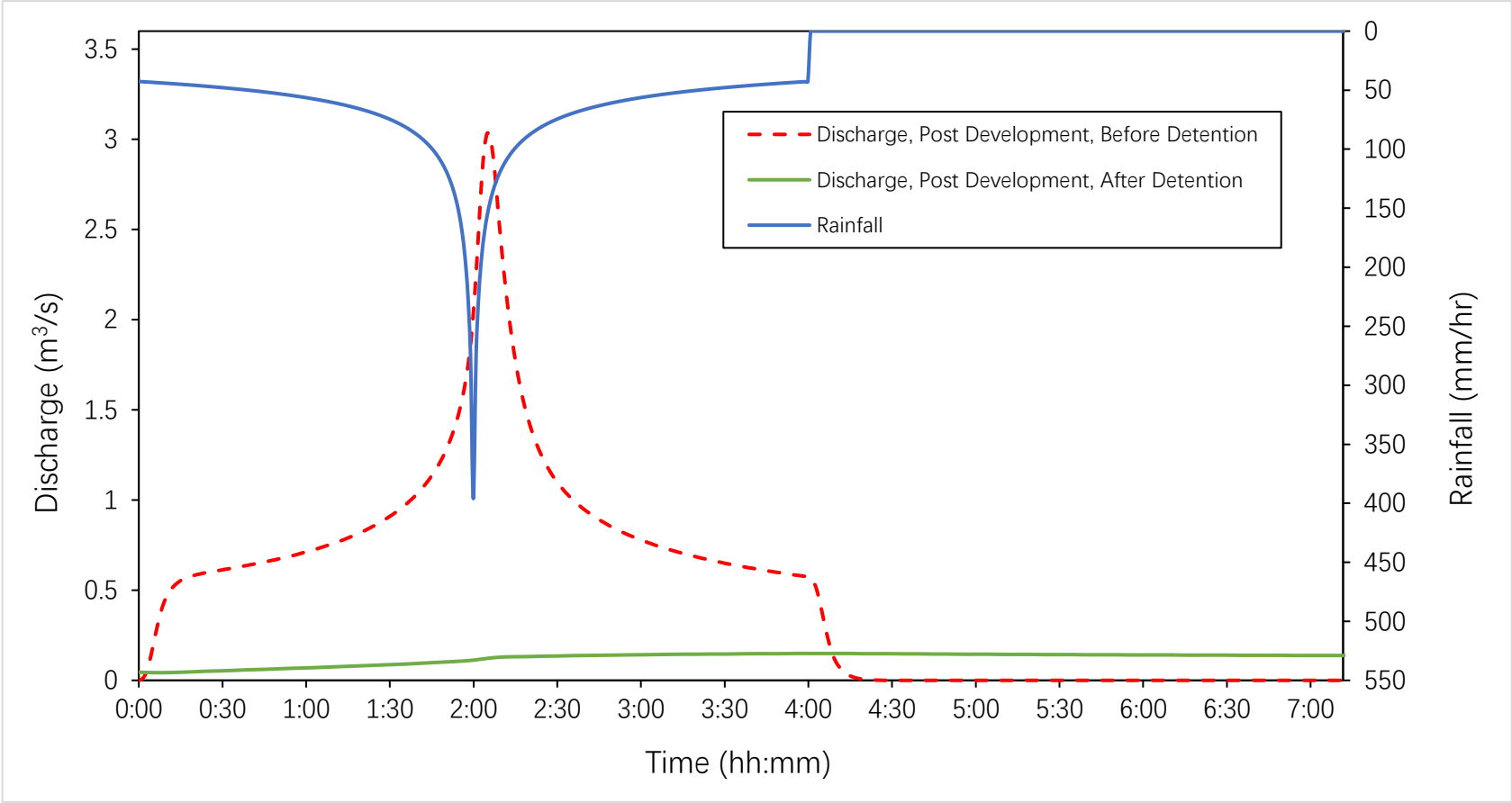
Hydrograph of Wetland Restoration Area

2yr Rainstorm Event, AMC3, RF=1.0



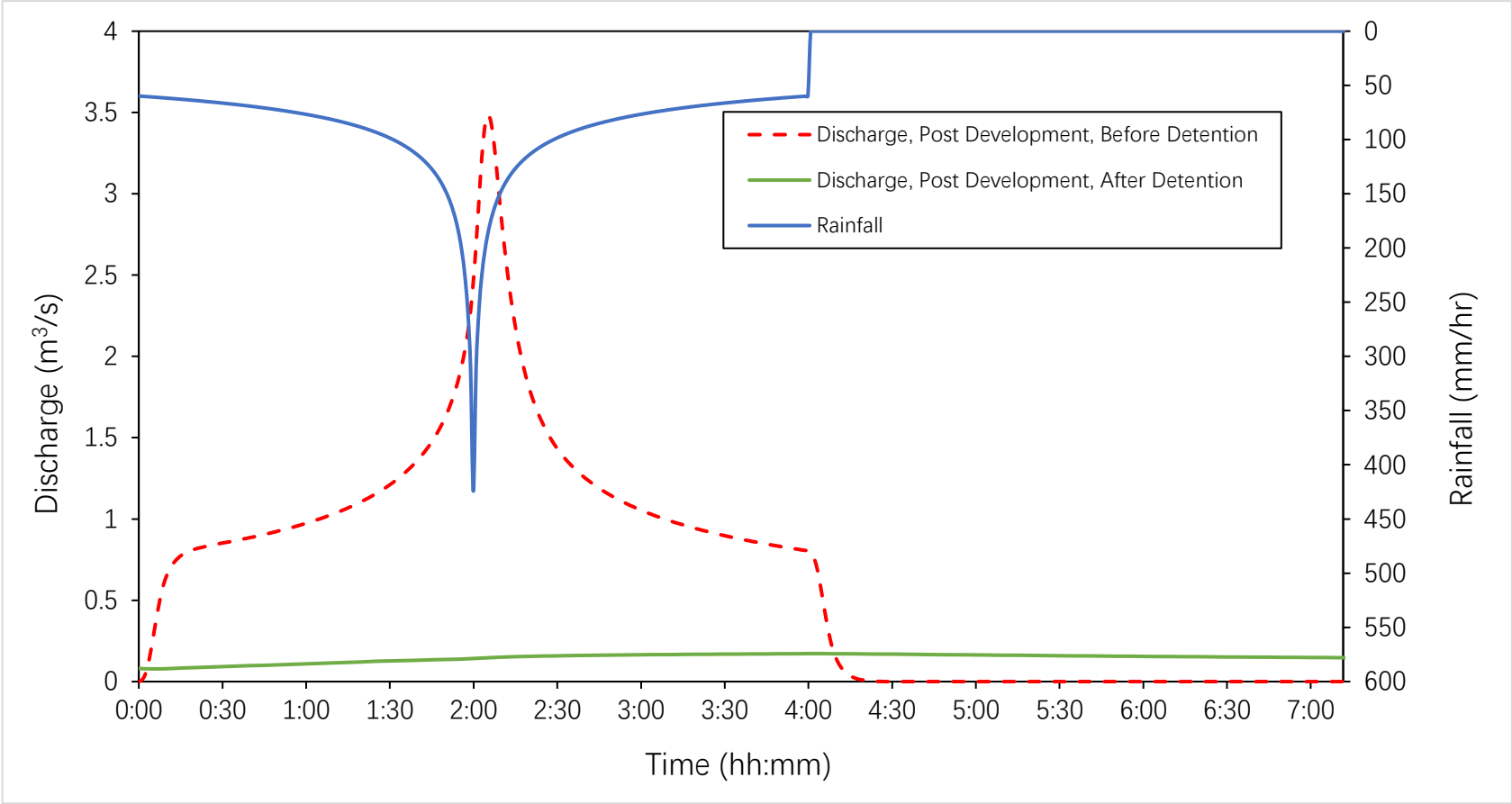
Hydrograph of Wetland Restoration Area

10yr Rainstorm Event, AMC3, RF=1.0



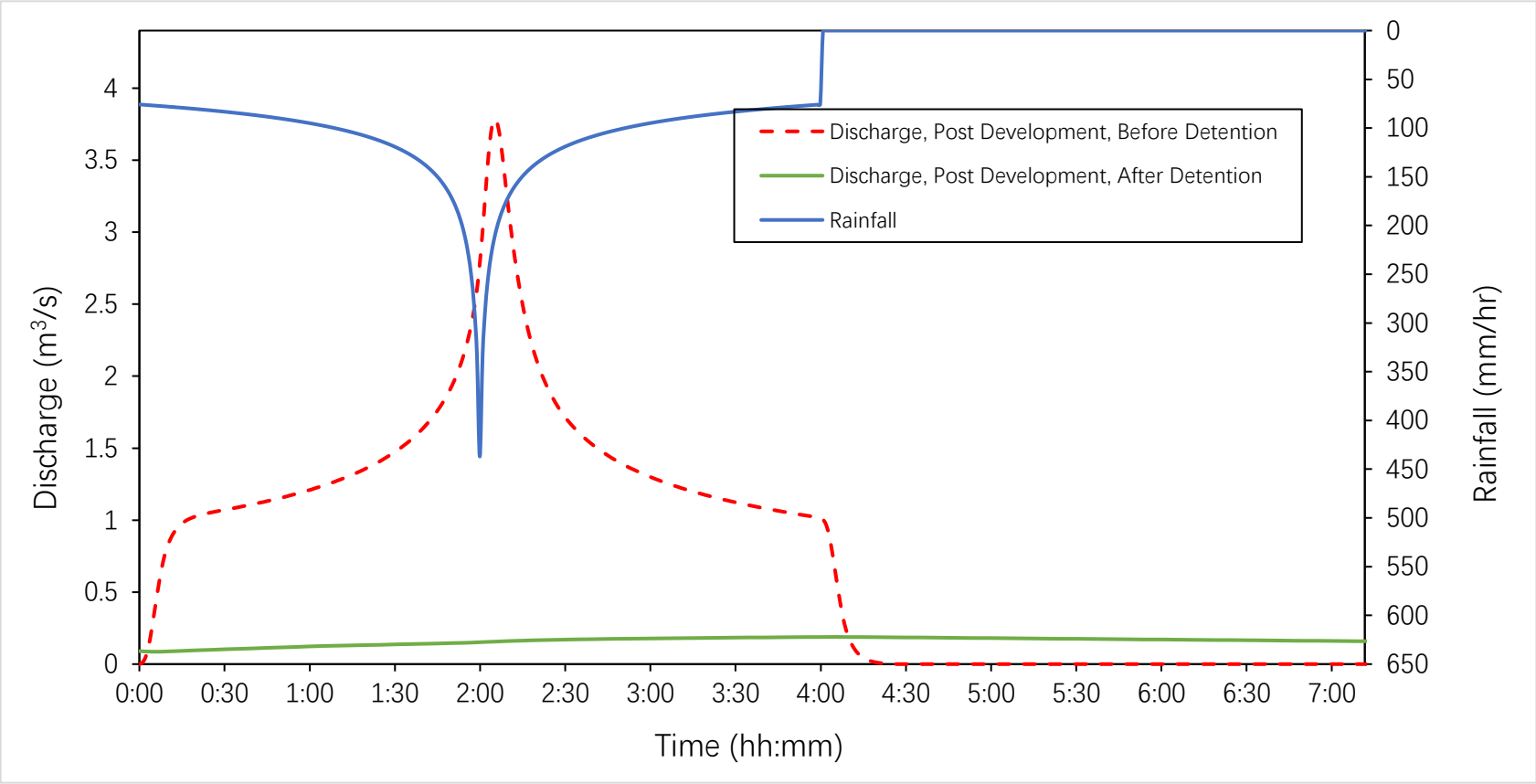
Hydrograph of Wetland Restoration Area

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Wetland Restoration Area

200yr Rainstorm Event, AMC3, RF=1.0

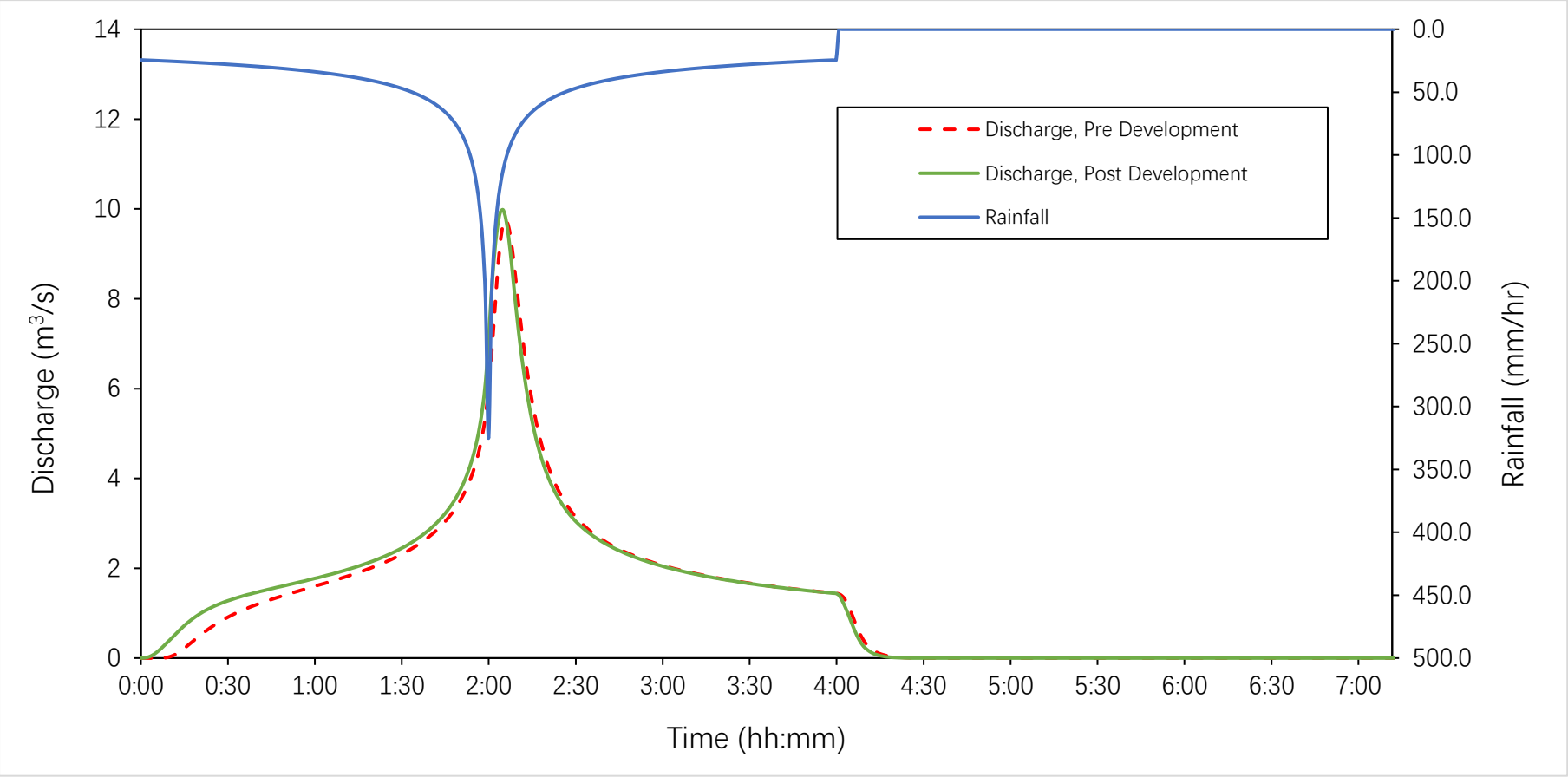


Appendix G

Hydrograph of the Proposed Development

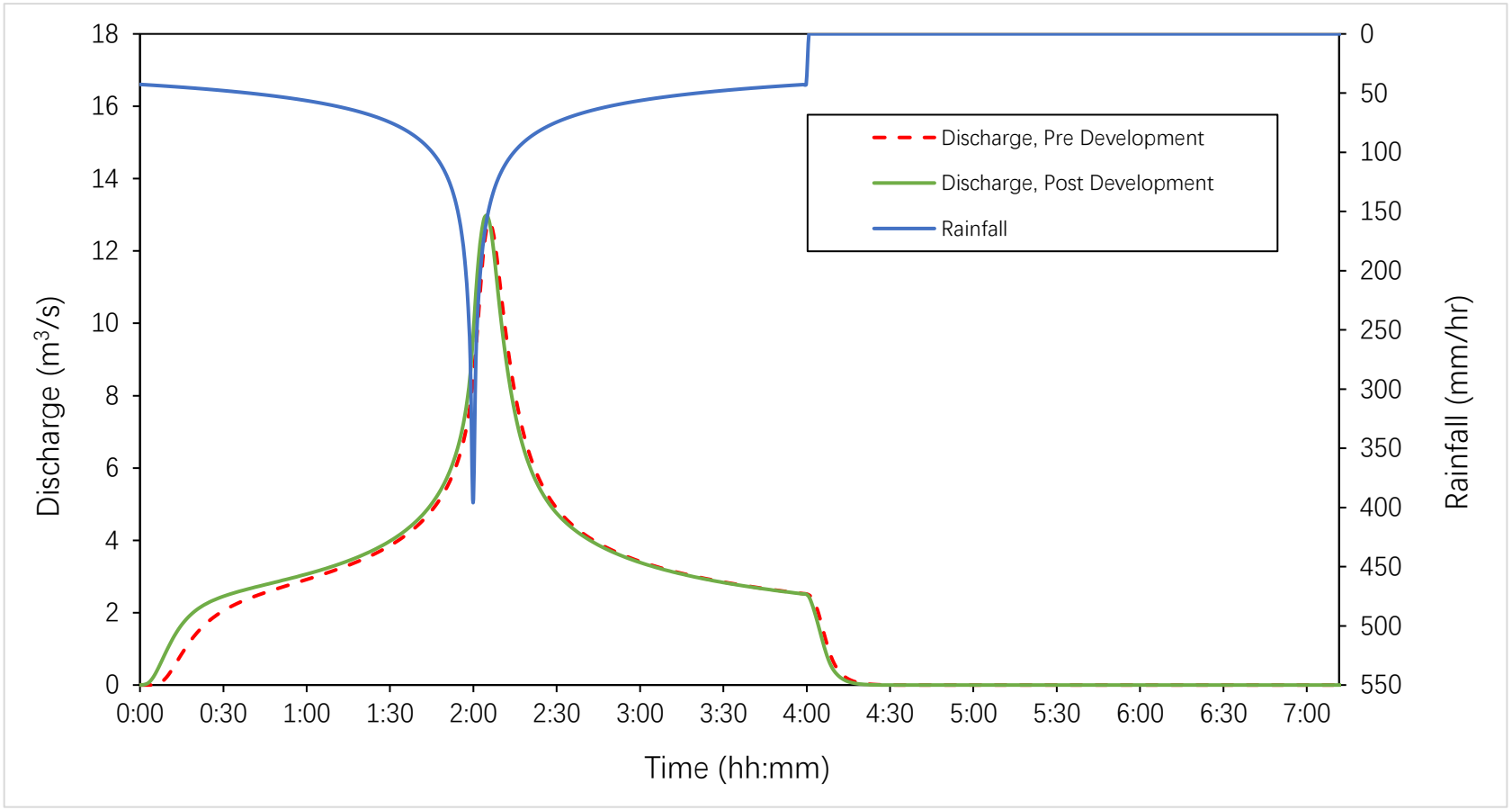
Hydrograph of Proposed Development

2yr Rainstorm Event, AMC3, RF=1.0



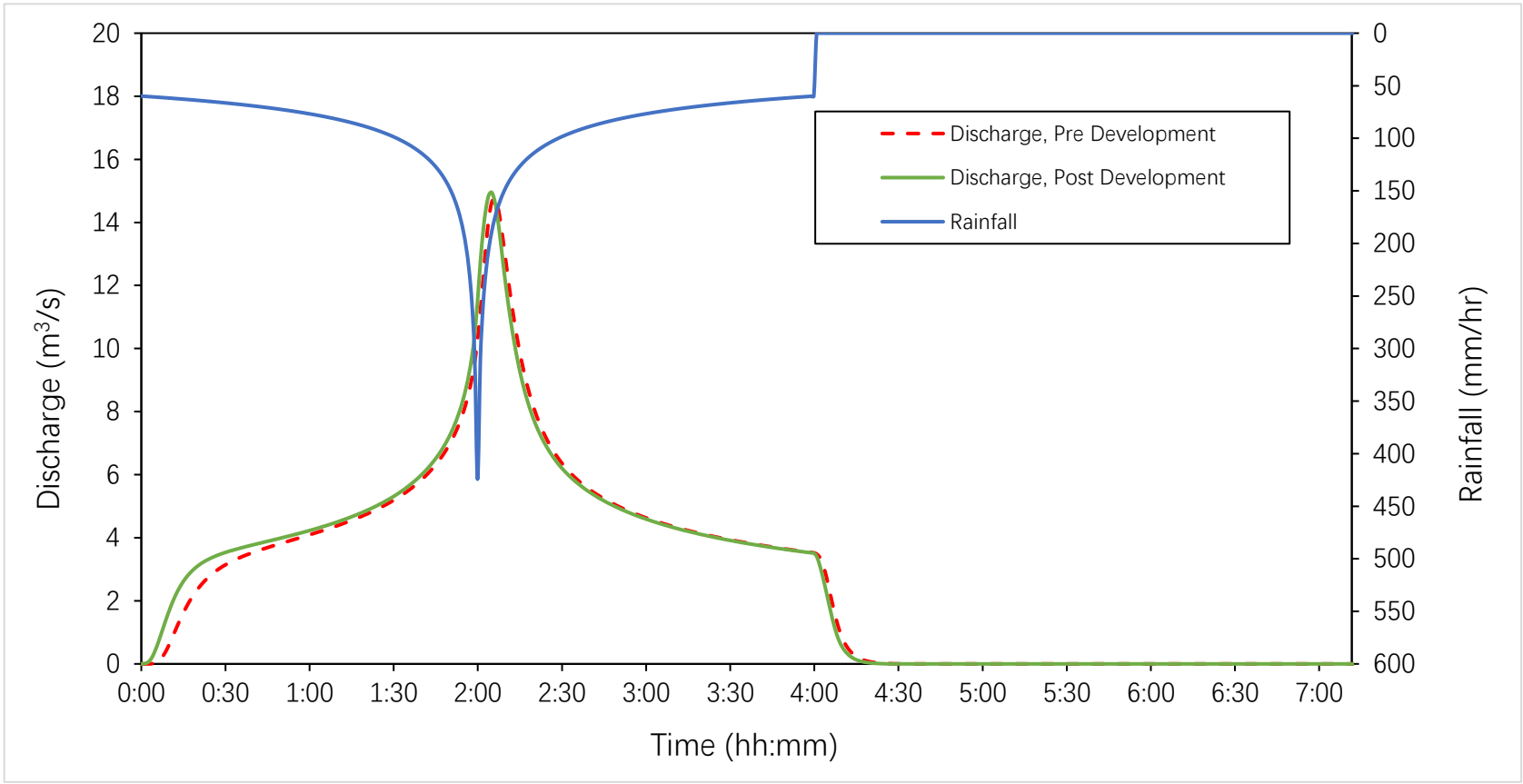
Hydrograph of Proposed Development

10yr Rainstorm Event, AMC3, RF=1.0



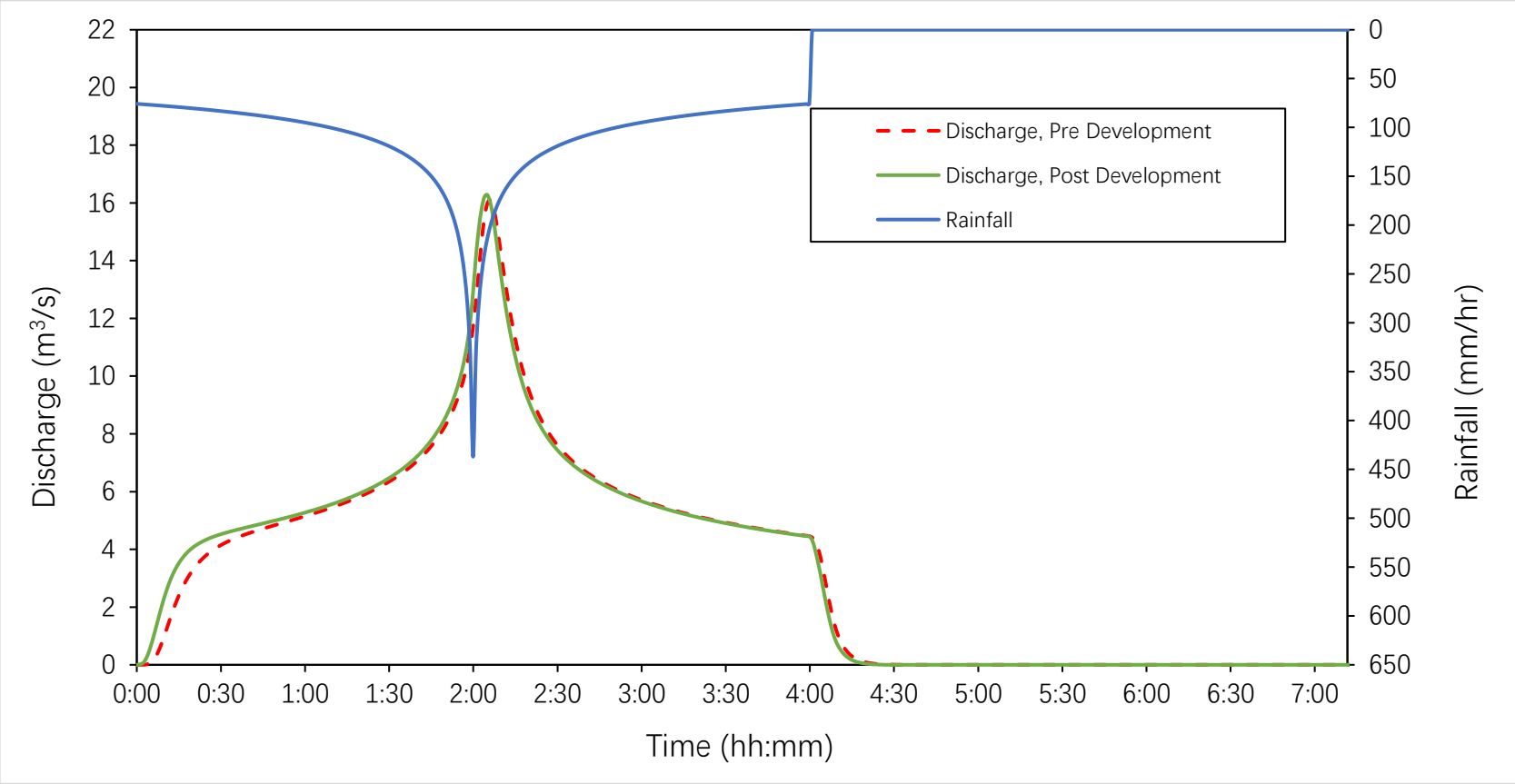
Hydrograph of Proposed Development

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Proposed Development

200yr Rainstorm Event, AMC3, RF=1.0



Appendix H

Summary of Hydrodynamic Modelling Results

(AMC3, Scenario C)

Pre-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c(m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.569	4.571	3.742	4.398	3.835	4.305	3.890	4.250
MAI PO 490	3.563	4.577	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 490	3.563	4.577	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 980	3.557	4.583	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 980	3.557	4.583	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1620	3.281	4.859	3.687	4.453	3.809	4.331	3.867	4.273
MAI PO 1630	3.040	5.100	3.445	4.695	3.726	4.414	3.818	4.322
MAI PO 1630	3.040	5.100	3.445	4.695	3.726	4.414	3.818	4.322
MAI PO 1880	2.737	5.403	3.307	4.833	3.657	4.483	3.756	4.384
MAI PO 1180	2.737	5.403	3.307	4.833	3.657	4.483	3.756	4.384
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Post-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c (m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.546	4.594	3.736	4.404	3.833	4.307	3.888	4.252
MAI PO 274	3.546	4.594	3.739	4.401	3.833	4.307	3.890	4.250
MAI PO 274	3.546	4.594	3.739	4.401	3.833	4.307	3.890	4.250
MAI PO 336	3.545	4.595	3.735	4.405	3.832	4.308	3.888	4.252
MAI PO 336	3.545	4.595	3.735	4.405	3.832	4.308	3.888	4.252
MAI PO 355	3.545	4.595	3.735	4.405	3.832	4.308	3.887	4.253
MAI PO 355	3.545	4.595	3.735	4.405	3.832	4.308	3.887	4.253
MAI PO 690	3.543	4.597	3.727	4.413	3.823	4.317	3.876	4.264
MAI PO 690	3.543	4.597	3.727	4.413	3.823	4.317	3.876	4.264
MAI PO 980	3.535	4.605	3.723	4.417	3.818	4.322	3.871	4.269
MAI PO 980	3.535	4.605	3.723	4.417	3.818	4.322	3.871	4.269
MAI PO 1150	3.420	4.720	3.707	4.433	3.807	4.333	3.860	4.280
MAI PO 1150	3.420	4.720	3.707	4.433	3.807	4.333	3.860	4.280
MAI PO 1620	3.282	4.858	3.673	4.467	3.804	4.336	3.862	4.278
MAI PO 1630	3.039	5.101	3.424	4.716	3.716	4.424	3.804	4.336
MAI PO 1630	3.039	5.101	3.424	4.716	3.716	4.424	3.804	4.336
MAI PO 1880	2.736	5.404	3.282	4.858	3.647	4.493	3.744	4.396
MAI PO 1880	2.736	5.404	3.282	4.858	3.647	4.493	3.744	4.396
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Note:

1) The Lowest Levee Level from River Chainage from MAI PO 0 to MAIPO 2125 is 8.14mPD.
2) Freeboard = The Lowest Levee Level - Max Water Level

Appendix I

Hydraulic Analysis of the Proposed Drainage Pipe Network

Hydraulic Analysis of the Proposed Drainage Pipe Network at WSW_PIPE01 554 (the location is shown in Figure 6)

Extracted from MIKE11 model

Freeboard of Drainage Pipe at WSW_PIPE01 554

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.503	3.897
2C	3.545	3.855
10A	3.684	3.716
10B	3.715	3.685
10C	3.735	3.665
50A	3.770	3.630
50B	3.935	3.465
50C	3.832	3.568
200A	3.825	3.575
200B	4.145	3.255
200C	3.888	3.512

Note:

1) The average ground level of the drainage manhole is approximate 7.4mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix J

Hydraulic Analysis of the Proposed
3.5m(W) x 2.5m(H) Box Culvert

Hydraulic Analysis of the Proposed 3.5m(W) × 2.5m(H) Box Culvert at WSW_BC01 283 (the location is shown in Figure 6)

Extracted from MIKE11 model

Freeboard of Box Culvert at WSW_BC01 283

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.503	2.997
2C	3.546	2.954
10A	3.684	2.816
10B	3.715	2.785
10C	3.739	2.761
50A	3.771	2.729
50B	3.935	2.565
50C	3.833	2.667
200A	3.825	2.675
200B	4.145	2.355
200C	3.890	2.610

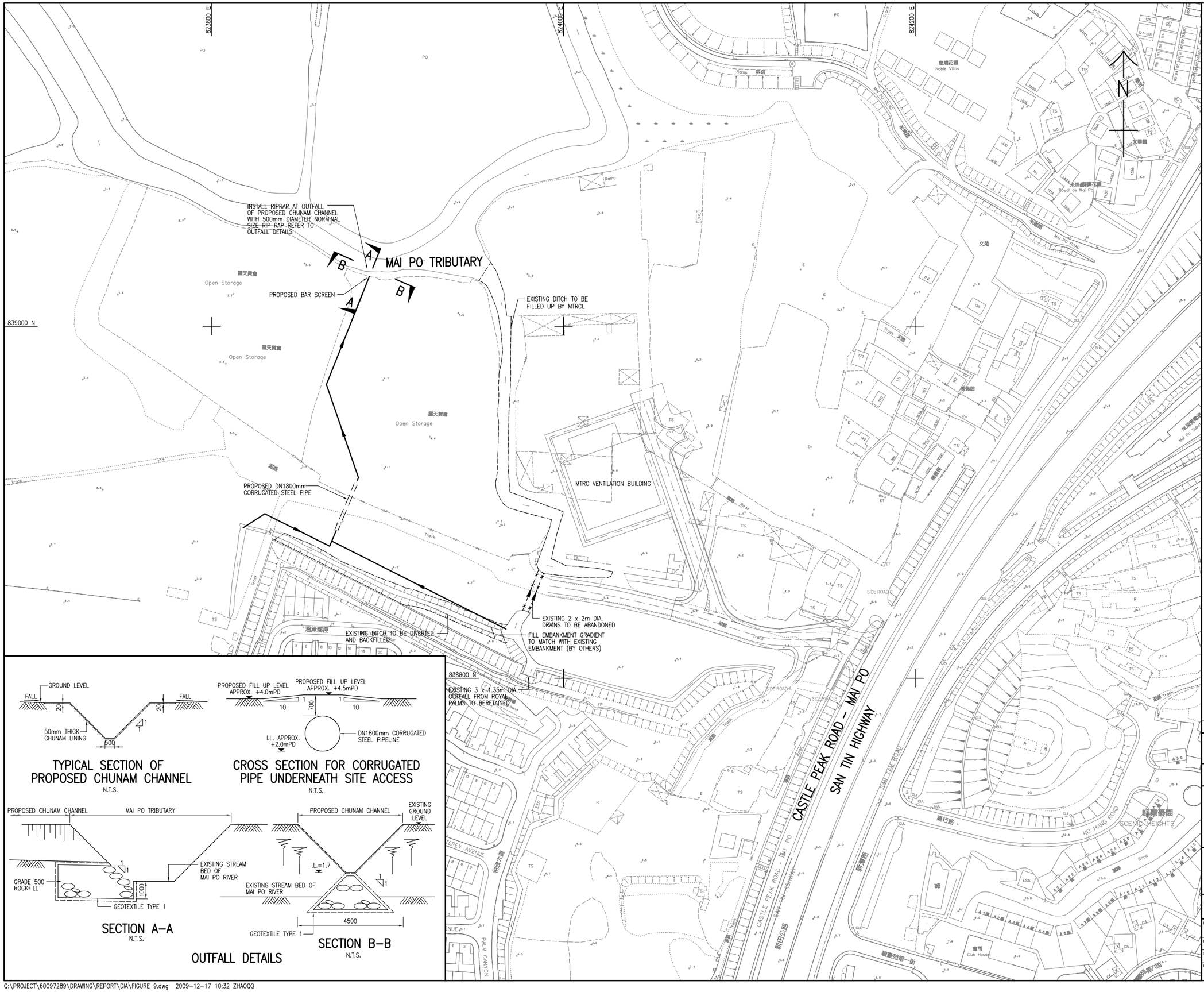
Note:

1) The average ground level of the box culvert is approximate 6.5mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix K

Proposed Temporary Drainage Diversion



LEGEND:

- PROPOSED CORRUGATED STEEL PIPE
- PROPOSED CHUNAM CHANNEL
- EXISTING DRAINAGE PIPE TO BE ABANDONED

REV. 修訂	DESCRIPTION 內容摘要	CHECKED 複核	DATE 日期

PROFIT POINT ENTERPRISE LIMITED

PROPOSED COMPREHENSIVE RESIDENTIAL DEVELOPMENT AT WO SHANG WAI

PROPOSED TEMPORARY DRAINAGE DIVERSION

AECOM

DRG.NO. 圖紙編號 FIGURE 9

DESIGNED BY 設計	–	CONTRACT NO. 合約編號	P. Dir. APPROVED 批准人
DRAWN BY 繪圖	LWL	STATUS 階段	
SCALE 比例	A1 1:1000		
DIMENSIONS ARE IN 尺寸單位	METER		

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Q:\PROJECT\60097289\DRAWING\REPORT\DIA\FIGURE 9.dwg 2009-12-17 10:32 ZHAOQQ

Appendix 6: Sewerage Impact Assessment

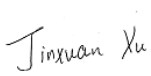
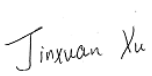
Sewerage Impact Assessment (SIA)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Date: 20 January 2025

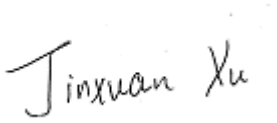
Revision 1

Quality Management

Issue/revision	0	1	2	
Remarks				
Date	23 Jul. 2024	20 Jan. 2025		
Prepared by	Jinxuan Xu	Jinxuan Xu		
Signature				
Checked by	Alex Cheung	Chan, Connie Lai-Shan		
Signature				
Authorised by	Kau, Paul	Kau, Paul		
Signature				
Project number				
Report number	0	1		

Signatures

Prepared by



Jinxuan Xu
Consultant

Reviewed by

Chan, Connie Lai-Shan

Senior Associate

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Appendix A Estimation of Sewage Flow from Swimming Pool

1 INTRODUCTION

1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Sewerage Impact Assessment (SIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the sewage generated due to the proposed comprehensive residential development.

1.2 The purpose of this application is to propose amendments to the previously approved application No. A/YL-MP/344.

1.3 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.4 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.5 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.6 The proposed development consists of a mix of 3 stories detached and semi-detached house and 6, 8 and 10 storey residential tower. 48,716 m^2 of land are reserved for landscaping purpose as open greenery area.

1.7 The proposed development consists of 3,571 housing unit in total with a plot ratio of 1.28 and an average unit gross floor area of 74.5 m^2.

1.8 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff. For assessment in this report, the land use is considered hospital, and the staff are assumed to be non-residential.

2 OUTLINE OF APPLICATION SITE AND PLANNED SEWERAGE CONDITIONS

2.1 The Application Site is classified as unsewered area with respect to the Yuen Long and Kam Tin Sewerage Master Plan (YLKT SMP).

2.2 According to the approved EIA report for the Project "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation" (EIA-302/2023), a new tertiary effluent polishing plant, namely San Tin Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m3/day by 2031, and 125,000 m3/day by 2035. The San Tin EPP is less than 500m northeast to the Application Site, and has plan to collect sewage from nearby developments and villages in Yuen Long.

2.3 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. The sewerage system within the Application Site will be designed to facilitate the future connection to the San Tin EPP.

2.4 In case of mismatching with the implementation program of San Tin EPP, two alternative sewerage discharge options are proposed for the proposed development:

- Alternative Option 1: Construct a temporary onsite Sewage Treatment Plant (STP) and discharge treated effluent from the STP to Mai Po Tributary as a temporary measure before the operation of the San Tin EPP.
- Alternative Option 2: Convey the sewage from the Application Site to Yuen Long Sewage Treatment Works (YLSTW) via Nam Sang Wai sewage pumping station (SPS) by a proposed twin rising mains.

3 ASSESSMENT METHODOLOGY

3.1 The assessment has been carried out in accordance with the guidelines set out in EPD Report No. EPD/TP 1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 ("GESF").

3.2 The projected demand for the sewerage system was identified to estimate the potential sewerage impact on the San Tin EPP, YLSTW, Nam Sang Wai SPS and the proposed temporary sewerage system serving the Application Site.

3.3 With reference to Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF), the Global Unit Flow Factors indicated in **Table 3-1** and the Global Peaking factors shown in **Table 3-2** are adopted for estimation of population and sewage flow generated from the Application Site.

Table 3-1 Global Unit Flow Factor (UFF)

Type	**Units Flow Factors (m^3/person/day)**
Private Housing (R3)	0.37 (Planning)
Staff of Housing (General)	0.28
Domestic (Institutional and special class)	0.19
Staff of RCHE (Commercial J11)	0.28

Table 3-2 Global Peaking Factor

Population	**Global Peaking Factor (excluding stormwater allowance)**
More than 50000	$\text{Max}(\frac{6}{N^{0.175}}, 1.6)$
10,000 – 50,000	3
5,000 – 10,000	4
1,000 – 5,000	5
Less than 1,000	6

4 POPULATION AND SEWAGE FLOW PROJECTION

4.1 The expected amount of sewage generated from the amended comprehensive residential development of this application is tabulated in **Table 4-1** as follow:

Table 4-1Comparison of Flow Projection Between the Last Approved Scheme and the Amended Scheme of This Application

Scenario	Design Population		Unit Flow Factor [(i)] (m^3/head/day)	ADWF (m^3/day)	Total ADWF (m^3/day)	Peaking Factor	Peak Flow (m^3/day)
Approved Scheme in 2024	Resident	2210 [(v)]	0.37	817.7	830.3	4	3291.8
	Staff	10	0.28	2.8		4	
	Pool [(ii)]			9.8		N/A	
Amended Scheme of this Application	Resident of Housing	9998 [(vi)]	0.37	3699.26	3788.04	3	11277.76
	Staff of Housing	80	0.28	22.4		3	
	Pool [(ii)]			43.18[(vii)]		N/A	
	Resident of RCHE	100	0.19	19		3	
	Staff of RCHE	15	0.28	4.2		3	

Note:

(i) The Unit Flow Factor for the resident and staff are extracted from GESF. The Unit Flow Factor for commercial activities type J11, community, social & personal services are adopted for estimating the flow generated by the staff.

(ii) The sewage flow generated from the pools in clubhouse and individual houses is estimated to be 25 m^3/day, 111 m^3/day and 9.8 m^3/day in the last three approved schemes, and 68.5 m^3/day in the amended scheme of this application. The estimation of the sewage flow from pools in the amended scheme of this application is attached in ***Appendix A***.

(iii) Assumes 3 family members in each of the 400 houses in the approved scheme in 2016.

(iv) Assumes 3 family members in each of the 267 houses, 24 family members in House 1 and 29 staff in House 1 in the approved scheme in 2020.

(v) Assumes 2.8 family members in each of the 789 houses in the approved scheme in 2024 based on the 2021 population census for Yuen Long District.

(vi) Assumes 2.8 family members in each of the 3571 houses in the amended scheme of this application based on the 2021 population census for Yuen Long District.

(vii) Flow from the pools is considered as peak flow.

5 SEWERAGE IMPACT ASSESSMENT for SAN TIN EPP

5.1 It is proposed that sewage generated from the Application Site will be discharged to proposed San Tin EPP, which is less than 500m northeast to the Application Site, via a proposed sewer. The proposed possible sewage disposal scheme inside and outside the Application Site is shown in **Figure 2**.

5.2 According to the approved EIA "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation", a new tertiary effluent polishing plant, namely San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m^3/day by 2031, and125,000 m^3/day by 2035. The San Tin EPP has plan to collect sewerage from nearby developments.

5.3 Although San Tin EPP is designed for the project of Sant Tin / Lok Ma Chau Development Node, it still has flexibility of 26,377 m^3/day ADWF for receiving additional sewage flow from developments, existing villages, reject water from Water Reclamation Plant and centrate from Food-Waste Pre-treatment Facilities.

5.4 As such, the San Tin EPP have sufficient capacity to cater for the additional flow of 3,788.04 m^3/day ADWF from the Application Site. There will not be any adverse impact on the existing and planned sewerage system due to the Application Site.

5.5 Currently, there is no information indicating the depth and exact location of proposed connection point to the San Tin EPP, because the San Tin EPP is at very early design stage. Therefore, the type, length, slope and size of the sewerage system from the Application Site to the San Tin EPP cannot be determined at this stage. Meanwhile, area for an internal sewerage pumping station has been reserved, if a twin rising mains is needed in the future, as shown in **Figure 2**.

6 SEWERAGE IMPACT ASSESSMENT for OPTION 1

6.1 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. In case of mismatching with the implementation program of San Tin EPP, alternative schemes are proposed. Option 1 is the provision of a temporary on-site sewage treatment facility with tertiary treatment technology as an interim measure to handle the sewage generated from the proposed development before the availability of San Tin EPP. The treated effluents will discharged to Mai Po Tributary. The proposed possible sewage disposal scheme is shown in **Figure 3**.

Standards and Regulations on Water Quality

6.2 Water quality in Hong Kong is subject to the provisions of the Water Pollution Control Ordinance (Cap 358), 1980 (WPCO). Territorial Water has been subdivided into ten Water Control Zones (WCZ) and four supplementary water control zones. The Application Site is located in the Deep Bay Control Zone. As such, the sewage disposal scheme would have to comply with the Zero Discharge Policy in accordance to Town Planning Board Guidelines (i.e. TPB PG-No. 12C) that there will be no net increase in the pollution loads into the Deep Bay Water Control Zone.

6.3 However, "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach and for this temporary sewage treatment plant, it was not applicable. Instead, besides designing the temporary onsite STP to Group C Inland Waters' discharge standards as a minimum requirement, the design of temporary onsite STP will also follow the below tertiary effluent standards.

Table 6-1 Water Quality Standards of Treated Sewage Effluent to Deep Bay

Parameter	Unit	Tertiary Effluent Standards (Upper Limit)
BOD_5	mg/L	10
TSS	mg/L	10
TN	mg/L	20
TP	mg/L	2

Ammonia-N [(1)]	mg/L	5
E. coli	count/100mL	100 [(2)]

Note:

(1) Ammonia-N standard is applicable for discharge to be made into inland waters of Deep Bay.

(2) *E. coli* standards are set based on the Water Pollution Control Ordinance-Technical Memorandum and receiving water body.

Temporary Onsite STP

6.4 Membrane bio-reactor wastewater treatment technology will be adopted for the temporary with capacity of 3,788.04 m^3/day. The treated effluent will be discharged to the Mai Po Tributary.

6.5 The MBR plant is a combined system of biological treatment and microfiltration process, which is capable of generating high quality effluent. The MBR process operates at a higher biomass concentration than conventional activated sludge system. The pores on the membrane surface have a diameter of 0.04 micrometres, separating bacteria, solid and *E. Coli* in accordance with tertiary effluent standards. The MBR process will be operated at optimum conditions with sufficient retention time in order to reduce BOD_5 and ammonia nitrogen to the tertiary effluent standards.

6.6 Furthermore, operation conditions and quality of the effluent will also be real-time monitored. Immediate maintenance will be carried out if any parameter is found to approach or exceed its pre-set limits. Samples of effluent will also be taken regularly and tested to ensure compliance with the tertiary effluent standards.

6.7 This temporary on-site MBR plant shall be designed with the excess flow (PDWF – capacity of temporary onsite STP, i.e., ADWF = 7489.72 m^3/day) being equalized in an equalization tank of adequate volume to store up at least such flow for 2 hours (i.e. 624.14 m^3).

6.8 The production of sludge is estimated to be 56 m^3/day for solid content of 1% w/w. The sludge will be screened and dewatered, with a minimum solid content of 30%. The dewatered sludge will be collected by a licensed collector at regular intervals and disposed at the landfill. As an alternative, the dewatered sludge could also be transferred to nearby Government's Sewerage Treatment Works for off-site treatment

due to its small quantity.

6.9 The quantity of treated effluent to discharged to Mai Po Tributary is estimated to be 3,788.04 – 56 = 3,732.04 m_3/day.

7 SEWERAGE IMPACT ASSESSMENT for OPTION 2

7.1 In terms of option 2, it is proposed that the sewage generated from the proposed development will be collected at the proposed internal sewage pumping station and then pump through a proposed twin rising mains to Nam Sang Wai SPS for disposal at YLSTW. The proposed possible sewage disposal scheme is shown in **Figure 4**.

7.2 In general, within the Application Site, manholes will be located at various points along the sewers either to accept a connection from individual building or at a change of horizontal or vertical alignment. The manholes will provide access for cleaning and maintenance purposes. The sewer will be designed in accordance with the Sewerage Manual published by Drainage Services Department (DSD) and the Building Ordinance.

7.3 The Feasibility Study of Provision of Sewerage to Unsewered Areas/Villages in Northwest New Territories revealed that the total projected flow to be conveyed to YLSTW in Year 2030 is 44,790m^3/d, whilst the design capacity of the planned YLSTW will be upgraded from 70,000m^3/d to 100,000m^3/d under the ongoing project of effluent polishing scheme. Therefore, the YLSTW will still have sufficient capacity to handle the flow generated from the proposed development of 3788.04 m^3/d.

7.4 As stated in the approved EIA Study for Northern Link (Register No. AEIAR-259/2024), the design capacity of Nam Sang Wai SPS is 42,921 m^3/day, while the average daily flow in 2022 is only approximately 3,970m^3/day which is less than one tenth of the design capacity, thus, the Nam Sang Wai SPS still has sufficient capacity to cater the sewage flow from Application Site of 3788.04 m^3/d.

7.5 As such, both the Nam Sang Wai SPS and the YLSTW have sufficient capacity to cater for the additional flow from the proposed development. There will not be any adverse impact on the existing and planned sewerage system due to the proposed development.

7.6 Due to the Application Site in unsewered area, a twin rising mains will be proposed to connect the internal SPS to Nam Sang Wai SPS along the cycling track next to the Castle Peak Road-Mai Po, Kam Pok Road, the cycling track next to the Kam Pok Road-Pok Wai South Road, as shown in **Figure 4**.

8 MAINTENANCE RESPONSIBILITIES

8.1 The sewerage system within and outside the development site will be constructed and maintained by the applicant unless otherwise agreed.

9 CONCLUSION

9.1 A sewerage impact assessment has been conducted for the comprehensive residential development at Wo Shang Wai to confirm that the proposed San Tin EPP is adequately able to take up the sewerage discharge of the Application Site.

9.2 However, the implementation program of San Tin EPP may be postponed and cannot meet the anticipated first population intake of the proposed development in 2031. Two alternative proposed sewerage schemes for the comprehensive residential development at Wo Shang Wai were also proposed and assessed.

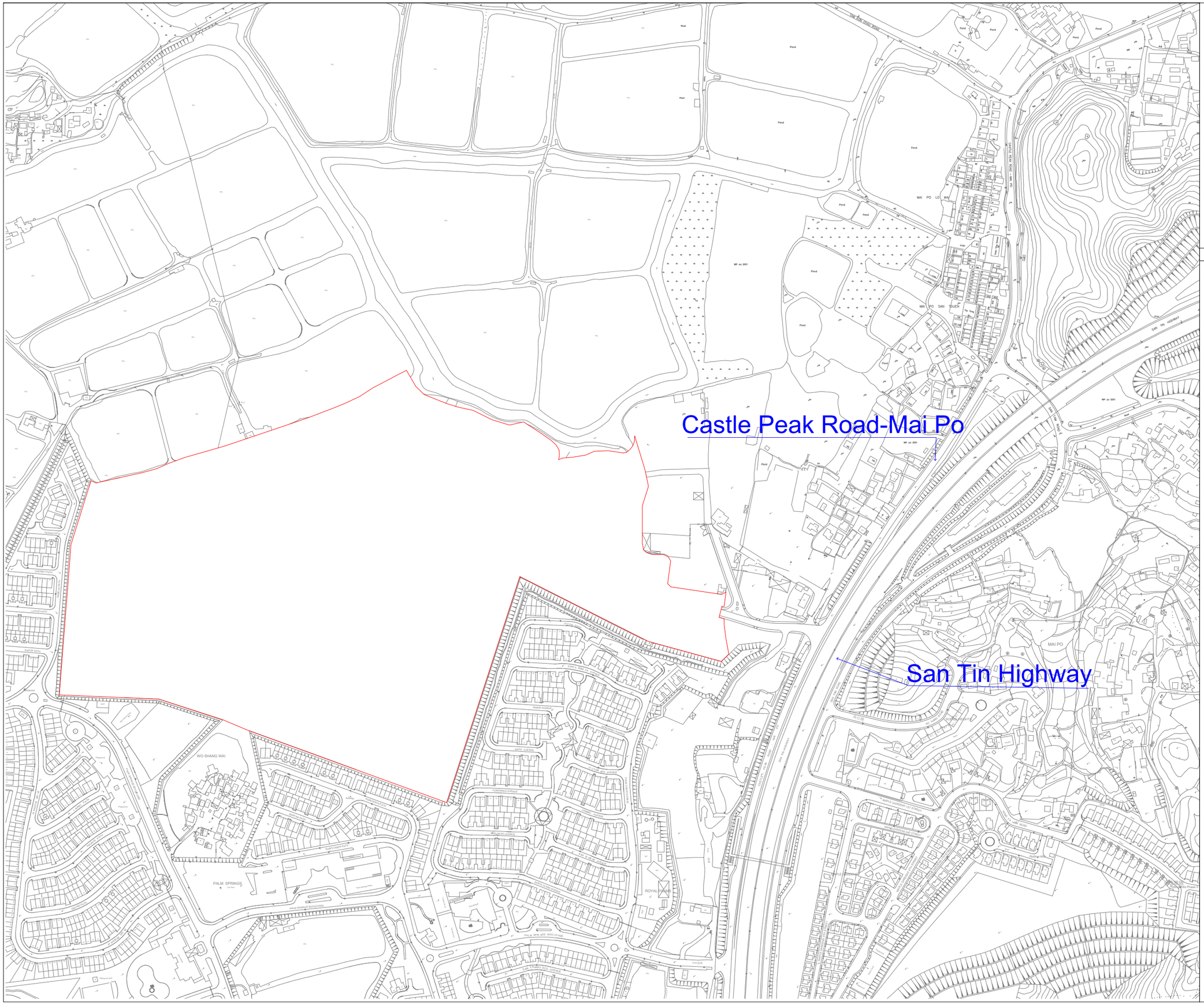
9.3 For alternative Option 1, a temporary on-site sewage treatment facility with the tertiary treatment process of MBR will treat the 3788.04 m^3/day sewage from the development to achieve effluent quality meeting tertiary effluent standards before discharge to Mai Po Tributary. Since "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach, it was not applicable for this temporary sewage treatment plant.

9.4 For alternative Option 2, the YLSTW and Nam Sang Wai SPS have sufficient capacity to cater for the sewage flow from the Application Site. No adverse sewerage impact will be incurred as a result of occupation of the Application Site.

9.5 The Application Site is located at the unsewered area, so the applicant will be responsible for the construction of new sewerage systems within the Application Site and outside the Application Site to San Tin EPP or the Nam Sang Wai SPS.

9.6 New sewers constructed within and outside site boundary connecting to the San Tin EPP or the Nam Sang Wai SPS will be constructed and maintained by the applicant.

Figures



N

LOCATION PLAN

LEGENDS:

PROJECT SITE BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

AMENDMENTS TO APPROVED APPLICATION NO. A/YL-MP/229 FOR A COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing title

PROJECT SITE LOCATION AND ITS SURROUNDINGS

Drawing no.			Rev.
Figure 1			0
Drawn: JX	Date: MARCH2023	Checked: –	Approved: –
Scale: 1:2000		Status	

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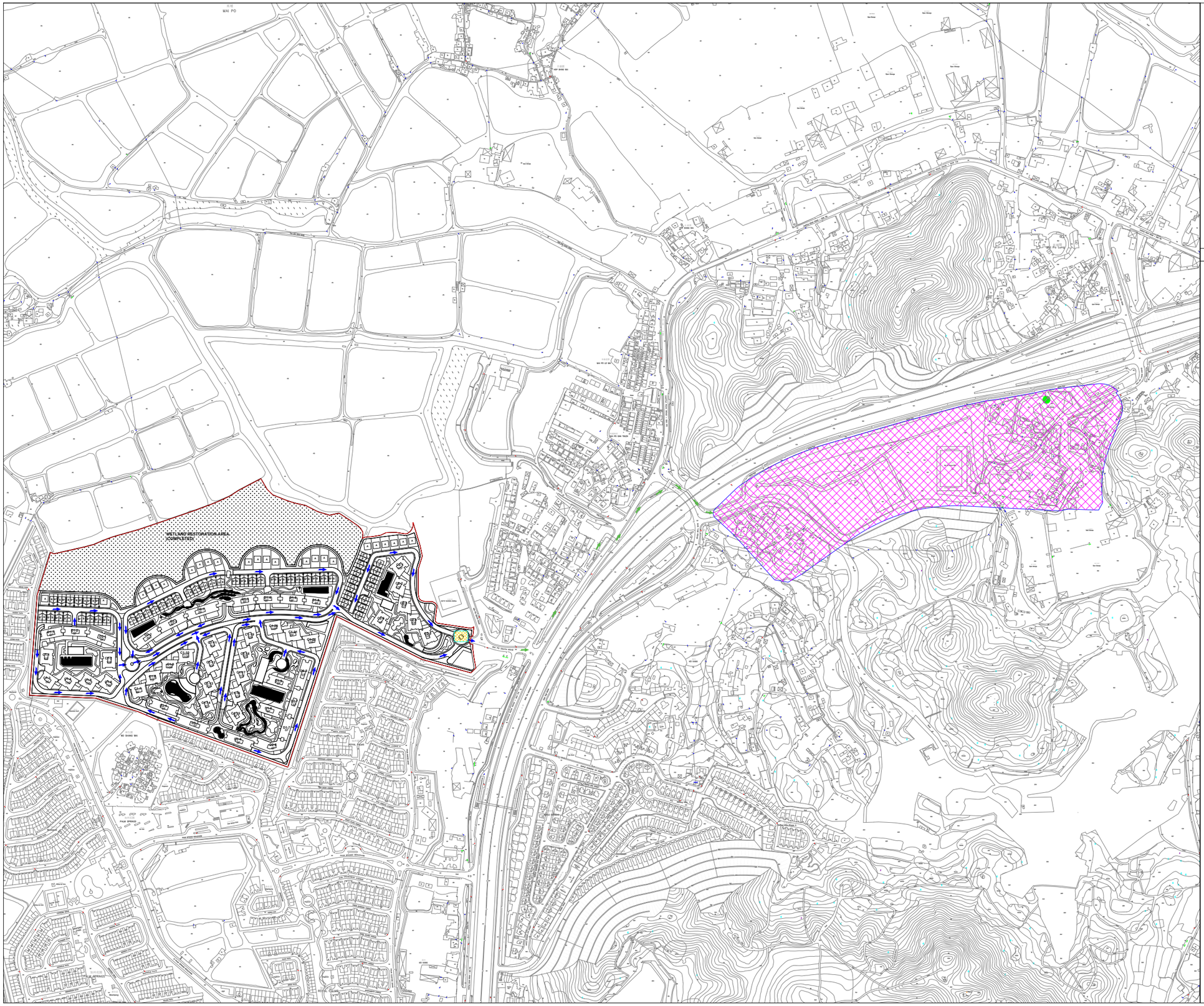

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED LOCATION OF San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP)
- PROPOSED INTERNAL FOUL SEWERAGE
- PROPOSED PUBLIC FOUL SEWERAGE SYSTEM
- RESERVED FOR INTERNAL SEWAGE PUMPING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND SEWERAGE SYSTEM OUTSIDE APPLICATION SITE TO SAN TIN EPP

Drawing no.			Rev.
Figure 2			1
Drawn	Date	Checked	Approved
JX	JAN2025	–	–
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1:3000			

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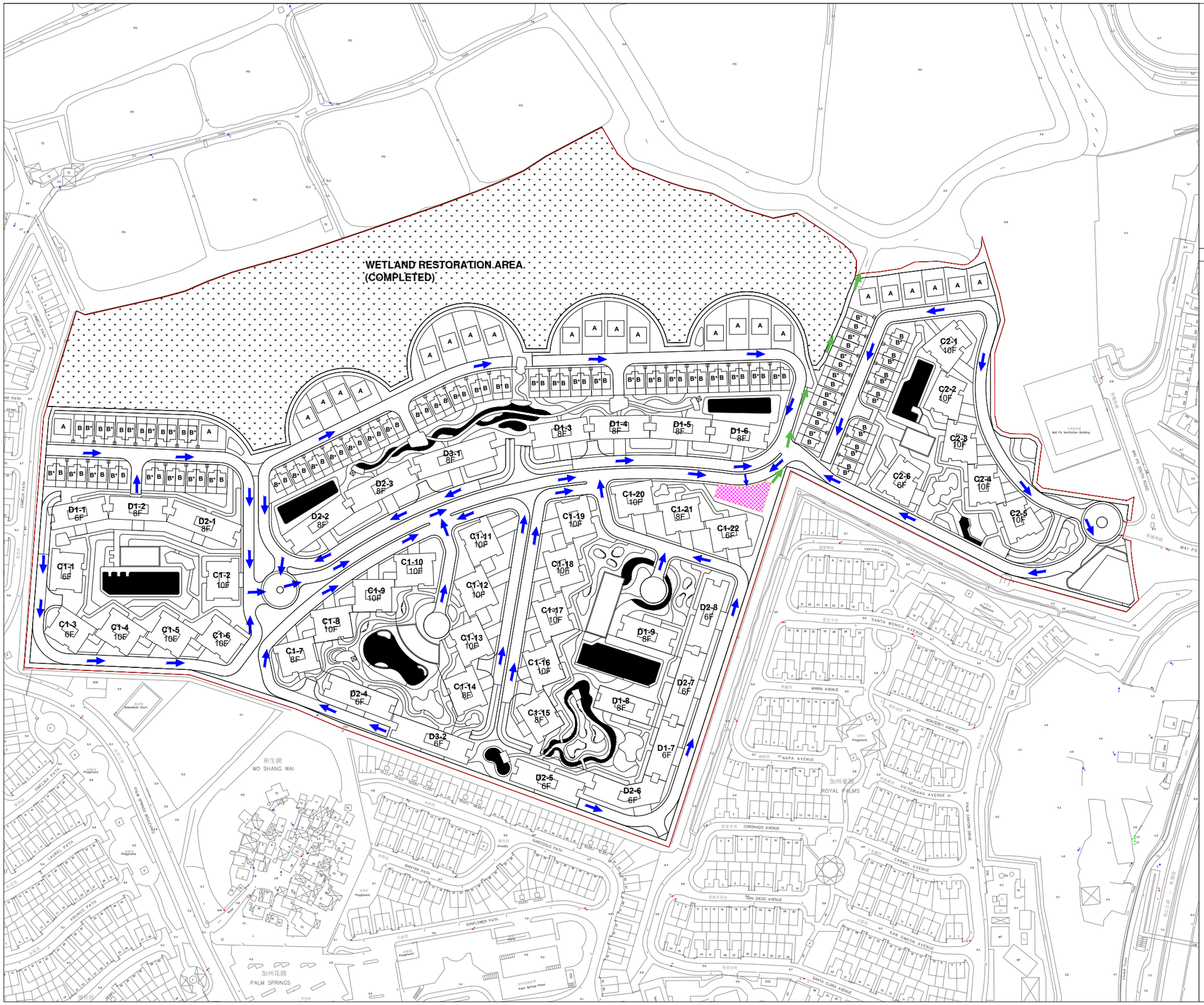

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- LOCATION of PROPOSED TEMPORARY ONSITE SEWAGE TREATMENT PLANT
- PROPOSED FOUL SEWERAGE
- PROPOSED TREATED EFFLUENT DISCHARGE PATH

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND TREATED EFFLUENT DISCHARGE SYSTEM

Drawing no.			Rev.
Figure 3			–
Drawn	Date	Checked	Approved
JX	JAN2025	–	–
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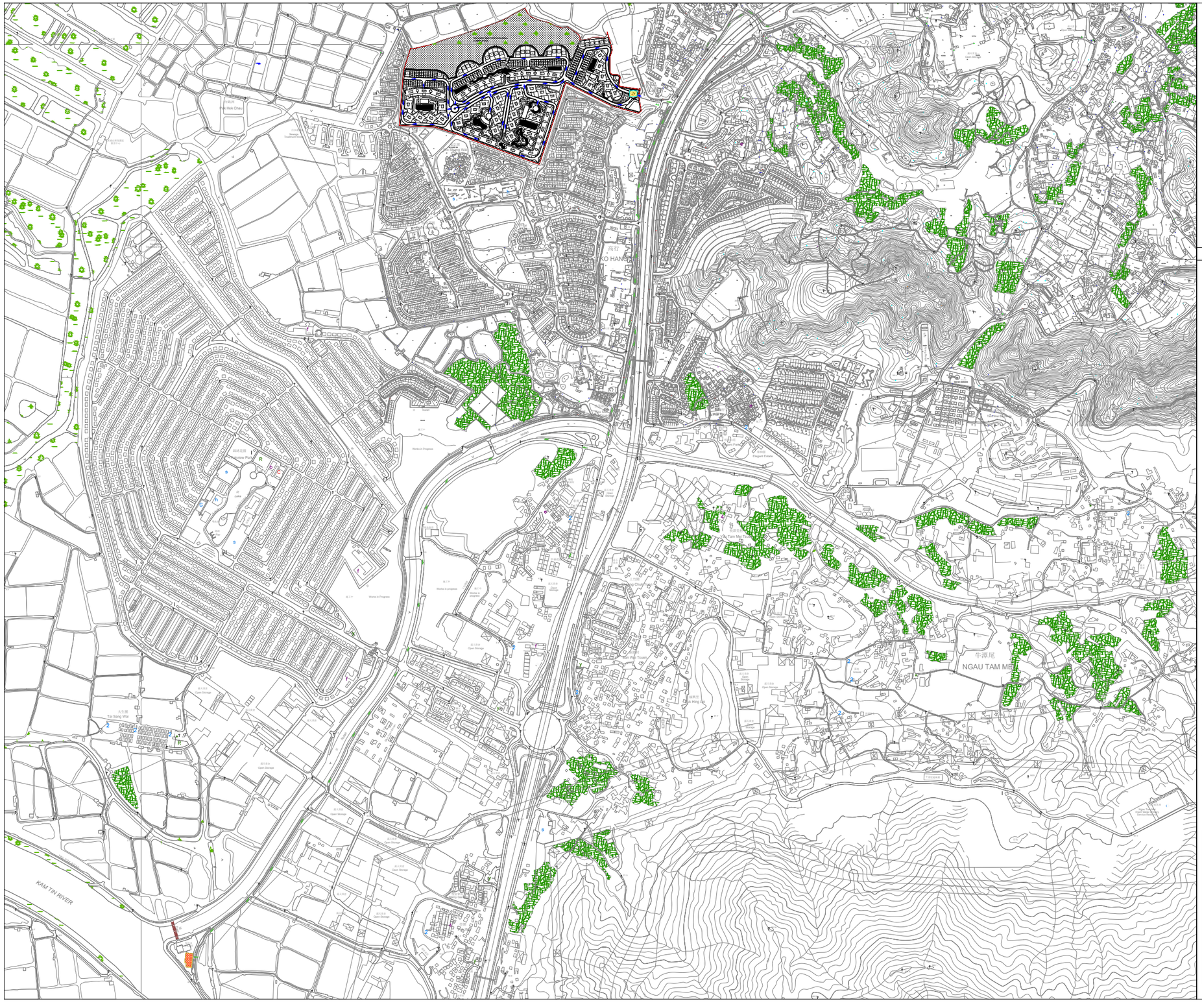

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED INTERNAL SEWAGE PUMPING STATION
- PROPOSED INTERNAL FOUL SEWERAGE
- PROPOSED FOUL SEWERAGE OUTSIDE APPLICATION SITE
- NAM SANG WAI SEWAGE PUMPING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED SEWERAGE SYSTEM OUTSIDE APPLICATION SITE TO NAM SANG WAI SEWAGE PUMPING STATION

Drawing no.	Rev.
Figure 4	–

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Scale –

Status

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Appendices

Appendix A

Estimation of Sewage Flow from Swimming Pool

Appendix A - Estimation of Sewage Flow From Swimming Pool and Water Features					
Flow from Swimming Pool					
Pool (Phase1)			Pool (Phase2)		
Pool area	712.17	m^2	Pool area	418.14	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	854.60374	m^3	Pool volume	501.76255	m^3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	39.56	L/s	Flow Rate	23.23	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	7.1216978	m^3/day	Volume of backwash	4.1813546	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	7.1216978	m^3/day	Total Pool (house)	4.1813546	m^3/day
Pool (Phase3)			Pool (Phase4)		
Pool area	377.12	m^2	Pool area	490.55	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	452.5396	m^3	Pool volume	588.66438	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	20.95	L/s	Flow Rate	27.25	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	3.77	m^3/day	Volume of backwash	4.91	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool	3.77	m^3/day	Total Pool	4.91	m^3/day
Pool (Phase5)			Pool (Phase6)		
Pool area	666.41	m^2	Pool area	868.90	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	799.69	m3	Pool volume	1042.68	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	37.02	L/s	Flow Rate	48.27	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	6.66	m^3/day	Volume of backwash	8.69	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	6.66	m^3/day	Total Pool	8.69	m^3/day
Water Features					
Pool area	1569.78	m^2			
Pool depth	0.6	m			
Pool volume	941.86719	m3			
Turn over rate	6	hr			
Flow Rate	43.60	L/s			
Duration of Backwash fr	3	min/day			
Volume of backwash	7.85	m^3/day			
No. of pool	1	nos			
Total Pool	7.85	m^3/day	**All Pools**	**43.2**	**m^3/day**

Appendix 7: Water Supply Impact Assessment

WATER SUPPLY IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

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Signature				
Project number				
Report number	0	1	2	3

Signatures

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Water Supply Impact Assessment (WSIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the water demand due to the proposed comprehensive residential development.

1.1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in Figure 1.

1.2 DESCRIPTION OF PROPOSED DEVELOPMENT

1.2.1 The proposed development consists of a mix of 3 stories detached and semi-detached house and 6, 8 and 10 storey residential tower. 48716 m^2 of land are reserved as open greenery area.

1.2.2 The proposed development consists of 3571 housing unit in total with a plot ratio of 1.28 and an average unit gross floor area of 74.45 m^2.

1.2.3 The master layout plan is attached in **Appendix A**.

1.2.4 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff. For assessment in this report, the land use is considered hospital, and the staff are assumed to be non-residential.

1.3 OBJECTIVES

1.3.1 The objective for this study is set out to be as follows:

(1) Estimating water demand arising from proposed development

(2) Estimating water intakes to the existing/planned development

(3) Evaluating water supply impacts to other existing development

(4) Proposing water supply main layout to mitigate negative impacts to existing developments

1.4 DESIGN GUIDELINE

1.4.1 To conduct this study, we have obtained and adopted the following information:

- Existing water main records provided by WSD
- Capacity, Top water level, and Invert water level of Ngau Tam Mei Fresh Water Preliminary Service Reservoir
- Master Layout Plan of the proposed development
- WSD's Departmental Instruction 1309 (D.I. 1309)
- Manual of Mainlaying Practice
- 2021 Population Census

1.4.2 The following approach were adopted in carrying out this WSIA

(1) Evaluate existing and planned works within the study area

(2) Assess water demand from proposed development

(3) Assess water demand from existing and planned development

(4) Evaluate impact on existing water main

(5) Recommend and propose water supply scheme with a hydraulic analysis

(6) Examine the short- and long-term impacts on existing water mains and interfacing projects

1.5 INTERFACING PROJECTS

1.5.1 Notable interfacing project includes:

- CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction

2 EXISTING AND PLANNED WORK

2.1 EXISTING WATER WORKS AND SERVICE RESERVOIRS

2.1.1 Ngau Tam Mei area surrounding the application site is served by Ngau Tam Mei Water Treatment Works. The treated water from Ngau Tam Mei is stored in Ngau Tam Mei Primary Service Reservoir.

2.1.2 **Table 2.1** summarise the capacity, top water level and invert level of the Ngau Tam Mei Primary Service Reservoir.

Table 2.1 Parameter of Ngau Tam Mei Primary Service Reservoir

Reservoir	Capacity (m^3)	Top Water Level (APD)	Invert Level (APD)
Ngau Tam Mei Primary Service Reservoir	40750	104.1	94.15

2.1.3 There is no saltwater supply nor reclaimed water supply to the area, therefore, fresh water is used for flushing.

2.2 EXISTING WATER MAINS

2.2.1 With reference to Main Record Plans (MRPs) from WSD, the application site is served by a DN150 and a DN200 pipe. Both pipes are a tee-off from a DN200 ductile iron pipe running along Castle-Peak Road-Mai Po section.

2.2.2 A DN600 pipe runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The DN600 pipe gets fresh water from a DN700 pipe along Castle Peak Road – Tam Mi section.

2.2.3 The DN700 pipe gets water from DN1400 which runs from east to west along Ching Yau Road, starting from Ngau Tam Mei Primary Service Reservoir and ending at San Tin Highway.

2.3 EXISTING DEVELOPMENT

2.3.1 After evaluating aerial photo and water main records of the application site, the list of developments identified is shown in **Table 2.2.**

Table 2.2 List of Building Group Identified and Parameters

Building Group	Number of units	Population (person)
Mai Po San Tsuen	338	
Green Crest	81	
Wai Tsai Tsuen	127	
The Vineyard phase 2	30	
Yau Tam Mei San Tsuen	31	
Wah On Villa	119	
Ian Court	105	
Faye Villa	39	
Kadoorie Villas	75	
San Wai Tsuen	30	
YL 0172 (Palm Springs)		4677
YL 0162 (Casa Paradizo + Royal Camelia)		3836

2.3.2 Number of units were obtained by counting houses on aerial photo and data from real estate database. Populations were found from population census 2021.

2.3.3 The population of building group YL 0172 and YL 0162 is extracted from the population census in 2021. Building group YL 0173 is not included as it covered settlements that are not served by the same existing water mains as application site.

2.4 PLANNED WATER WORK AND WATER MAIN

2.4.1 North to application site, CEDD have commissioned CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction. The project will involve re-routing water main in the area and constructing a new water treatment work and service reservoir.

2.4.2 The drafted preliminary diversion plan of CE 15/2023 was obtained from the project consultant. It shows that the application site itself does not fall into the project scope, but there would be potential interface if proposed water main extends to the section of San Tam Road under San Tin Highway. The DN600 pipe on San Tam Road, north of application site will be proposed for rerouting as part of the development plan in CE 15/2023.

3 WATER SUPPLY IMPACT ASSESSMENT

3.1 WATER DEMAND FROM PROPOSED DEVELOPMENT

3.1.1 As quoted in section 1, the proposed development would be R3 type residential development with 3571 units, estimated to house 9999 people assuming an average of 2.8 people occupying each unit. The total landscaping area is 48716 m^2 and includes a residential care home for elderly with 100 beds.

3.1.2 With reference to D.I. 1309, the freshwater demand is assumed to be 0.390 m^3 per person per day, with a service trade allowance of 0.045 m^3 per person per day. The flushing water demand is 0.070 m^3 per person per day. Irrigation water demand is assumed to be 0.01 m^3 per m^2 per day based on the approved EIA report of the project "Sludge Treatment Facilities" (EIA-155/2008).

3.1.3 Overall, the freshwater demand from the application site is estimated to be 4882.2 m^3 per day and the mean flushing demand is 729.4 m^3 per day.

3.2 WATER DEMAND FROM EXISTNG DEVELOPMENTS

3.2.1 As quoted in section 3.3, the existing developments can be divided into 11 building groups. Based on **Table 2.2**, the population can be estimated from number of units using the average occupier per unit from population census 2021. For Yuen Long district the factor is 2.8 person per household. The irrigation area is taken to be 48716 m^2 and the water demand per area is 0.010 m^3 per m^2.

3.2.2 Some settlements, such as Mai Po San Tsuen and San Wai Tsuen, around application site are recognised as modern villages. For such site, the freshwater demand is assumed to be 0.230 m^3 per person per day, with a service trade allowance of 0.045 m^3 per person per day. The flushing water demand is 0.070 m^3 per person per day.

3.2.3 Overall, the freshwater demand from the existing developments is estimated to be 4622.5 m^3 per day and the mean flushing demand is 780.4 m^3 per day.

3.2.4 The calculations and table summarising the demand arising from different demand type can be found in **Table 3.1**.

Table 3.1 Table of Water Demands Taken from D.I. 1309 and EIA-155/2008

Demand Type	Water Type	Unit Demand	Unit
Residential (R3)	Fresh	0.390	m^3 per person per day
	Flushing	0.070	m^3 per person per day
Villages (Modern)	Fresh	0.230	m^3 per person per day
	Flushing	0.070	m^3 per person per day
Hospital	Fresh	0.455	m^3 per person per day
	Flushing	0.295	m^3 per person per day

Service Trade	Fresh	0.045	m^3 per person per day
Irrigation	Fresh	0.010	m^3 per m^2 per day

3.3 IMPACT ON EXISTING WATER WORK

3.3.1 The freshwater peak demand factor is assumed to be 3 and the flushing water peak demand factor were assumed to be 2. According to the Manual of Mainlaying Practice, the maximum advisable flow velocity in water mains is 3 m/s. Therefore, the maximum peak flowrate was found assuming flow velocity to be 3 m/s.

3.3.2 Based on the calculation shown in **Appendix B**, The proposed development have a mean daily water demand of 5611.6 m^3/day and a peak water demand of 14448.6 m^3/day. The maximum allowable flowrate for the DN150 and DN200 pipe leading to the site is 7271.9 m^3/day and 3876.9 m^3/day respectively. The existing pipes are not sufficient to meet the peak water demand of the application site.

4 PROPOSED WATER MAIN SCHEME

4.1 OVERVIEW

4.1.1 As mentioned in **Section 2.2**, there is a DN600 pipe running along San Tam Road on the other side of San Tin Highway. The calculation table in Appendix B shows that the DN600 pipe would have the flow velocity 0.67 m/s and flowrate of 0.18 m^3/s supplying to only existing development. The flow velocity in the DN600 pipe increase to 1.36 m/s with a flowrate of 0.37 m^3/s when the proposed development is considered.

4.1.2 It is therefore proposed to construct a new tee-off from the DN600 pipe, named 600DI89 on MRP. Two options are presented and evaluated in this WSIA. The drawings of the proposed pipe layout can be found in **Appendix C**.

4.1.3 Only elevation heads and frictional head are considered in the hydraulic calculations. Elevation head is considered as the sole driving force from primary reservoir and the main head loss is due to friction. Velocity and angled head loss are considered minor compared to frictional head loss. Minor losses are estimated as 10% of the frictional head loss.

4.1.4 Hazen-William's equation is used to calculate frictional head loss, and Hazen-Willams Coefficient is taken as 120 for pipe with diameter larger than 600mm, and 110 for pipe with diameter smaller than 600mm. Pipes where water demand cannot be estimated are assumed to have a flow velocity of 3 m/s for a conservative approach.

4.2 PREFERRED OPTION – CONSTRUCTION AT EXISTING SUBWAY AT SAN TAM ROAD

4.2.1 The preferred option would be to tee-off from the DN600 pipe further north at existing San Tam Road Subway under San Tin Highway. This option would avoid construction work under San Tin Highway and mitigate all potential structural and safety issues associate with the works at San Tin Highway.

4.2.2 Proposed tee-off pipe will be 350 mm at minimum in nominal diameter based on the calculation in **Appendix B**, and the length were estimated to be 573 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have an even lower elevation.

4.2.3 Calculation have shown that with a head loss of 46.1 meter from existing water mains and 10.4 meter head loss from proposed water main, the residual head in the pipe will be 46.8 meter at the boundary of the application site.

4.2.4 Based on WSD's circular letter No. 1/2007, the minimum acceptable residual pressure in water mains is 20m . This option meets the minimum requirements and are therefore hydraulically feasible.

4.2.5 However, the proposed connection point is located on a proposed pipe under CE15/2023 managed by AECOM-Halcrow Joint Venture. The joint venture should be consulted on construction schedule and feasibility of the connection may varies with time. In the case that the proposed tee-off is not feasible, the backup option should be considered.

4.3 BACKUP OPTION – CONSTRUCTION UNDER SAN TIN HIGHWAY

4.3.1 The backup option would be to directly tee-off from the DN600 pipe across San Tin Highway. Construction would preferably be through micro-tunnelling to avoid interrupting traffic on San Tin Highway.

4.3.2 Proposed tee-off pipe will be 300 mm at minimum in nominal diameter, and the length were estimated to be 166 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have a lower elevation.

4.3.3 Calculation have shown that with a head loss of 41.9 meter from existing water mains and 6.8-meter head loss from proposed water main, the residual head in the pipe will be 51.1 meter at the boundary of the application site.

4.3.4 Digging underneath the San Tin Highway will requires an excavation permit from Highway department. If the option is to be adapted, the applicant shall register on XPMS as soon as possible and liaison with Highway department for permission.

5 CONCLUSION AND WAY FORWARD

5.1.1 It could be concluded that the existing water supply mains around the proposed development is not sufficient for the water demand, and hence a new water main scheme is needed.

5.1.2 It would be feasible to tee-off from the existing DN600 pipe (600DI89) which runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The preferred scheme would be to tee-off further north on San Tam Road to prevent construction work under the highway. The residual head would be 46.8 meter, which meets the minimum residual pressure requirement from WSD.

5.1.3 Another feasible scheme is to tee-off directly across San Tin Highway, this is not preferred as construction work on San Tin highway may be uncertain. The residual head is estimated to be 51.1 meter, which would also meet the minimum residual pressure requirement from WSD.

5.1.4 The applicant will discuss the preferred option with AECOM for interface with CE 15/2023 and adopt the backup option if the preferred option becomes unavailable.

Appendices

Appendix A

MLP of Proposed Development

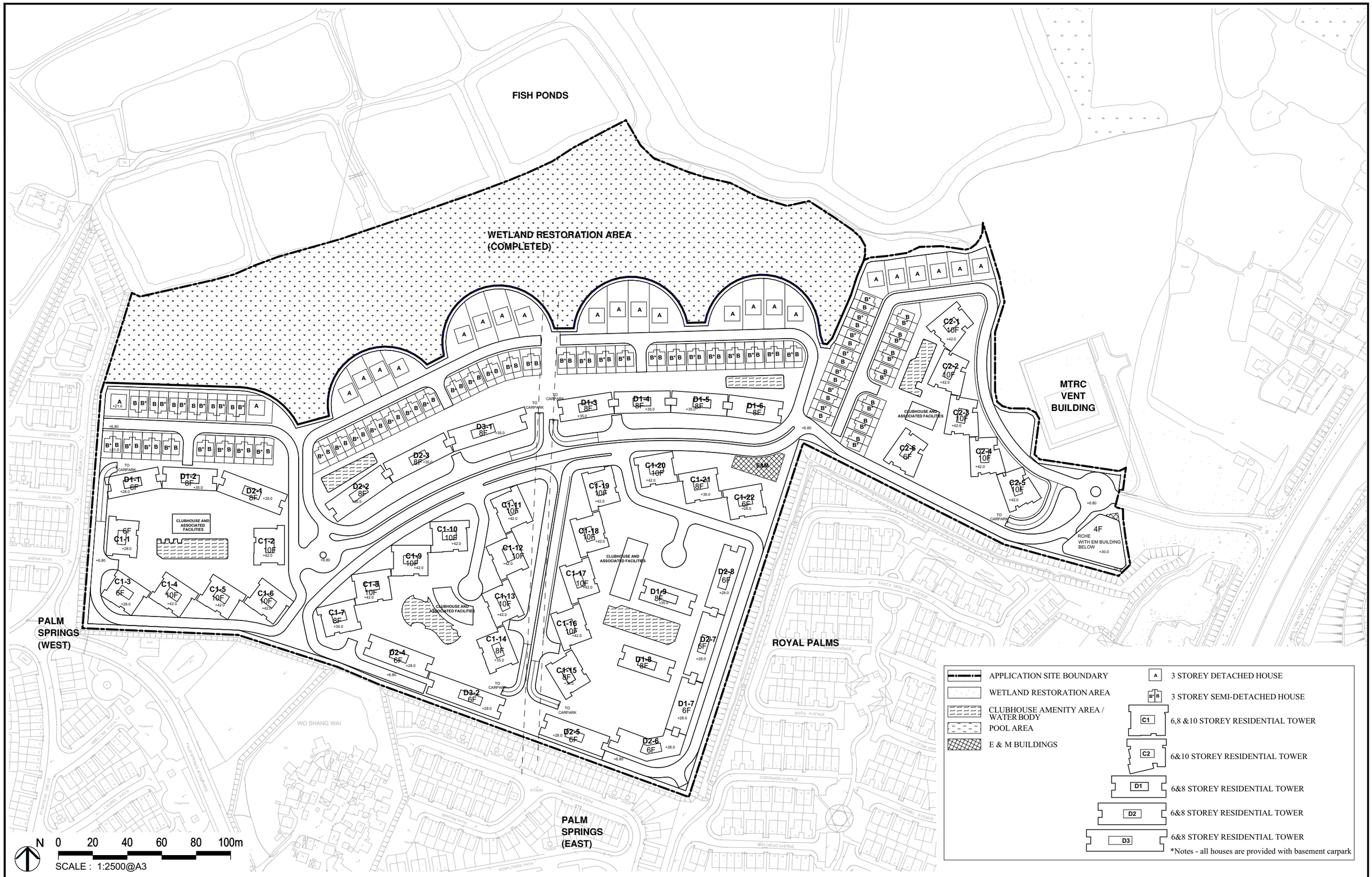


Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

1:2500 in A3
DWG. No. : 3809-003

Appendix B

Table of Calculation

						Fresh			Flushing	
	Building Group	Landuse	Area (m2)	Number of units	Population (person)	Unit Demand Factor (m3/head/day)	Unit Demand Factor (m3/m2/day)	Mean Water Demand (m3/day)	Unit Demand Factor (m3/head/day)	Mean Flushing demand (m3/day)
Exisitng Developments	Mai Po San Tsuen	Villages (Modern)		338	913	0.275		251.075	0.07	63.91
	Green Crest	Residental (R3)		81	219	0.435		95.265	0.07	15.33
	Wai Tsai Tsuen	Villages (Modern)		127	343	0.275		94.325	0.07	24.01
	The Vineyard phase 2	Residental (R3)		30	81	0.435		35.235	0.07	5.67
	Yau Tam Mei San Tsuen	Villages (Modern)		31	84	0.275		23.1	0.07	5.88
	Wah On Villa	Residental (R3)		119	322	0.435		140.07	0.07	22.54
	Ian Court	Residental (R3)		105	284	0.435		123.54	0.07	19.88
	Faye Villa	Residental (R3)		39	106	0.435		46.11	0.07	7.42
	Kadoorie Villas	Residental (R3)		75	203	0.435		88.305	0.07	14.21
	San Wai Tsuen	Villages (Modern)		30	81	0.275		22.275	0.07	5.67
	YL 0172 (Palm Springs)	Residental (R3)		980	4677	0.435		2034.495	0.07	327.39
	YL 0162 (Casa Paradizo + Royal Camelia	Residental (R3)			3836	0.435		1668.66	0.07	268.52
Total								4622.455		780.43
Proposed Development		Residental		3571	9642	0.435		4194.27	0.07	674.94
		RCHE			100	0.455		45.5	0.295	29.5
		Landscaping	50504				0.01	505.04		
Total					9642			4239.77		704.44

Remark:

Unit demand factor from DI 1309, where parameter not provide, similar estimation were used

Unit demand = Fresh water demand + Flushing water demand + Service trades

Records for populations taken from 2021 population census

Census found from: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.census2021.gov.hk%2Fdoc%2FHMA_BG_21C.xlsx&wdOrigin=BROWSELINK

Population data for village type settlement are estimated by counting house seens in aerial photo and assuming 2.7 person per house

2.7 per house is assumed based on the data for Yuen Long District in the 2021 population census

Portion	Nominal Diameter (mm)	Internal Diameter (mm)	Length (m)	Material	Hazen-Williams Coefficient	Total Fresh water demand	Total Flushing water demand	Fresh water peak factor	Flushing water peak factor	Peak Demand Flow(m3/day)	Peak flowrate(m3/s)	Area (m2)	Velocity (m/s)	Head loss per length	Head Loss (m)	Minor Head Loss (m)	Total Head Loss (m)	Note
1400S01	1400	1379	2255.3	S	120							1.5	3.00	0.005	11.4	1.1	12.5	Assumed velocity of 3 m/s for conservative estimation
1400S98	1400	1379	53.8	S	120							1.5	3.00	0.005	0.3	0.0	0.3	Assumed velocity of 3 m/s for conservative estimation
1200S98	1200	1182	11.3	S	120							1.1	3.00	0.006	0.1	0.0	0.1	Assumed velocity of 3 m/s for conservative estimation
700S00	700	682	29.4	S	120							0.4	3.00	0.011	0.3	0.0	0.4	Assumed velocity of 3 m/s for conservative estimation
700S91	700	682	155.3	S	120							0.4	3.00	0.011	1.8	0.2	2.0	Assumed velocity of 3 m/s for conservative estimation
700S88	700	682	311.4	S	120							0.4	3.00	0.011	3.6	0.4	3.9	Assumed velocity of 3 m/s for conservative estimation
600S90	600	586	207.8	S	110							0.3	3.00	0.016	3.3	0.3	3.7	Assumed velocity of 3 m/s for conservative estimation
600S89	600	586	341.7	S	110							0.3	3.00	0.016	5.5	0.6	6.1	Assumed velocity of 3 m/s for conservative estimation
600DI90	600	586	1493.0	DI	110	8862.2	1484.9	3	2	29556.4	0.3	0.3	1.27	0.003	4.9	0.5	5.4	Considering all existing and planned development
200DI17	200	200			110	4194.3	674.9	3	2	13932.7	0.2	0.03	5.13	0.15	0	0.0	0.0	
									Option 1			0						
DN300	300	282	166.0	DI	110	4239.8	704.4	3	2	14128.2	0.2	0.1	2.62	0.029	4.9	0.5	5.4	Supply to only proposed development
									Option 2									
600DI90	600	586	173.6	DI	110	8862.2	1484.9	3	2	29556.4	0.3	0.27	1.27	0.00	0.57	0.1	0.6	
DN350	350	334	573.0	DI	110	4239.8	704.4	3	2	14128.2	0.2	0.1	1.87	0.013	7.4	0.7	8.1	Supply to only proposed development

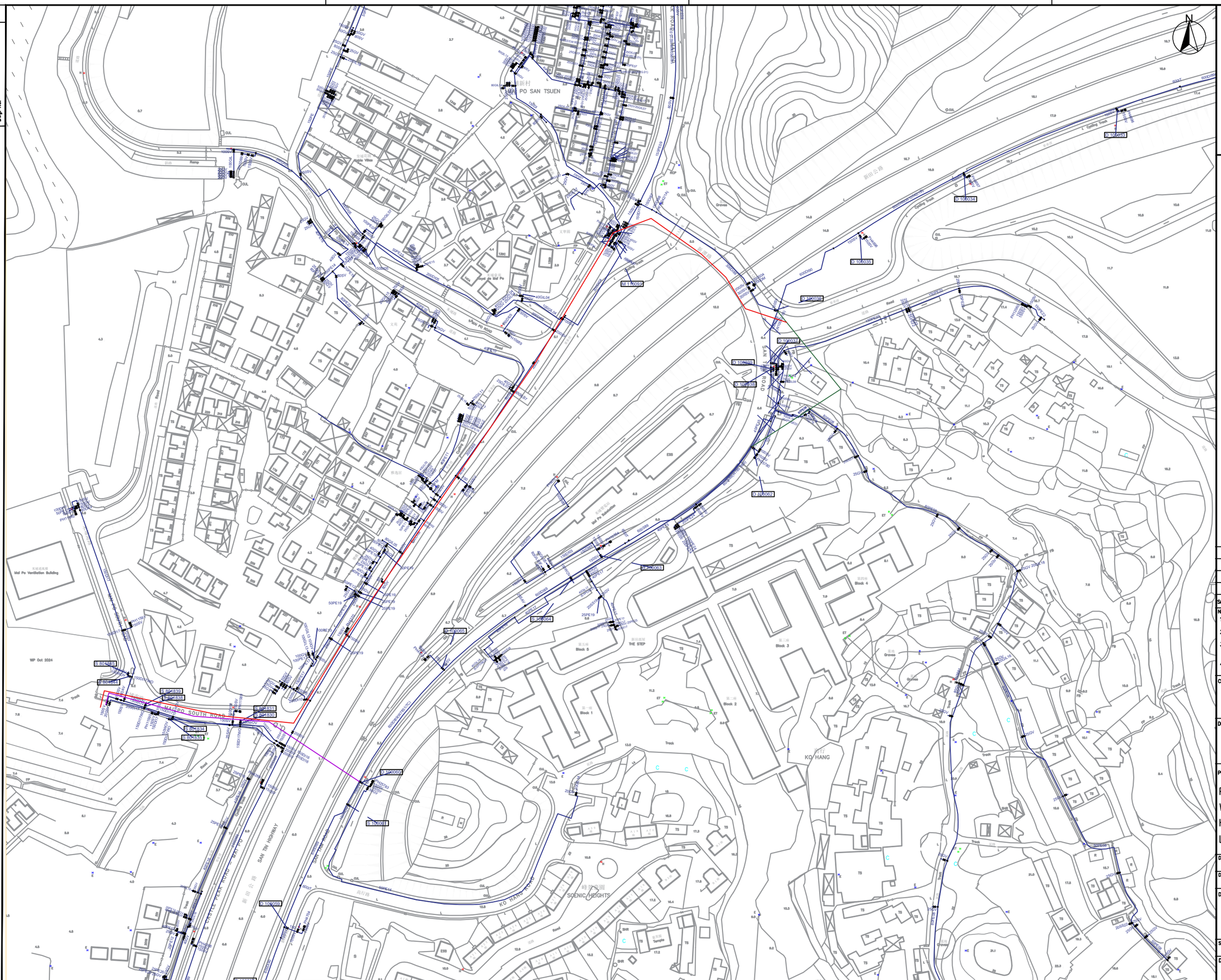
Notes:
Hazen-Williams Coefficient taken as 110 when diameter < 600, 120 when diameter > 600
According to main laying practice, the maximim velocity allowed is 3 m/s
Velocity head loss, angled headloss and headloss at connections are considered minor
Minor headloss accounted by a 1.1 factor on frictional headloss

Estimate Residual Head			
Head to Ngau Tam Mei Fresh Water Preliminary Service Reservoir	=	99.1	mPD
Ground Level at extremity of proposed system	=	6.2	mPD
Friction Head Loss from Existing and Proposed Main Option 1	=	39.7	m
Residual Head at Extremity	=	53.3	m
Friction Head Loss from Existing and Proposed Main Option 2	=	43.0	m
Residual Head at Extremity	=	49.9	m

Appendix C

Proposed Water Supply Scheme

Dwg. No.



N

LEGEND

- Option 1
- Option 2
- Water Main to be diverted in CE15
- Water Main to be abolished in CE15

Suffix	Date	Revision	Drawn	Checked
–	–	–	–	–

NOTES:

1. Use written dimensions or grid lines. Measurements to existing work to be checked on site.
2. This drawing is to be read in conjunction with the Specification & Conditions of Contract.
3. This drawing & design are copyright and no portion may be reproduced without the written permission of WSP(Asia)Ltd. Consulting Engineers.
4. All Pipe Sizes refers to inner diameter in millimeters.

CLIENT

Profit Point Enterprise Ltd

DESIGN CONSULTANT

wsp

PROJECT

PROPOSED DEVELOPMENT AT
WO SHANG WAI
HONG KONG
LOTs 77 AND 50 S.A in DD101

DESIGNED BY	DATE	CHECKED BY	DATE
–	JAN 2025	CC	JAN 2025
DRAWN BY	DATE	APPROVED BY	DATE
JS	JAN 2025	–	–

DRAWING TITLE

PROPOSED WATER SUPPLY SCHEME
(Sheet 1)

SCALE	STATUS	FILE NAME
1:2000		

DRAWING NO.	REV.
–	

C:\Users\HKJS750985\Downloads\Prelim-WSW pipe drawing 1.dwg

Appendix 8: Ecological Impact Assessment

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Ecological Impact Assessment

Profit Point Enterprises Limited

Revision: 0

22-January-2025

aurecon

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Appendices

Appendix A Fauna Species recorded in EM&A reports between December 2023 – November 2024

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1 INTRODUCTION

1.1 Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

The EcoIA presented here in support of the S.12A planning application of a revised residential scheme is based on the findings of ecological surveys conducted between April 2024 – January 2025, together with review of latest 12-months EM&A reports (December 2023 – November 2024). The assessment is derived from the results of literature review and ecological surveys conducted within the Application Site and within 500m of its boundary.

1.2 Key Relevant Amendment under Current Application

No changes are proposed at the implemented WRA and at the interface (boundary) between the residential portion and the WRA.

Proposed changes in layout of the internal road, landscaping and number of houses (not abutting the WRA) are not anticipated to have any impact on the WRA and the wetlands in the Wetland Conservation Area (WCA), and these are not discussed.

Key amendments which might have potential implication to the findings of the approved Ecological Impact Assessment (EIA) mainly involve those proposed at the houses immediately facing the WRA and the stepped design. These comprise:

- Detached/semi-detached houses abutting the WRA increase from 2-storey (+16.80mPD) to 3-storey (+21mPD)
- Stepped design from 3-storey houses abutting the WRA, 8 to 10-storeys (+35mPD to +42mPD) in the middle and 6-storeys buildings (+28mPD) along the southern boundary

2 LEGISLATION AND STANDARDS

Environmental legislation, guidelines, standards and references listed below have been referred during the preparation of this EcoIA.

- Environmental Impact Assessment Ordinance (EIAO) (Cap. 499)
- Country Parks Ordinance (Cap. 208)
- Forests and Countryside Ordinance (Cap. 96)
- Wild Animals Protection Ordinance (Cap. 170)
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
- Town Planning Ordinance (Cap. 131)
- EIAO Technical Memorandum (EIAO-TM) Annex 8 – Criteria for Evaluating Ecological Impact
- EIAO-TM Annex 16 – Guidelines for Ecological Assessment
- EIAO Guidance Note (GN) No.3 – Flexibility and Enforceability of Mitigation Measures Proposed in an Environmental Impact Assessment Report (GN 3/2010)
- EIAO GN 6/2010 – Some Observations on Ecological Assessment from the Environmental Impact Assessment Ordinance Perspective
- EIAO GN 7/2023 – Ecological Baseline Survey for Ecological Assessment
- EIAO GN 10/2023 – Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys
- The International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

3 BASELINE CONDITIONS

3.1 Application Site and Assessment Area

The Assessment Area (AA) for this EcoIA includes all areas within 500m distance from the boundary of the Application Site. The Application in this assessment refers to the area within the Site Boundary, whereas AA refers to the area within the 500m radius but excluding the Application Site.

Currently, the Application Site comprises mainly the completed Wetland Restoration Area (WRA) under approved EIA (AEIAR-120/2008) and the residential component where site formation works have been in progress. The residential portion includes paved haul road, regularly managed grassy with unwanted plant species (mainly *Leucaena leucocephala)*, temporary internal drainage channel, with retained trees scattered within the site.

3.2 Recognized Sites of Conservation Importance

3.2.1 Mai Po Inner Deep Bay Ramsar Site

The Mai Po Inner Deep Bay Ramsar Site is of particular significance for migratory waterbirds including a number of globally threatened species and was recognized as such in 1995 through the designation as a Ramsar Site. The core area of the Ramsar Site comprises Mai Po Nature Reserve and much of the intertidal mudflats, which are protected further by being included in the Mai Po Marshes and Inner Deep Bay Sites of Special Scientific Interest (SSSIs). The Ramsar Site lie to the west about 70-80m from the closest point of the implemented WRA (**Figure 1**) and it is separated from the Application Site by Palm Springs. The nearest 12-storey and 18-storey buildings at the western portion of Application Site will be approximately 130m and 160m away from the Ramsar Site.

3.2.2 Wetland Conservation Area (WCA)

Wetlands mainly the fishponds continuous and adjoining to the Deep Bay Area are designated under TPB PG-No.12C, as the Wetland Conservation Area (WCA) with the planning intention of protecting the integrity of the Deep Bay wetland ecosystem. Any development within the WCA should comply with the principle of “No-Net-Loss in Wetland”. The Application Site abuts the WCA.

3.2.3 Wetland Buffer Area (WBA)

The Wetland Buffer Area (WBA) is also designated under TPB PG-No. 12C to include a buffer of about 500m on the landward side of the WCA. Developments within the WBA are required to demonstrate that ecological impacts on the WCA will be minimized and any negative ecological impacts will be fully mitigated through positive measures. Residential developments which seek to replace existing open storage areas and/or include pond restoration projects should normally be given sympathetic consideration by the Board. The Application Site lies within the WBA.

3.2.4 Site of Special Scientific Interest (SSSI)

The Mai Po Village SSSI contains 5.3 ha of fung shui woodland located to the east of Mai Po Village. This site was designated an SSSI in 1979 on the basis of an egretry containing several hundred pairs of Little Egret, Cattle Egret and Chinese Pond Heron. Egrets no longer breed within the boundaries of the SSSI. The Mai Po Village Egretry in recent years has been recorded opposite to this SSSI, at the intercept of Tam Kon Chau Road and Castle Peak Road.

3.2.5 Egretries

Two active egretries lie within potential foraging distance of breeding egrets (Young 1993), including Mai Po Village egretry (approximately 620m from the Application Site) and Mai Po Lung egretry (approximately 1.3km from the Application Site).

4 Literature Review

4.1 Approved Environmental Impact Assessment Report (AEIAR-120/2008)

The WRA was proposed in AEIAR-120/2008 as mitigation to compensate for the loss of wetland habitats in accordance with "No-net-loss in Wetland" principle under Town Planning Board Guideline 12B (TPB PG-No. 12B). Implementation of the WRA followed the approved Wetland Restoration and Creation Scheme (WRCS). The wetland area was consolidated into a single unit and located immediately adjacent to the Wetland Conservation Area (WCA), which reduced fragmentation of wetland habitat and maximised ecological connectivity with existing wetland habitats in the WCA. The WRA also serves to buffer the WCA from potential impacts created by the residential component of the Project.

Table 1 Total Number of Species and Number of Species of Conservation Importance recorded within the Project Area

No. of Species / Fauna Group	Mammals	Birds*	Amphibians	Reptiles	Butterflies	Odonates
Number of Species of Conservation Importance	2^	14 (19)	0	0	1	1
Total Number of Species recorded	5	49	5	1#	21	18

* Number in parentheses indicates the number of wetland-dependent or wetland-associated species

Considered to be escaped individual

^ Not considered as species of conservation importance in AEIAR-120/2008

Mammals

A total of five mammal species were recorded within the Project Area. One bat species, Japanese Pipistrelle, which is considered to be Very Common (AFCD 2020) in Hong Kong, was recorded during night-time surveys. All bat species are protected in Hong Kong under Cap. 170; however, no bat roosts were present within the Project Area. Four small mammal species were recorded by trapping; Musk Shrew, House Mouse, Ryukyu Mouse and Brown Rat. These are common and widespread in Hong Kong, especially in anthropogenic habitats except for Ryukyu Mouse, which is assessed as Rare (AFCD 2020) due to restricted distribution in Hong Kong but has been recorded nearby from Mai Po Nature Reserve. None of them were considered as species of conservation importance in AEIAR-120/2008, based on the low occurrence and low number of individuals recorded.

Birds

A total of 54 bird species were recorded within the Project Area. Of these, 14 species are of conservation importance: Black-crowned Night Heron (0.2 mean per survey; 4 = maximum number recorded), Chinese Pond Heron (1.3; 4), Eastern Cattle Egret (1.3; 14), Grey Heron (0.1; 2), Great Egret (Y = species recorded outside the transect surveys), Little Egret (5.5; 48), Great Cormorant (0.5; 5), Black Kite (1.2; 5), Little Ringed Plover (0.1; 1), Oriental Pratincole (Y), Pacific Swift (Y), Zitting Cisticola (0.1; 1), Red-billed Starling (0.9; 15) and White-shouldered Starling (0.1; 2). Black-crowned Night Heron, Chinese Pond Heron, Eastern Cattle Egret, Great Egret and Little Egret are common in Hong Kong, with winter, migrant and breeding populations (HKBWS 2021). Grey Heron is common mainly in the Deep Bay area, with highest numbers in winter. Great Cormorant is an abundant winter visitor, mainly in the Deep Bay area. Black Kite is common and widespread in Hong Kong, with increased numbers in winter. Little Ringed Plover is common and present all year in lowland areas near water. Oriental Pratincole is a passage migrant, common in spring and uncommon in autumn, to lowland areas of New Territories. Pacific Swift is uncommon spring passage migrant and summer visitor. Zitting Cisticola is common passage migrant and winter visitor to grassy and reedmarsh areas. Red-billed Starling is an abundant winter visitor to open-country areas, mainly in the northwest New Territories. White-shouldered Starling is a locally common passage migrant and breeding species, and uncommon winter visitor to open-country and village edge habitats mainly in the northwest New Territories.

Herpetofauna

Five amphibian species were recorded within the Project Area; Asian Common Toad, Ornate Pigmy Frog, Paddy Frog, Günther's Frog and Brown Tree Frog. All are common and widespread in Hong Kong. None are species of conservation importance.

One reptile was recorded within the Project Area, Chinese Striped Terrapin which is not considered to be native to Hong Kong and was therefore considered to be an escape.

Butterflies

A total of 21 butterfly species were recorded within the Project Area. All are Common in Hong Kong (AFCD 2020), except Common Jay, Yellow Orange Tip and Danaid Egg-fly which are Uncommon. Only Danaid Egg-fly is of Local Concern (Fellowes et al. 2002).

Odonates

A total of 18 odonate species were recorded within the Project Area. All are common and widespread species in Hong Kong (AFCD 2020). Only Scarlet Basker is of Local Concern (Fellowes et al. 2002).

4.2 Latest 12-months EM&A Reports (December 2023 – November 2024) – Ecology

Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned to conduct Environmental Monitoring and Audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development. A summary of EM&A requirements for ecology is presented in **Table 2** below.

Table 2 Total Number of Species and Number of Species of Conservation Importance recorded within the Project Area

Parameters	Locations	Frequencies
Birds	Within the Project Area and Assessment Area of 500m	Weekly
Dragonflies & Butterflies	Within the Project Area and Assessment Area of 500m	Once per month (Mar, Sep-Nov); Twice per month (Apr-Aug)
Herpetofauna	Within the Project Area and Assessment Area of 500m	Daytime: Once per month (Apr-Nov); Night-time: Once per month (Mar-Aug)
Water quality of WRA	WRA	In situ: Monthly Laboratory Testing: Every six months (end of wet season and end of dry season)
Site Inspection	Within the Project Area and Assessment Area of 500m	Weekly

The latest monitoring findings indicated that the WRA, has induced ecological gain within the Project Area). The total number of mammals, birds, amphibians, reptiles, butterflies and odonates species and those of conservation importance recorded within Assessment Area (excluding WRA) and WRA, for the 12 months between December 2023 to November 2024 are summarised in **Table 3** and **Table 4** respectively below. Compared to **Table 1**, all fauna group have been recorded increase in total number of species and species of conservation importance, utilising the WRA.

Table 3 Total Number of Species and Number of Species of Conservation Importance recorded within Study Area (excluding WRA) between December 2023 – November 2024

Fauna Group	Species of Conservation Importance	Total no. of species recorded
Mammals	1	1
Birds*	31 (40)	80
Amphibians	0	3
Reptiles	0	2
Butterflies	1	14

Odonates	0	18

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

Table 4 Total Number of Species and Number of Species of Conservation Importance recorded within WRA between December 2023 – November 2024

Fauna Group	Species of Conservation Importance	Total no. of species recorded
Mammals	3	4
Birds*	28 (36)	75
Amphibians	1	7
Reptiles	3	6
Butterflies	3	26
Odonates	1	31

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

5 Ecological Surveys

Surveys conducted are summarised in the table below. Survey transects and flightline vantage points are presented in **Figure 2**.

Table 5 Ecological Survey Programme

Survey Group	2024									2025
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Habitat and Flora		✓						✓		
Bird Transect Survey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Flightline Survey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mammal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Herpetofauna	✓	✓	✓	✓	✓	✓	✓			
Odonates and Butterflies	✓	✓	✓	✓	✓	✓	✓	✓		
Aquatic Fauna	✓		✓					✓		✓
Fireflies	✓	✓	✓			✓	✓	✓		

Habitat and Flora

Habitat within the Project Area and Assessment Area was preliminarily identified by reference to recent aerial photographs and confirmed the existing habitat types by ground-truthing.

Floral survey was conducted once during the survey period. General characteristics of the floral community present in each habitat were noted for use in habitat descriptions.

Bird Transect Survey

Bird transect surveys were conducted monthly within the Application Site and Assessment Area. The surveys started during the early morning, at the period of peak bird activity, and all birds seen or heard were recorded.

Wet Season Flightline Survey

Wet season flightline surveys were conducted monthly between April and October. A vantage point (see **Figure 2**) was located at the middle of the Application Site, where is slightly elevated, allowing overview of fishponds to the north. Another vantage point was located near the Mai Po Village Egretry, at the Tam Kon Chau Road.

The species, number of individuals, location of flightlines, time of observation and (relative) height above ground were recorded. Surveys commenced 15 minutes before sunrise to cover the period of maximum egret activity and lasted for two hours. Flightlines were marked onto a map.

Dry Season Flightline Survey

Dry season flightline surveys were conducted monthly between November and January. A vantage point (see **Figure 2**) was located at the middle of the Application Site, where is slightly elevated, allowing overview of fishponds to the north. Another vantage point was located near the Mai Po Village Egretry, at the Tam Kon Chau Road.

The species, number of individuals, location of flightlines, time of observation and (relative) height above ground were recorded. Surveys commenced 15 minutes before sunrise to cover the period of maximum egret activity and lasted for two hours. Flightlines were marked onto a map.

Mammals

Monthly transect surveys were conducted along with herpetofauna daytime and night-time surveys. In addition to any observations of mammals, evidence of mammal activity (footprints, scats, burrows or food remains) was searched at suitable locations.

Herpetofauna

Herpetofauna surveys were conducted monthly between April and October 2024 both during the day and at night. The transects followed were the same as for terrestrial fauna survey. During the surveys all individuals seen foraging or basking in the open were recorded and appropriate microhabitats and potential refugia were inspected for more cryptic species. Hand or head torches were used as necessary during night-time surveys. Amphibians were also recorded by identification of advertising calls.

Odonates and Butterflies

Odonates and Butterflies surveys were conducted monthly between April and November 2024 along the same transect, with species mainly detected by direct observation. All species observed were identified to species level and quantified.

Aquatic fauna

Aquatic fauna surveys were conducted within the Application Site two times in wet season and two times in dry season. Aquatic fauna was identified by direct observation and active searching by nets as appropriate.

Fireflies

Firefly surveys were conducted monthly from April to June 2024 and September to November 2024, following the survey transect for terrestrial fauna. The survey was conducted shortly after dusk. During the surveys, any adult firefly observed were identified to the species level, where possible.

6 SURVEY FINDINGS

6.1 Habitats and Vegetation

The Application Site was only categorized into two habitat types, mitigation wetland (i.e. the completed WRA) and development site, which both have been modified and are under regular management. The Assessment Area was categorized into eleven habitat types, including agricultural land, drainage channel/ditch, fishpond, pond/open water, reedbed, marsh, *Leucaena* woodland, secondary woodland, plantation, managed grassland, developed area. Habitat map is presented in **Figure 3**. No flora species of conservation importance was recorded in the Application Site and 500m Assessment Area.

Table 6 Area of habitats in the Application Site and 500m Assessment Area

Habitat	Application Site (including the completed WRA)	500m Assessment Area (excluding the Application Site)
Development Site	16.00	-
Mitigation Wetland	4.74	-
Agricultural Land	-	0.20
Drainage Channel/Ditch	-	4.24
Fishpond	-	59.83
Pond/Open Water	-	4.67
Reedbed	-	10.84
Marsh	-	1.22
Leucaena Woodland	-	2.24
Secondary Woodland	-	0.77
Plantation	-	7.61
Managed Grassland	-	0.59
Developed Area	-	90.11
Total	**20.74**	**182.32**

6.2 Faunal Survey Findings

Bird Transect Survey

Total of 66 bird species have been recorded within the Assessment Area (excluding the Application Site); 27 of these are species of conservation importance.

Total of 42 bird species have been recorded within the Application Site, 13 of these are species of conservation importance.

Wet Season Flightline Survey

Across the seven surveys in the wet season, a total of 1041 individuals of six species (Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Great Egret, Little Egret and Great Cormorant) were recorded within a total of 14 survey hours. These were subsequently ascribed to individual flightlines over or near the Application Site. The flight paths that were used by very small proportion of the birds were not considered to be significant and were excluded from further analysis.

9 flightlines were identified from the analysis (see **Figure 4**). 3 flightlines (Flightlines No. 1, 2 and 5) were defined as major flightlines (defined here as being used by over 10% of total individuals).

The other 6 flightlines were defined as minor flightlines. Flightlines No.5, located to the west of the Application Site, had the highest usage with 400 individual birds (38.42% of total individuals).

Table 7 Summary of wet season flightline data showing number of birds using individual flightlines

Flightline No.	Total no. of Birds	Mean no. of birds per survey hour	%	Mean no. of birds by species per survey hour #					
				CPH	CE	GH	GE	LE	GC
1*	155	11.07	14.89	2.36	0.29	0.07	2.71	5.64	
2*	123	8.79	11.82	2.50	0.21	0.07	0.14	5.50	0.36
3	105	7.50	10.09	0.64	0.29	0.07	0.57	2.21	3.71
4	63	4.50	6.05	0.29			0.07	0.57	3.57
5*	400	28.57	38.42			0.07	3.36	0.07	25.07
6	65	4.64	6.24	0.36			1.93	1.86	0.50
7	34	2.43	3.27	0.07		0.07	0.64	1.36	0.29
8	19	1.36	1.83	0.57			0.71	0.07	
9	77	5.5	7.40	0.79		0.07	0.14	0.93	3.57
Grand Total	**1041**	**74.36**	**100%**	**7.57**	**0.79**	**0.43**	**10.29**	**18.21**	**37.07**

Notes:
(1) * Indicates the major flightlines.
(2) # CPH = Chinese Pond Heron; CE = Eastern Cattle Egret; GH = Grey Heron; GE = Great Egret; LE = Little Egret; GC = Great Cormorant.

Table 8 Summary of wet season flightline data showing number and percentage of birds using individual flightlines in each height category

Flightline No.	Relative Height						Grand Total	Overall % (Flightline usage)
	0 – 1X	≥1-2X	≥2-3X	≥3-4X	≥4-5X	≥5-6X		
	Approximate Height							
	0-10m	≥10-20m	≥20-30m	≥30-40m	≥40-50m	≥50-60m		
1*		71	65	13	6		155	14.89%
2*		65	34	17	7		123	11.82%
3		16	36	47	3	3	105	10.09%
4		1	3	54	5		63	6.05%
5*		14	295	91			400	38.42%
6		30	32	3			65	6.24%
7		14	12	5	1	2	34	3.27%
8		7	2	10			19	1.83%
9		7	68	1	1		77	7.40%
Grand Total		**225**	**547**	**241**	**10**	**23**	**1041**	**100.00%**
Overall % (Height)	**0.00%**	**21.61%**	**52.55%**	**23.15%**	**2.21%**	**0.48%**	**100.00%**	**N/A**

Notes:
(1) * indicates the major flightlines.

Major flightlines comprised birds travelled across wetland habitats adjacent to but outside the Application Site. Flightline No.1 was the only flightline close to the Application Site. Bird individuals were observed travelling across the completed WRA (see **Figure 4**).

Dry Season Flightline Survey

Across the three surveys in the dry season, a total of 1359 individuals of six species (Black-faced Spoonbill, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret and Great Cormorant) were recorded within a total of 6 survey hours. These were subsequently ascribed to individual flightlines over or near the Application Site. The flight paths that were used by very small proportion of the birds were not considered to be significant and were excluded from further analysis.

7 flightlines were identified from the analysis (see **Figure 5**). 1 flightline (Flightline No. 4) was defined as major flightline (defined here as being used by over 50% of total individuals). The other

6 flightlines were defined as minor flightlines. Flightline No.4 located to the north of the Application Site, had the highest usage with 728 individual birds (53.69% of total individuals).

Table 8 Summary of dry season flightline data showing number of birds using individual flightlines

Flightline No.	Total no. of Birds	Mean no. of birds per survey hour	%	Mean no. of birds by species per survey hour #					
				BFS	CPH	GH	GE	LE	GC
1	219	36.50	16.15	0.50		0.33	3.00	0.33	32.33
2	111	18.50	8.19					0.33	18.17
3	56	9.33	4.13					0.50	8.83
4*	728	121.33	53.69	0.50		0.33	10.33	12.67	97.50
5	21	3.50	1.55				0.17	2.17	1.17
6	85	14.17	6.27				1.17	0.33	12.67
7	136	22.67	10.03	2.67	0.50	0.33	0.67	2.50	16.00
Grand Total	**1359**	96.86	**100%**	3.67	0.50	1.00	15.33	18.83	186.67

Notes:
(1) * Indicates the major flightlines.
(2) # BFS = Black-faced Spoonbill; CPH = Chinese Pond Heron; GH = Grey Heron; GE = Great Egret; LE = Little Egret; GC = Great Cormorant.

Table 9 Summary of dry season flightline data showing number and percentage of birds using individual flightlines in each height category

Flightline No.	Relative Height						Grand Total	Overall % (Flightline usage)
	0 – 1X	≥1-2X	≥2-3X	≥3-4X	≥4-5X	≥5-6X		
	Approximate Height							
	0-10m	≥10-20m	≥20-30m	≥30-40m	≥40-50m	≥50-60m		
1		73	141	5			219	16.15
2			1	84	26		111	8.19
3		14	5	37			56	4.13
4*		177	534	17			728	53.69
5		9	12				21	1.55
6		56	23	6			85	6.27
7		83	53				136	10.03
Grand Total		**412**	**769**	**149**	**26**		**1356**	**100.00**
Overall % (Height)	**0.00%**	**30.38%**	**56.71%**	**10.99%**	**1.92%**	**0.00%**	**100.00%**	**N/A**

Notes:
(1) * indicates the major flightline.

Major flightlines comprised birds travelled across wetland habitats adjacent to but outside the Application Site. Flightline No. 3 was the only flightline close to the Application Site. Bird individuals were observed travelling across the Project Area (see **Figure 5**).

Mammals

Short-nosed Fruit Bat and Japanese Pipistrelle have been recorded both within the Assessment Area and the Application Site. Both are species of conservation importance and are protected under Cap.170 in Hong Kong.

Herpetofauna

Within the Assessment Area (excluding the Application Site), a total of 5 amphibian species and 4 reptile species were recorded. None of these is species of conservation importance.

Within the Application Site, a total of 5 amphibian species and 4 reptile species were recorded. None of these is species of conservation importance.

Odonates and Butterflies

A total of 28 odonate species was recorded within the Assessment Area (excluding the Application Site). Two species of conservation importance were recorded within the AA, namely Coastal Glider and Ruby Darter, both considered to be Local Concern by Fellows et al. (2002). Within the Application Site, a total of 8 odonate species was recorded.

A total of 32 butterfly species have been recorded within the Assessment Area (excluding the Application Site). Within the Application Site, a total of 15 butterfly species was recorded.

Aquatic fauna

Exotic fish including Snakehead Murrel was observed in the drainage channels. Larvae and exuviae of a total of 10 odonate species were also observed. None of these is species of conservation importance.

Fireflies

Only one species *Pyrocoelia analis*, was recorded within the Assessment Area, with very low abundance. This is a commonly seen species in agricultural land and fishpond area in Hong Kong.

Special attention to Mai Po Bent-winged Firefly during the surveys, this species of conservation importance was not recorded.

7 EVALUATION OF HABITATS

7.1 Habitats within the Application Site

Table 9 Ecological evaluation of mitigation wetland within the Application Site

Criteria	Mitigation Wetland
Naturalness	Under management and monitoring as approved EIA mitigation measures.
Size	4.74ha, approximately one fourth of the Application Site. Loss of 0.69ha seasonal marsh and 4ha freshwater marsh/reedbed are fully compensated according to approved EIA report (AEIAR-120/2008)
Diversity	Moderate diversity of fauna
Rarity	Wetland-dependent species
Re-creatability	Could be recreated.
Fragmentation	Not fragmented.
Ecological linkage	Ecological linkage to WCA and Deep Bay
Potential value	Value could be enhanced by suitable management
Nursery/ breeding ground	Potentially breeding ground for some amphibian, reptile and odonates
Age	More than ten years. Construction works completed in November 2010 and established by October 2012.
Abundance/ Richness of wildlife	Moderate abundance of wildlife
Ecological value	**MODERATE**

Table 10 Ecological evaluation of development site within the Application Site

Criteria	Development Site
Naturalness	Wasteland, site formation works in progress
Size	16.0ha
Diversity	Low
Rarity	Common species
Re-creatability	Easily re-creatable.
Fragmentation	N/A
Ecological linkage	Limited ecological linkage
Potential value	N/A
Nursery/ breeding ground	Nil.
Age	Few decades
Abundance/ Richness of wildlife	Low
Ecological value	**LOW**

7.2 Habitats within 500m Assessment Area (excluding the Application Site)

Table 11 Ecological evaluation of fishpond within the Assessment Area

Criteria	Fishpond
Naturalness	Man-made wetland habitat
Size	59.83ha, relatively large
Diversity	Limited floral diversity. Moderate diversity of avifauna species.
Rarity	Wetland-dependent species
Re-creatability	Readily re-creatable
Fragmentation	Not fragmented.
Ecological linkage	Highly connected with Deep Bay ecosystem
Potential value	High
Nursery/ breeding ground	Wetland-dependent bird species utilising fishpond habitat, such as Little Grebe and White-breasted Waterhen have been recorded breeding.

Criteria	Fishpond
Age	Long established for decades.
Abundance/ Richness of wildlife	Abundant for wetland-dependent species.
Ecological value	**MODERATE TO HIGH**

Table 12 Ecological evaluation of pond/open water within the Assessment Area

Criteria	Pond/Open water
Naturalness	Man-made, derived from abandoned fishponds
Size	4.67ha
Diversity	Low to moderate
Rarity	Conservation Area for the ponds within Palm Springs, however low usage by species of conservation importance, such as Little Egret and Chinese Pond Heron.
Re-creatability	Readily re-creatable
Fragmentation	Fragmented by developed area.
Ecological linkage	Limited linkage for the ponds within Palm Springs; Pond/open water to the west of Palm Springs are connected with Deep Bay wetlands.
Potential value	Limited for ponds within Palm Springs
Nursery/ breeding ground	Wetland-dependent bird species utilising pond habitat, such as White-breasted Waterhen have been recorded breeding.
Age	Few decades after abandonment
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**MODERATE**

Table 13 Ecological evaluation of marsh within the Assessment Area

Criteria	Marsh
Naturalness	Naturally derived from abandoned fishpond, overgrown with wetland plants
Size	1.22ha
Diversity	Low diversity
Rarity	Low
Re-creatability	Readily re-creatable
Fragmentation	Located at the fringe of continuous fishponds area, abutting village development.
Ecological linkage	Limited as much less favourable than adjacent wetland
Potential value	Could be enhanced with vegetation management or resumed into pond habitat.
Nursery/ breeding ground	Nil.
Age	at least 20 years since abandonment.
Abundance/ Richness of wildlife	Low abundance
Ecological value	**LOW TO MODERATE**

Table 14 Ecological evaluation of drainage channel/ditch within the Assessment Area

Criteria	Drainage Channel/Ditch
Naturalness	Man-made
Size	4.22ha, small in Hong Kong context.
Diversity	Low to moderate
Rarity	Species of conservation importance was not recorded.
Re-creatability	Readily re-creatable.
Fragmentation	Not fragmented within the fishpond area.
Ecological linkage	Linked with wetland habitats
Potential value	Could be enhanced with vegetation management.
Nursery/ breeding ground	Nil.
Age	Long established with fishponds

Criteria	Drainage Channel/Ditch
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**LOW TO MODERATE**

Table 15 Ecological evaluation of reedbed within the Assessment Area

Criteria	Reedbed
Naturalness	Semi-natural, derived from abandoned fishponds.
Size	10.84ha
Diversity	Low floral diversity, dominated by reed; Low to moderate diversity of fauna
Rarity	Low to moderate
Re-creatability	Readily re-creatable
Fragmentation	Not fragmented.
Ecological linkage	Connected with Deep Bay wetlands.
Potential value	Could be enhanced with proper vegetation management.
Nursery/ breeding ground	Nil.
Age	Few decades after abandonment
Abundance/ Richness of wildlife	Low to moderate.
Ecological value	**MODERATE**

Table 16 Ecological evaluation of agricultural land within the Assessment Area

Criteria	Agricultural Land
Naturalness	Man-made
Size	0.2ha, very small patches scattered within the Assessment Area.
Diversity	Very Low
Rarity	N/A
Re-creatability	Re-creatable
Fragmentation	Fragmented by surrounding developed area
Ecological linkage	Limited to adjacent hillslope habitat
Potential value	Low
Nursery/ breeding ground	Nil.
Age	Within past few years
Abundance/ Richness of wildlife	Very Low
Ecological value	**VERY LOW**

Table 17 Ecological evaluation of managed grassland within the Assessment Area

Criteria	Managed Grassland
Naturalness	Man-made
Size	0.59ha, very small.
Diversity	Very low
Rarity	N/A
Re-creatability	Re-creatable
Fragmentation	Fragmented
Ecological linkage	Limited
Potential value	Very low
Nursery/ breeding ground	Nil.
Age	Past few decades.
Abundance/ Richness of wildlife	Very low
Ecological value	**VERY LOW**

Table 18 Ecological evaluation of *Leucaena* woodland within the Assessment Area

Criteria	***Leucaena* Woodland**
Naturalness	Semi-natural, derived from wasteland, overgrown with *Leucaena leucocephala*
Size	2.24ha
Diversity	Low
Rarity	N/A
Re-creatability	Re-creatable
Fragmentation	Fragmented
Ecological linkage	Limited
Potential value	Very low, unless entirely replaced with native species through management
Nursery/ breeding ground	Nil.
Age	Past few decades.
Abundance/ Richness of wildlife	Very Low
Ecological value	**VERY LOW**

Table 19 Ecological evaluation of secondary woodland within the Assessment Area

Criteria	**Secondary Woodland**
Naturalness	Semi-natural woodland habitat, derived from *Fung Shui* woodland
Size	0.77ha, small.
Diversity	Moderate floral diversity. Faunal diversity lower than in woodlands elsewhere in Hong Kong, due to relative isolation of this patch.
Rarity	Secondary woodland is common in Hong Kong but Fung Shui woods and egretries are rare.
Re-creatability	Could be recreated in long-term if suitable resources are available. Fung shui wood would be difficult to recreate. Recolonisation by egrets would be difficult to achieve.
Fragmentation	Not fragmented within the Assessment Area, but this single block is isolated from similar habitats.
Ecological linkage	Some ecological linkage to Deep Bay via foraging egrets. Otherwise, poor linkage due to presence of villages and major road.
Potential value	Value could be enhanced by suitable management, especially if the number of breeding egrets could be increased.
Nursery/ breeding ground	Previously egretry record.
Age	Fairly old due to *fung shui* functions.
Abundance/ Richness of wildlife	Moderate abundance of wildlife, but lower than in other woodland areas.
Ecological value	**MODERATE**

Table 20 Ecological evaluation of plantation within the Assessment Area

Criteria	**Plantation**
Naturalness	Manmade habitat, mainly roadside planting.
Size	Medium within AA.
Diversity	Low to moderate.
Rarity	Species of conservation importance was not recorded.
Re-creatability	Readily re-creatable.
Fragmentation	Fragmented by developed areas.
Ecological linkage	Not connected to the fishpond areas.
Potential value	Potential ardeid roost for mature trees relatively closer to the wetland habitats.
Nursery/ breeding ground	Nil.
Age	Several decades
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**LOW TO MODERATE**

Table 21 Ecological evaluation of developed area within the Assessment Area

Criteria	Developed Area
Naturalness	Man-made
Size	Relatively large
Diversity	Low to moderate
Rarity	Low
Re-creatability	Re-creatable
Fragmentation	N/A
Ecological linkage	Abutting Deep Bay wetland areas.
Potential value	N/A
Nursery/ breeding ground	Nil.
Age	Several decades.
Abundance/ Richness of wildlife	Low
Ecological value	**VERY LOW**

8 POTENTIAL ECOLOGICAL IMPACTS

The proposed changes to the project involve only the residential portion of the Project Area. However, since the WRA is designed as a mitigation measure for three target bird species, increased disturbance to the WRA which renders the site less suitable for these species could have a significant adverse impact to the WRA. Therefore, any proposed changes at the interface or to predicted disturbance levels with the WRA are evaluated.

8.1 Potential Direct Impact to the WRA

Since there are no changes proposed to the WRA or at the boundary between the residential area and WRA, no additional direct impact to the ecological function and area of the WRA is anticipated.

8.2 Potential Direct Impact to Fauna Species of Conservation Importance

Since no changes are proposed to the WRA, no additional impact is anticipated to the fauna species of conservation importance within the WRA.

The WRA has also been implemented as buffer area between the residential development and the WCA; no additional impact is anticipated to the fauna species of conservation importance in the WCA.

8.3 Potential Indirect Impact to the WRA

An increase in building height may result in higher visibility of human activities at the boundary and within the WRA. According to the approved EcoIA, all of the three target bird species are considered to be species which are prone to human disturbance. Potential indirect impact to the WRA might result from human activities at the residential area of the site are primarily noise and visual disturbance.

As noted in submission of A/YL-MP/229 (accepted in Feb 2015), according to the approved Wetland Restoration and Creation Scheme (WRCS), a 2m high solid wall with buffer tree/shrub planting on the WRA-side, will delineate the WRA and the residential area. The buffer planting has been postponed due to the need to retain the existing site boundary and noise barrier and it will be completed prior to the operational phase of the Project (refer to EP-311/2008/C). No additional mitigation measure was required for postponing the buffer planting.

The total number of residential units abutting the WRA is increased from 13 to 37 in the revised MLP. However, only 3-storey detached/semi-detached houses are proposed in this location. Greater setback of these residential units from the WRA, is also expected to offset the potentially increased disturbance impact due to the increase in number of house units. Hence, no additional ecological impact is predicted. All measures to screen the WRA from the residential proportion of the project included in the approved EIA are retained.

The proposed taller buildings have been considered carefully the alignment and orientation. More than 50m setback from the nearest WCA at the eastern part of Application Site is proposed while including the WRA and Palm Springs, there are more than 100m setback between the taller buildings and the WCA to the north and to the west.

In addition to the approved S16 scheme, the buffer planting between the residential portion and the WRA, will be increase from width of 2.5m to 5m. This will provide further screening effect, avoiding disturbance to the WRA, as well as the WCA fishponds to the north.

No significant adverse ecological impacts are anticipated due to the proposed amendments.

8.4 Potential Indirect Impact to Fauna Species of Conservation Importance

Since no changes are proposed to the WRA, no additional disturbance impact is anticipated to the fauna species of conservation importance in the WCA.

A 3m site hoarding will be placed between the WRA and the construction works for residential areas so that a visual barrier is maintained between the construction work and wetland habitats. Other methods to reduce sources of disturbance will be employed, including good site practice within the construction site, selection of quiet equipment to minimise noise disturbance, minimisation of night-time lighting and location of lighting away from the wetlands, and prevention of feral dogs from accessing the construction site. Implementation of the ecological mitigation measures stated, will continue to be checked as part of the EM&A procedures during the construction period. No additional disturbance impact is anticipated to the fauna species of conservation importance in the WRA.

8.5 Potential Impact to Bird Flightline

Based on the latest flightline survey findings, approximately 9 bird individuals (mainly Great Cormorant) per survey hour were recorded flying above the Application Site. However, as shown in Table 8, most of the Great Cormorant (approximately 129 individuals per survey hour) were recorded flying across the fishponds to the north of the Application Site (flightline no.1 and flightline no.4). Furthermore, during the survey, the majority of Great Cormorant was observed flying close to the Shen Zhen River, from Mai Po, across Lin Barn Tsuen fishponds, towards the north; hence, the flightline is outside the 500m Assessment Area. This observation matches with Figure 2.3 of the Strategic Feasibility Study on the Development of Wetland Conservation Parks System under the Northern Metropolis Development Strategy (AFCD 2024), major flightline across the WCPS system. Impedance of Great Cormorant flightlines is therefore not expected.

The birds using the flightline also flew over the adjacent residential development (Palm Springs) which is of a comparable height to the proposed low-rise development of the Project. Impedance of flightlines arising from the proposed amendment is not expected. As such, potential impacts to flightlines as a whole are not considered to be significant.

8.6 Potential Bird Collision Impact with Buildings

With reference to the revised MLP, the stepped design has been considered the orientation and taller buildings are situated at minimum setback of 120m from the nearest wetland habitat. Tallest 10-storey buildings (+42mPD) are all proposed in the middle (at least 150m away) and the eastern portion of the Application, as far away from the wetland habitat as possible.

The mitigation measures to avoid bird collisions (i.e. visually unobtrusive and non-reflective building materials etc.) in the approved EcoIA apply here. Therefore, the potential impact of bird collision with any buildings is not anticipated.

8.7 Potential Impact to the Wetland Conservation Area

No change is proposed to the design or operation of the WRA with reference to the Wetland Restoration Plan (WPR) in the approved EIA. Access will only be required to facilitate monitoring and management. Monitoring activities will be undertaken at an appropriate time of the day to minimize the disturbance to bird activity. Routine management works (e.g. grass-cutting) will be conducted on a monthly basis to avoid the need for large scale and/or intensive vegetation management. The WRA will be secured to prevent unauthorised human access and exclude dogs from the site as far as possible. The WRA will continue to function as a buffer between the residential development and the fishponds in the WCA.

The mitigation measures to avoid night-time lighting and glare in the approved EcoIA apply here. Hence, no additional impact is predicted to the wetland habitats in the WCA.

9 CONCLUSION

Since the proposed amendments relate to the layout of residential development and design of house units, no major ecological impact is expected to the implemented WRA and wetland habitats in the WCA.

There might be some potential for increased disturbance impact due to the increased total number of house units. However, the setback of 3-storey detached house adjacent to the implemented WRA, are expected to offset the disturbance impact. The buffer planting between the implemented WRA and the residential area will be completed prior to the operational phase of the Project. No additional impact is predicted.

No major flightlines in latest surveys is over the residential portion of the proposed development. Only one minor flightline is recorded. No impedance of flightline is expected. No additional flightline impact is predicted as the increase in building height is minimal. Hence, the findings of the approved EcoIA remain valid.

There might be potential for bird collisions with taller buildings; however, the mitigation measures to avoid bird collisions with buildings in the approved EcoIA apply here and no additional impact is predicted.

With the implementation of all mitigation measures, no additional ecological impact is predicted compared to the approved scheme and that the findings of the approved EcoIA under planning Application No. A/YL-MP/229 remain valid.

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Appendix

Appendix A

Fauna Species recorded in EM&A reports between December 2023 – November 2024

All survey findings summarised in Appendix A are retrieved from EM&A reports by Mott MacDonald Hong Kong Ltd.

Table A1 Mammal Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Japanese Pipistrelle	*Pipistrellus abraums*	Cap. 170	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**1**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Cap. 170 = Wild Animals Protection Ordinance.
2. Distribution and rarity follow the data of HKBIH (AFCD, 2024).

Table A2 Mammal Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Short-nosed Fruit Bat	*Cynopterus sphinx*	RLCV (NT); Cap. 170	Very widely distributed in urban and countryside areas throughout Hong Kong.
Japanese Pipistrelle	*Pipistrellus abraums*	Cap. 170	Widely distributed throughout Hong Kong.
Leopard Cat	*Prionailurus bengalensis*	RLCV (VU); CSMPS (I); CITES (II); Cap. 170; Cap. 586	Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island.
Eurasian Wild Pig	*Sus scrofa*	-	Very widely distributed in countryside areas throughout Hong Kong.
No. of species of conservation importance			**3**
Total no. of species recorded			**4**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): NT = Near-threatened; VU = Vulnerable.
   b. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   c. Protection status by CSMPS (CSIS, 2019): I = Class I Protected Species in China.
   d. Cap. 170 = Wild Animals Protection Ordinance.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Distribution and rarity follow the data of HKBIH (AFCD, 2024).

Table A3 Bird Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Northern Shoveler	***Spatula clypeata***	**RC**	**Abundant winter visitor to the intertidal areas of Deep Bay typically present October to April.**
Tufted Duck	***Aythya fuligula***	**LC**	**Abundant winter visitor.**
House Swift	*Apus nipalensis*	-	Locally abundant resident and passage migrant, mainly in spring. Much lower numbers now occur on migration compared with the 1980s and 1990s.
Greater Coucal	*Centropus sinensis*	CSMPS(II)	Widespread and common resident typically present in mangroves and shrub dominated closed and open-canopy habitats, usually in lowland areas.
Asian Koel	*Eudynamys scolopaceus*	-	Very common resident, with increased numbers in autumn suggesting the presence of passage migrants.
Large Hawk-cuckoo	*Hierococcyx sparverioides*	-	Common summer visitor.
Indian Cuckoo	*Cuculus Micropterus*	-	Breeding summer visitor, which is locally common but less widespread than in the past.
Eurasian Collared Dove	*Streptopelia decaocto*	-	A locally common breeding resident in the northwest New Territories with scattered records elsewhere. First recorded in 1999 and placed on Category IIB in 2007, it is slowly increasing in numbers and range.
Red Turtle Dove	*Streptopelia tranquebarica*	-	A common passage migrant, especially in autumn, and scarce winter visitor, mainly to the Deep Bay area, with occasional summer records. Numbers appear to have increased in recent years and summer records have become more frequent, but there is no evidence that breeding has occurred.
Spotted Dove	*Spilopelia chinensis*	-	Common and conspicuous resident in all anthropogenic habitats.
Eastern Water Rail	***Rallus indicus***	-	**Scarce winter visitor to freshwater or brackish marsh.**
Common Moorhen	***Gallinula chloropus***	-	**Scarce to uncommon winter visitor, scarce at other times, in vegetated wetland habitats of the northern New Territories, though appears to be in decline due to urbanisation and more intensive management of commercial fishponds.**
White-breasted Waterhen	***Amaurornis phoenicurus***	-	**Common resident in a variety of freshwater and brackish wetland habitats, though numbers are declining probably due to urbanisation of the New Territories.**
Little Grebe	***Tachybaptus ruficollis***	**LC**	**Common in open freshwater wetlands in the northwest New Territories, though declining in marginal areas probably due to increased human disturbance and draining of wetlands.**
Black-winged Stilt	***Himantopus Himantopus***	**RC**	**Common to abundant in freshwater marsh, brackish Gei Wai and commercial fishponds. Has increased greatly since winter 2005/06 and small numbers now breed in most years.**
Little Ringed Plover	***Charadrius dubius***	**(LC)**	**Present all year. Primarily an autumn passage migrant and winter visitor to fresh and brackish water wetlands but breeds in small numbers in ephemeral freshwater wetland habitat.**
Common Snipe	***Gallinago gallinago***	-	**Common passage migrant and winter visitor to vegetated freshwater wetlands, most numerous in autumn.**
Common Sandpiper	***Actitis hypoleucos***	-	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Green Sandpiper	***Tringa ochropus***	-	**Uncommon passage migrant and winter visitor, rare in summer; occurs in a wide variety of freshwater wetlands.**
Marsh Sandpiper	***Tringa stagnatilis***	**RC**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Wood Sandpiper	***Tringa glareola***	**LC**	**Common migrant and winter visitor to freshwater wetlands, with some evidence of a decline in numbers.**
Spotted Redshank	***Tringa erythropus***	**RC**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Whiskered Tern	***Chlidonias hybrida***	**-**	**Common passage migrant, scarce in winter; occurs mainly in fishpond and freshwater wetland areas, but also in inshore and occasionally, offshore waters.**
White-winged Tern	***Chlidonias leucopterus***	**-**	**Passage migrant, common in spring and scarce in autumn; mostly seen over fishponds or freshwater marsh in the Deep Bay area but also occasionally in coastal waters. Numbers have possibly declined since the 1990s.**
Great Cormorant	***Phalacrocorax carbo***	**PRC**	**Abundant winter visitor to Deep Bay area and both inshore and offshore waters.**
Yellow Bittern	***Ixobrychus sinensis***	**(LC)**	**Common summer visitor and passage migrant to wetland areas primarily in the Deep Bay area, scarce in winter. Numbers of breeding birds and passage migrants have substantially decreased.**
Black-crowned Night Heron	***Nycticorax nycticorax***	**(LC)**	**Abundant passage migrant and winter visitor and uncommon breeding species. Occurs in variety of wetland habitats throughout Hong Kong.**
Chinese Pond Heron	***Ardeola bacchus***	**PRC (RC)**	**Common at a variety of freshwater and brackish wetlands across Hong Kong throughout the year; both migratory and resident populations occur.**
Eastern Cattle Egret	***Bubulcus ibis***	**(LC)**	**Present all year in vegetated fresh and brackish water wetland areas; highest numbers in the wet season, after breeding and during autumn migration.**
Grey Heron	***Ardea cinerea***	**PRC**	**Abundant winter visitor; scarce in summer. Has bred. Frequents wetlands throughout Hong Kong but concentrated in Deep Bay area.**
Great Egret	***Ardea alba***	**PRC (RC)**	**Present all year in larger and more open brackish and freshwater wetlands. Most numerous in late autumn and least in April. Migrants pass through mainly in autumn, and a large breeding population has established in Deep Bay in recent years.**
Intermediate Egret	***Ardea intermedia***	**RC**	**Common on passage but scarce at other times of year mainly in freshwater wetland areas. Appears to have increased in numbers over past 60 years.**
Little Egret	***Egretta garzetta***	**PRC (RC)**	**Present all year in a wide variety of fresh and non-freshwater wetland habitats. An influx of birds occurs in the winter months.**
Black-winged Kite	*Elanus caeruleus*	LC; CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, scarce at other times; occurs in open country habitats mainly in the northwest New Territories.
Crester Goshawk	*Accipiter trivirgatus*	CITES(II); CSMPS(II); Cap.586	Common resident in forest areas, but also hunts in open country.
Besra	*Accipiter virgatus*	CSMPS(II); CITES(II); Cap.586	Present all year. Numbers highest in autumn when passage migrants occur in diverse wooded areas and lowest in summer when it breeds in closed-canopy shrubland.
Black Kite	*Milvus migrans*	(RC); CSMPS(II); CITES(II); Cap.586	Present all year throughout Hong Kong, numbers lowest in summer and highest during autumn migration.
Eastern Buzzard	*Buteo japonicus*	CSMPS(II); CITES(II); Cap.586	Common autumn passage migrant and winter visitor, scarce in spring. Occurs in widespread areas of Hong Kong in most non-urban habitats.
White-throated Kingfisher	***Halcyon smyrnensis***	**(LC); CSMPS(II)**	**Present all year with numbers highest in the second half. Much declined, particularly in the breeding season. Occurs mainly in Deep Bay wetlands in the winter, but in mixed shrubland and farmland habitats in the breeding season.**
Common Kingfisher	***Alcedo atthis***	**-**	**Common in autumn and winter, scarce in spring and summer; frequents a wide variety of lowland, largely freshwater wetlands, though also forages at the coast. The migrant population is probably much declined.**
Pied Kingfisher	***Ceryle rudis***	**(LC)**	**Locally uncommon resident, mainly in freshwater and brackish wetland. In decline.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Peregrine Falcon	*Falco peregrinus*	(LC); CSMPS(II); CITES(I); Cap.586	Present all year, with the resident subspecies peregrinator breeding and birds from northerly breeding populations present in winter.
Long-tailed Shrike	*Lanius schach*	LC	Formerly a widespread and fairly common breeding species with occasional winter records. Last proven to breed in 2003 and now a scarce passage migrant and rare winter visitor.
Black-naped Oriole	*Oriolus chinensis*	-	Occurs year-round in open broadleaf woodland or forest-edge areas, most abundant during autumn passage.
Hair-crested Drongo	*Dicrurus hottentottus*	-	Common summer visitor, larger numbers on passage especially autumn, and regular in winter in low numbers. Occurs in open country areas with scattered trees or artificial perches.
Black Drongo	*Dicrurus macrocercus*	-	Common breeding resident in open-canopy shrubland and open-country with sufficient perches and nest sites.
Azure-winged Magpie	*Cyanopica cyanus*	-	Locally common breeding resident in the Deep Bay area centred around Mai Po.
Collared Crow	***Corvus torquatus***	**LC; IUCN(VU)**	**Locally common resident.**
Large-billed Crow	*Corvus macrorhynchos*	-	Largely resident, occurs throughout Hong Kong.
Japanese Tit	*Parus minor*	-	Abundant resident in diverse wooded and lightly-wooded habitats.
Chinese Bulbul	*Pycnonotus sinensis*	-	Abundant resident in nearly all habitats; HK's most widespread bird. Also occurs as a passage migrant and winter visitor.
Red-whiskered Bulbul	*Pycnonotus jocosus*	-	Abundant or common resident in nearly all habitats; Hong Kong's second most widespread bird.
Barn Swallow	*Hirundo rustica*	-	Widespread and common.
Pallas's Leaf Warbler	*Phylloscopus proregulus*	-	Uncommon to common winter visitor and passage migrant to wooded areas.
Dusky Warbler	*Phylloscopus fusccatus*	-	Common passage migrant and winter visitor to open country areas with shrubs.
Yellow-bellied Prinia	*Prinia flaviventris*	-	Common resident in grassland, reed marsh and rank or herbaceous vegetation, and thus highest densities occur in the northwest New Territories.
Plain Prinia	*Prinia inornate*	-	Locally common resident in grassy habitat mainly in the northwest New Territories.
Common Tailorbird	*Orthotomus sutorius*	-	Common widespread resident in diverse habitats of forest, shrubby grassland and landscaped urban areas.
Swinhoe's White-eye	*Zosterops simplex*	-	Widespread abundant resident.
Masked Laughingthrush	*Pterorhinus perspicllatus*	-	A common resident of anthropogenic and disturbed habitats throughout Hong Kong.
Crested Myna	*Acridotheres cristatellus*	-	Abundant and widespread resident in diverse lowland habitats.
Common Myna	*Acridotheres tristis*	-	Locally common resident population considered to derive from ex-captive birds.
Red-billed Starling	*Spodiopsar sericeus*	GC	Abundant winter visitor to open country areas though the range appears to be reducing. A few breeding records in village houses and an urban park.
White-cheeked Starling	*Spodiopsar cineraceus*	PRC	Locally common but declining winter visitor, with recent breeding records.
Black-collared Starling	*Gracupica nigricollis*	-	Common, widespread resident of lowland open-country , village and urban habitats.
White-shouldered Starling	*Sturnia sinensis*	(LC)	Locally common passage migrant and breeding species and an uncommon winter visitor to open country habitat mainly in the northwest New Territories.
Chinese Blackbird	*Turdus mandarinus*	-	Common migrant and winter visitor, scarce but increasing breeding species in northwest New Territories.
Grey-backed Thrush	*Turdus hortulorum*	-	Common winter visitor and uncommon passage migrant to diverse wooded areas.
Oriental Magpie Robin	*Copsychus saularis*	-	Abundant, widespread resident over a wide range of habitats.
Red-throated Flycatcher	*Ficedula albicilla*	-	Common passage migrant and winter visitor to open country or lightly-wooded habitats.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Daurian Redstart	*Phoenicurus auroreus*	-	Common winter visitor to lightly wooded areas.
Amur Stonechat	*Saxicola stejnegeri*	-	Common passage migrant and winter visitor to open country areas.
Eurasian Tree Sparrow	*Passer montanus*	-	An abundant resident, commensal with humans and found in all lowland anthropogenic habitats, especially in active farmland, around fishponds and in city parks.
Scaly-breasted Munia	*Lonchura punctulate*	-	Locally common resident in open country grassland, farmland, wetland and waste ground. Largely restricted to the lowland northern New Territories.
White-rumped Munia	*Lonchura striata*	-	Common in lightly wooded urban fringe and village edge habitats, largely resident but aggregations occur in seeding grassland and rice fields.
Eastern Yellow Wagtail	*Motacilla tschutschensis*	-	Common passage migrant and winter visitor.
White Wagtail	*Motacilla alba*	-	Common passage migrant and winter visitor
Olive-backed Pipit	*Anthus hodgsoni*	-	Common winter visitor and passage migrant to wooded, semi-wooded and open-country habitats with wooded areas nearby.
Little Bunting	*Emberiza pusilla*	-	Uncommon from November to April with weak passage in autumn and spring.
Black-faced Bunting	*Emberiza spodocephala*	-	Common passage migrant and winter visitor to a diverse range of vegetated often damp open-country areas. Generally, the commonest and most widespread bunting in Hong Kong. Numbers have declined however, especially in spring.
No. of species of conservation importance			**31**
No. of species of conservation importance and/or wetland-dependent			**40**
Total no. of species recorded			**80**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): GC = Global Concern; LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Protection status by CITES (2024): I = Listed in Appendix I of CITES; II = Listed in Appendix II of CITES.
   d. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of the latest version of The Avifauna of Hong Kong (HKBWS, 2024).
3. Species considered as of wetland-dependent in this study are indicated in bold type.

Table A4 Bird Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Savanna Nightjar	*Caprimulgus affinis*	-	Locally common resident in grassland and open country, with some seasonal movements.
Greater Coucal	*Centropus sinensis*	CSMPS(II)	Widespread and common resident typically present in mangroves and shrub dominated closed and open-canopy habitats, usually in lowland areas.
Asian Koel	*Eudynamys scolopaceus*	-	Very common resident, with increased numbers in autumn suggesting the presence of passage migrants.
Plaintive Cuckoo	*Cacomantis merulinus*	-	Locally fairly common summer visitor, scarce passage migrant and winter visitor, with some individuals likely to be resident. Occurs in lowland rural areas of mixed habitats, often in agricultural areas.
Large Hawk-cuckoo	*Hierococcyx sparverioides*	-	Common summer visitor
Indian Cuckoo	*Cuculus Micropterus*	-	Breeding summer visitor, which is locally common but less widespread than in the past.
Eurasian Collared Dove	*Streptopelia decaocto*	-	A locally common breeding resident in the northwest New Territories with scattered records elsewhere. First recorded in 1999 and placed on Category IIB in 2007, it is slowly increasing in numbers and range.
Red Turtle Dove	*Streptopelia tranquebarica*	-	A common passage migrant, especially in autumn, and scarce winter visitor, mainly to the Deep Bay area, with occasional summer records. Numbers appear to have increased in recent years and summer records have become more frequent, but there is no evidence that breeding has occurred.
Spotted Dove	*Spilopelia chinensis*	-	Common and conspicuous resident in all anthropogenic habitats.
Common Moorhen	***Gallinula chloropus***	**-**	**Scarce to uncommon winter visitor, scarce at other times, in vegetated wetland habitats of the northern New Territories, though appears to be in decline due to urbanisation and more intensive management of commercial fishponds.**
White-breasted Waterhen	***Amaurornis phoenicurus***	**-**	**Common resident in a variety of freshwater and brackish wetland habitats, though numbers are declining probably due to urbanisation of the New Territories.**
Little Grebe	***Tachybaptus ruficollis***	**LC**	**Common in open freshwater wetlands in the northwest New Territories, though declining in marginal areas probably due to increased human disturbance and draining of wetlands.**
Black-winged Stilt	***Himantopus Himantopus***	**RC**	**Common to abundant in freshwater marsh, brackish Gei Wai and commercial fishponds. Has increased greatly since winter 2005/06 and small numbers now breed in most years.**
Greater Painted-snipe	***Rostratula benghalensis***	**LC**	**Present all year in areas of freshwater marsh and wet agriculture; numbers in winter are higher due to presence of migrants from the north.**
Pintail/Swinhoe's Snipe	***Gallinago stenura / megala***	**LC for Swinhoe's Snipe**	**-**
Common Snipe	***Gallinago gallinago***	**-**	**Common passage migrant and winter visitor to vegetated freshwater wetlands, most numerous in autumn.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Sandpiper	***Actitis hypoleucos***	**-**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Green Sandpiper	***Tringa ochropus***	**-**	**Uncommon passage migrant and winter visitor, rare in summer; occurs in a wide variety of freshwater wetlands.**
Wood Sandpiper	***Tringa glareola***	**LC**	**Common migrant and winter visitor to freshwater wetlands, with some evidence of a decline in numbers.**
Common Greenshank	***Tringa nebularia***	**RC**	**Abundant passage migrant and common winter visitor to Deep Bay area, with scattered records elsewhere.**
Whiskered Tern	***Chlidonias hybrida***	**-**	**Common passage migrant, scarce in winter; occurs mainly in fishpond and freshwater wetland areas, but also in inshore and occasionally, offshore waters.**
Great Cormorant	***Phalacrocorax carbo***	**PRC**	**Abundant winter visitor to Deep Bay area and both inshore and offshore waters.**
Yellow Bittern	***Ixobrychus sinensis***	**(LC)**	**Common summer visitor and passage migrant to wetland areas primarily in the Deep Bay area, scarce in winter. Numbers of breeding birds and passage migrants have substantially decreased.**
Black-crowned Night Heron	***Nycticorax nycticorax***	**(LC)**	**Abundant passage migrant and winter visitor and uncommon breeding species. Occurs in variety of wetland habitats throughout Hong Kong.**
Chinese Pond Heron	***Ardeola bacchus***	**PRC (RC)**	**Common at a variety of freshwater and brackish wetlands across Hong Kong throughout the year; both migratory and resident populations occur.**
Eastern Cattle Egret	***Bubulcus ibis***	**(LC)**	**Present all year in vegetated fresh and brackish water wetland areas; highest numbers in the wet season, after breeding and during autumn migration.**
Grey Heron	***Ardea cinerea***	**PRC**	**Abundant winter visitor; scarce in summer. Has bred. Frequents wetlands throughout HK but concentrated in Deep Bay area.**
Purple Heron	***Ardea purpurea***	**RC**	**Present all year in vegetated wetlands almost exclusively in the Deep Bay area. Most numerous during autumn passage. Peak counts have decreased since the early 1980s.**
Great Egret	***Ardea alba***	**PRC (RC)**	**Present all year in larger and more open brackish and freshwater wetlands. Most numerous in late autumn and least in April. Migrants pass through mainly in autumn, and a large breeding population has established in Deep Bay in recent years.**
Intermediate Egret	***Ardea intermedia***	**RC**	**Common on passage but scarce at other times of year mainly in freshwater wetland areas. Appears to have increased in numbers over past 60 years.**
Little Egret	***Egretta garzetta***	**PRC (RC)**	**Present all year in a wide variety of fresh and non-freshwater wetland habitats. An influx of birds occurs in the winter months.**
Black-winged Kite	*Elanus caeruleus*	LC; CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, scarce at other times; occurs in open country habitats mainly in the northwest New Territories.
Crester Goshawk	*Accipiter trivirgatus*	CITES(II); CSMPS(II); Cap.586	Common resident in forest areas, but also hunts in open country.
Besra	*Accipiter virgatus*	CSMPS(II); CITES(II); Cap.586	Present all year. Numbers highest in autumn when passage migrants occur in diverse wooded areas and lowest in summer when it breeds in closed-canopy shrubland.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Eastern Marsh Harrier	***Circus spilonotus***	**LC; CSMPS(II); CITES(II); Cap.586**	**Common winter visitor and passage migrant, most numerous in autumn. Mainly occurs in Deep Bay area wetlands.**
Black Kite	*Milvus migrans*	(RC); CSMPS(II); CITES(II); Cap.586	Present all year throughout Hong Kong, numbers lowest in summer and highest during autumn migration.
Eastern Buzzard	*Buteo japonicus*	CSMPS(II); CITES(II); Cap.586	Common autumn passage migrant and winter visitor, scarce in spring. Occurs in widespread areas of Hong Kong in most non-urban habitats.
White-throated Kingfisher	***Halcyon smyrnensis***	**(LC); CSMPS(II)**	**Present all year with numbers highest in the second half. Much declined, particularly in the breeding season. Occurs mainly in Deep Bay wetlands in the winter, but in mixed shrubland and farmland habitats in the breeding season.**
Common Kingfisher	***Alcedo atthis***	-	**Common in autumn and winter, scarce in spring and summer; frequents a wide variety of lowland, largely freshwater wetlands, though also forages at the coast. The migrant population is probably much declined.**
Pied Kingfisher	***Ceryle rudis***	**(LC)**	**Locally uncommon resident, mainly in freshwater and brackish wetland. In decline.**
Common Kestrel	*Falco tinnunculus*	CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, uncommon winter visitor, scarce passage migrant in spring and very rare in summer; occurs in open country areas.
Long-tailed Shrike	*Lanius schach*	-	Occurs year-round in open broadleaf woodland or forest-edge areas, most abundant during autumn passage.
Hair-crested Drongo	*Dicrurus hottentottus*	-	Common summer visitor, larger numbers on passage especially autumn, and regular in winter in low numbers. Occurs in open country areas with scattered trees or artificial perches.
Black Drongo	*Dicrurus macrocercus*	-	Common breeding resident in open-canopy shrubland and open-country with sufficient perches and nest sites.
Red-billed Blue Magpie	*Urocissa erythroryncha*	-	Common resident, particularly in shrubland, forest edge, large parks and the urban fringe.
Collared Crow	***Corvus torquatus***	**LC; IUCN(VU)**	**Locally common resident.**
Large-billed Crow	*Corvus macrorhynchos*	-	Largely resident, occurs throughout Hong Kong.
Japanese Tit	*Parus minor*	-	Abundant resident in diverse wooded and lightly-wooded habitats.
Chinese Bulbul	*Pycnonotus sinensis*	-	Abundant resident in nearly all habitats; Hong Kong's most widespread bird. Also occurs as a passage migrant and winter visitor.
Red-whiskered Bulbul	*Pycnonotus jocosus*	-	Abundant or common resident in nearly all habitats; Hong Kong's second most widespread bird.
Barn Swallow	*Hirundo rustica*	-	Widespread and common.
Yellow-browed Warbler	*Phylloscopus inornatus*	-	Common and widespread winter visitor and passage migrant.
Dusky Warbler	*Phylloscopus fusccatus*	-	Common passage migrant and winter visitor to open country areas with shrubs.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Oriental Reed Warbler	***Acrocephalus orientalis***	**-**	**Passage migrant, common in autumn, uncommon in spring, and scarce to rare in winter and summer. Mainly occurs in reed marsh and tall grass associated with wetlands.**
Yellow-bellied Prinia	*Prinia flaviventris*	-	Common resident in grassland, reed marsh and rank or herbaceous vegetation, and thus highest densities occur in the northwest New Territories.
Plain Prinia	*Prinia inornate*	-	Locally common resident in grassy habitat mainly in the northwest New Territories.
Common Tailorbird	*Orthotomus sutorius*	-	Common widespread resident in diverse habitats of forest, shrubby grassland and landscaped urban areas.
Swinhoe's White-eye	*Zosterops simplex*	-	Widespread abundant resident.
Masked Laughingthrush	*Pterorhinus perspicllatus*	-	A common resident of anthropogenic and disturbed habitats throughout Hong Kong.
Crested Myna	*Acridotheres cristatellus*	-	Abundant and widespread resident in diverse lowland habitats.
Common Myna	*Acridotheres tristis*	-	Locally common resident population considered to derive from ex-captive birds.
Black-collared Starling	*Gracupica nigricollis*	-	Common, widespread resident of lowland open-country , village and urban habitats.
Chinese Blackbird	*Turdus mandarinus*	-	Common migrant and winter visitor, scarce but increasing breeding species in northwest New Territories.
Grey-backed Thrush	*Turdus hortulorum*	-	Common winter visitor and uncommon passage migrant to diverse wooded areas.
Oriental Magpie Robin	*Copsychus saularis*	-	Abundant, widespread resident over a wide range of habitats.
Siberian Rubythroat	*Calliope calliope*	CSMPS(II)	Common winter visitor and passage migrant to open- and closed-canopy shrubland, reed marsh, mangrove edge and open country areas with shrubs.
Red-throated Flycatcher	*Ficedula albicilla*	-	Common passage migrant and winter visitor to open country or lightly-wooded habitats.
Daurian Redstart	*Phoenicurus auroreus*	-	Common winter visitor to lightly wooded areas.
Amur Stonechat	*Saxicola stejnegeri*	-	Common passage migrant and winter visitor to open country areas.
Fork-tailed Sunbird	*Aethopyga christinae*	-	Abundant resident species in diverse wooded habitats.
Scaly-breasted Munia	*Lonchura punctulate*	-	Locally common resident in open country grassland, farmland, wetland and waste ground. Largely restricted to the lowland northern New Territories.
Eastern Yellow Wagtail	*Motacilla tschutschensis*	-	Common passage migrant and winter visitor.
White Wagtail	*Motacilla alba*	-	Common passage migrant and winter visitor

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Olive-backed Pipit	*Anthus hodgsoni*	-	Common winter visitor and passage migrant to wooded, semi-wooded and open-country habitats with wooded areas nearby.
Little Bunting	*Emberiza pusilla*	-	Uncommon from November to April with weak passage in autumn and spring.
No. of species of conservation importance			**28**
No. of species of conservation importance and/or wetland-dependent			**36**
Total no. of species recorded			**75**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   d. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of the latest version of The Avifauna of Hong Kong (HKBWS, 2024).
3. Species considered as of wetland-dependent in this study are indicated in bold type.

Table A5 Amphibian Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Asian Common Toad	*Duttaphrynus melanostictus*	-	Widely distributed in Hong Kong.
Asiatic Painted Frog	*Kaloula pulchra*	-	Widely distributed in Hong Kong.
Brown Tree Frog	*Polypedates megacephalus*	-	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**0**
Total no. of species recorded			**3**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A6 Amphibian Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Asian Common Toad	*Duttaphrynus melanostictus*	-	Widely distributed in Hong Kong.
Asiatic Painted Frog	*Kaloula pulchra*	-	Widely distributed in Hong Kong.
Ornate Pigmy Frog	*Microhyla fissipes*	-	Widely distributed in Hong Kong.
Paddy Frog	*Fejervarya multistriata*	-	Widely distributed throughout Hong Kong.
Chinese Bullfrog	*Hoplobatrachus chinensis*	PRC; RLCV (EN); CSMPS (II)	Widely distributed in Hong Kong.
Günther's Frog	*Sylvirana guentheri*	-	Widely distributed throughout Hong Kong.
Brown Tree Frog	*Polypedates megacephalus*	-	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**7**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): PRC = Potential Regional Concern.
   b. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): EN = Endangered; NT = Near-threatened.
   c. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A7 Reptile Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Bowring's Gecko	*Hemidactylus bowringii*	-	Distributed throughout Hong Kong.
Checkered Keelback	*Fowlea flavipunctata*	-	Widely distributed in streams in the New Territories and Lantau Island.
No. of species of conservation importance			**0**
Total no. of species recorded			**2**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A8 Reptile Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Long-tailed Skink	*Eutropis longicaudata*	-	Widely distributed throughout Hong Kong.
Four-clawed Gecko	*Gehyra mutilata*	RLCV (VU)	Widely distributed throughout Hong Kong.
Bowring's Gecko	*Hemidactylus bowringii*	-	Distributed throughout Hong Kong.
Common Rat Snake	*Ptyas mucosus*	PRC; RLCV (EN); CITES (II); Cap. 586	Widely distributed throughout Hong Kong.
Many-banded Krait	*Bungarus multicinctus*	PRC; RLCV (VU); IUCN (VU)	Common and widely distributed in Hong Kong.
Checkered Keelback	*Fowlea flavipunctata*	-	Widely distributed in streams in the New Territories and Lantau Island.
No. of species of conservation importance			**3**
Total no. of species recorded			**6**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): PRC = Potential Regional Concern.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): EN = Endangered; VU = Vulnerable.
   d. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A9 Odonate Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Wandering Midget	*Agriocnemis pygmaea*	-	Widely distributed in marshes, abandoned paddy fields and weedy pond margins throughout Hong Kong.
Orange-tailed Sprite	*Ceriagrion auranticum*	-	Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.
Common Bluetail	*Ischnura senegalensis*	-	Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.
Common Flangetail	*Ictinogomphus pertinax*	-	Widely distributed in ponds and still water throughout Hong Kong.
Asian Pintail	*Acisoma panorpoides*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong.
Asian Amberwing	*Brachythemis contaminata*	-	Widely distributed in weedy ponds and sluggish streams.
Crimson Darter	*Crocothemis servilia*	-	Widely distributed in cultivated areas, ponds and marshes throughout the New Territories.
Coastal Glider	*Macrodiplax cora*	LC	Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas.
Russet Percher	*Neurothemis fulvia*	-	Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.
Pied Percher	*Neurothemis tullia*	-	Favours marshes and abandoned rice paddies. Widely distributed throughout Hong Kong.
Green Skimmer	*Orthetrum sabina*	-	Widely distributed in all wetland habitats throughout Hong Kong.
Wandering Glider	*Pantala flavescens*	-	Widely distributed all over Hong Kong.
Pied Skimmer	*Pseudothemis zonata*	-	Widely distributed in woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.
Variegated Flutterer	*Rhyothemis variegata*	-	Widely distributed in marshes, ponds and tanks throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**14**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A10 Odonate Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Orange-tailed Midget	*Agriocnemis femina*	-	Widely distributed in disused paddy fields, marshes, ditches and weedy ponds margins.
Wandering Midget	*Agriocnemis pygmaea*	-	Widely distributed in marshes, abandoned paddy fields and weedy pond margins throughout Hong Kong.
Orange-tailed Sprite	*Ceriagrion auranticum*	-	Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.
Common Bluetail	*Ischnura senegalensis*	-	Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.
Blue Sprite	*Pseudagrion microcephalum*	LC	Found in lowland streams and ponds; often perches on aquatic plants just above the water surface. Population scattered all over Hong Kong and established in Hong Kong Wetland Park.
Orange-faced Sprite	*Pseudagrion rubriceps*	-	Widely distributed in ponds and weedy margins of slow flowing streams.
Yellow Featherlegs	*Copera marginipes*	-	Widely distributed in lowland streams, ditches, and weedy margins of pond throughout Hong Kong.
Pale-spotted Emperor	*Anax guttatus*	-	Widely distributed in ponds and sluggish streams throughout Hong Kong.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Flangetail	*Ictinogomphus pertinax*	-	Widely distributed in ponds and still water throughout Hong Kong.
Asian Pintail	*Acisoma panorpoides*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong.
Blue Dasher	*Brachydiplax chalybea*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong
Asian Amberwing	*Brachythemis contaminata*	-	Widely distributed in weedy ponds and sluggish streams.
Crimson Darter	*Crocothemis servilia*	-	Widely distributed in cultivated areas, ponds and marshes throughout the New Territories.
Blue Percher	*Diplacodes trivialis*	-	Widespread, especially in late summer, when it can be found almost everywhere in Hong Kong.
Forest Chaser	*Lyriothemis elegantissima*	-	Frequents marshes beside woodlands. Widespread throughout Hong Kong.
Russet Percher	*Neurothemis fulvia*	-	Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.
Pied Percher	*Neurothemis tullia*	-	Favours marshes and abandoned rice paddies. Widely distributed throughout Hong Kong.
Red-faced Skimmer	*Orthetrum chrysis*	-	Widely distributed in pools and marshy areas adjacent to flowing streams throughout Hong Kong.
Green Skimmer	*Orthetrum sabina*	-	Widely distributed in all wetland habitats throughout Hong Kong.
Wandering Glider	*Pantala flavescens*	-	Widely distributed all over Hong Kong.
Pied Skimmer	*Pseudothemis zonata*	-	Widely distributed in woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.
Ruby Darter	*Rhodothemis rufa*	LC	Widely distributed in ponds and marshes with dense floating plants.
Variegated Flutterer	*Rhyothemis variegata*	-	Widely distributed in marshes, ponds and tanks throughout Hong Kong.
Evening Skimmer	*Tholymis tillarga*	-	Widely distributed in marshes, weedy ponds and tanks throughout Hong Kong.
Saddlebag Glider	*Tramea virginia*	-	Widely distributed in trees adjacent to ponds and lakes throughout Hong Kong.
Scarlet Basker	*Urothemis signata*	LC	Common in areas with abandoned fishponds throughout Hong Kong.
No. of species of conservation importance			**3**
Total no. of species recorded			**26**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A11 Butterfly Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Straight Swift	*Parnara guttata*	-	Common
Pale Grass Blue	*Zizeeria maha*	-	Very Common
Common Hedge Blue	*Acytolepis puspa*	-	Common
Common Evening Brown	*Melanitis leda*	-	Uncommon
Dark-brand Bush Brown	*Mycalesis mineus*	-	Very Common
Common Palmfly	*Elymnias hypermnestra*	-	Common
Blue-spotted Crow	*Euploea midamus*	-	Very Common
Rustic	*Cupha erymanthis*	-	Very Common
Great Egg-fly	*Hypolimnas bolina*	-	Very Common
Common Sailer	*Neptis hylas*	-	Very Common
Common Mormon	*Papilio polytes*	-	Very Common
Spangle	*Papilio protenor*	-	Very Common
Lime Butterfly	*Papilio demoleus*	-	Uncommon
Tailed Jay	*Graphium agamemnon*	-	Common
Lemon Emigrant	*Catopsilia pomona*	-	Very Common
Common Grass Yellow	*Eurema hecabe*	-	Very Common
Red-base Jezebel	*Delias pasithoe*	-	Very Common
No. of species of conservation importance		**0**	
Total no. of species recorded		**18**	

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows Pun (2024).

Table A12 Butterfly Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Awl	*Hasora badra*	LC	Rare
Chinese Dart	*Potanthus confucius*	-	Common
Common Straight Swift	*Parnara guttata*	-	Common
Rare Swift	*Parnara ganga*	-	Uncommon
Paintbrush Swift	*Baoris farri*	-	Rare
Silver Streak Blue	*Iraota timoleon*	-	Uncommon
Tailless Line Blue	*Prosotas dubiosa*	-	Uncommon
Pale Grass Blue	*Zizeeria maha*	-	Very Common

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Lesser Grass Blue	*Zizina otis*	-	Common
Common Hedge Blue	*Acytolepis puspa*	-	Common
Common Evening Brown	*Melanitis leda*	-	Uncommon
Dark Evening Brown	*Melanitis phedima*	-	Common
Dark-brand Bush Brown	*Mycalesis mineus*	-	Very Common
Common Palmfly	*Elymnias hypermnestra*	-	Common
Plain Tiger	*Danaus chrysippus*	-	Uncommon
Blue-spotted Crow	*Euploea midamus*	-	Very Common
Great Egg-fly	*Hypolimnas bolina*	-	Very Common
Common Mapwing	*Cyrestis thyodamas*	-	Common
Angled Castor	*Ariadne ariadne*	-	Common
Common Archduke	*Lexias pardalis*	-	Uncommon
Common Sailer	*Neptis hylas*	-	Very Common
Common Mormon	*Papilio polytes*	-	Very Common
Paris Peacock	*Papilio paris*	-	Very Common
Common Bluebottle	*Graphium sarpedon*	-	Very Common
Tailed Jay	*Graphium agamemnon*	-	Common
Lemon Emigrant	*Catopsilia pomona*	-	Very Common
Common Grass Yellow	*Eurema hecabe*	-	Very Common
Three-spot Grass Yellow	*Eurema blanda*	-	Common
Red-base Jezebel	*Delias pasithoe*	-	Very Common
No. of species of conservation importance		**1**	
Total no. of species recorded		**31**	

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows Pun (2024).

0 250 500 1,000 Meters

- Wetland Restoration Area
- Application Site
- 500m Assessment Area
- Mai Po/Inner Deep Bay Ramsar Site
- Wetland Conservation Area (WCA)
- Wetland Buffer Area (WBA)
- Mai Po Nature Reserve
- Conservation Area

Sites of Special Scientific Interest (SSSI)

- Mai Po Village
- Mai Po Marshes SSSI

Egretries

- Mai Po Lung Egretry
- Mai Po Village Egretry

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Site of Conservation Importance

Drawn by:	PC	Scale:	1:10,000 on A3
Checked By:	MM	Date:	23 Jan 2025
Approved by:	MM		
Figure Number:	Figure 1	Revision:	0

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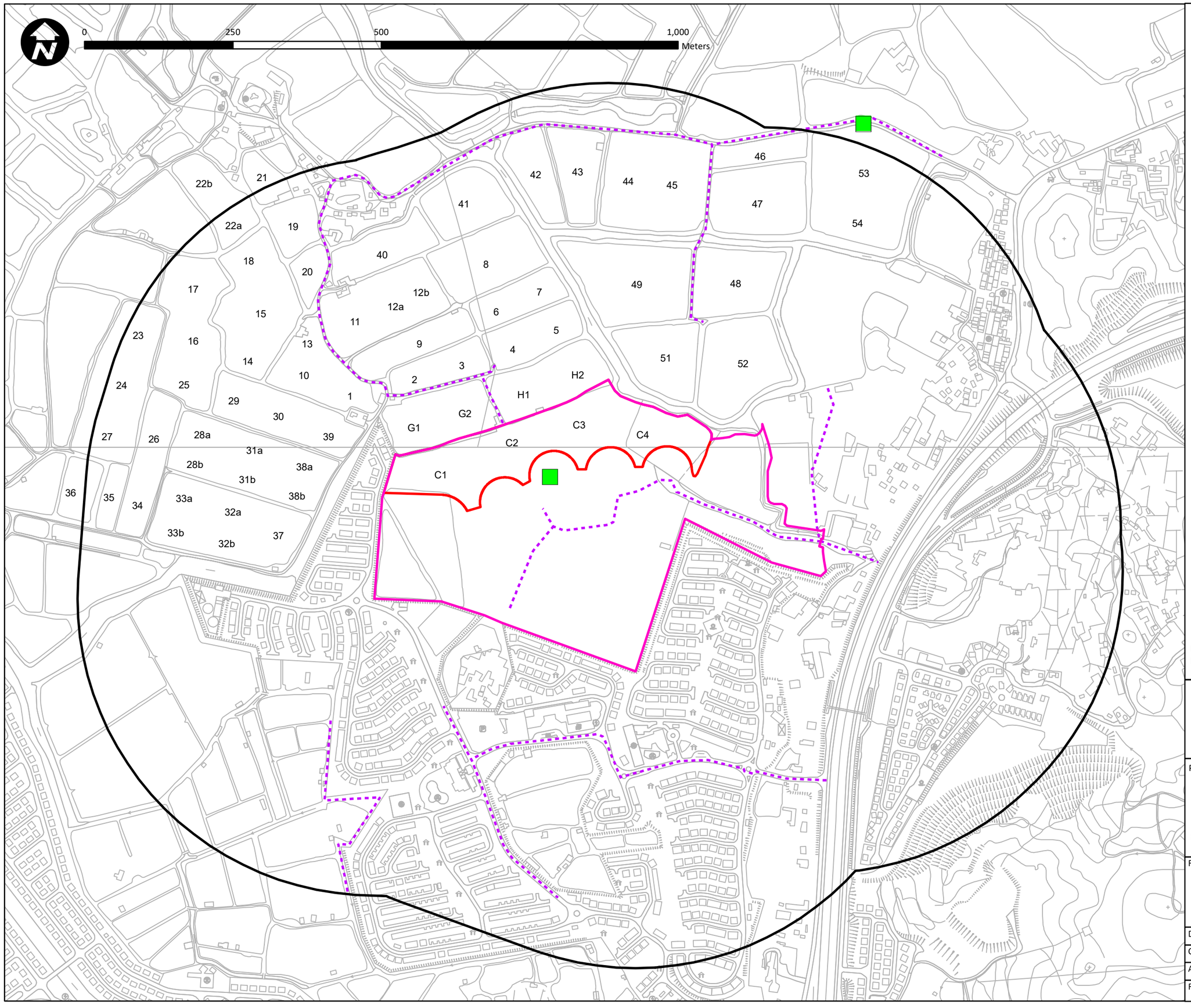

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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biodiversity
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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Survey Transect and Vantage Point

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	23 Jan 2025
Approved by:	MM		
Figure Number:	Figure 2	Revision:	0

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0 250 500 1,000 Meters

Application Site
Wetland Restoration Area
500m Assessment Area

Habitat

Mitigation Wetland
Development Site
Fishpond
Pond/Open Water
Marsh
Drainage Channel / Ditch
Reedbed
Agricultural Land
Managed Grassland
Leucaena Woodland
Woodland
Plantation
Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Habitat Map

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	23 Jan 2025
Approved by:	MM		
Figure Number:	Figure 3	Revision:	0

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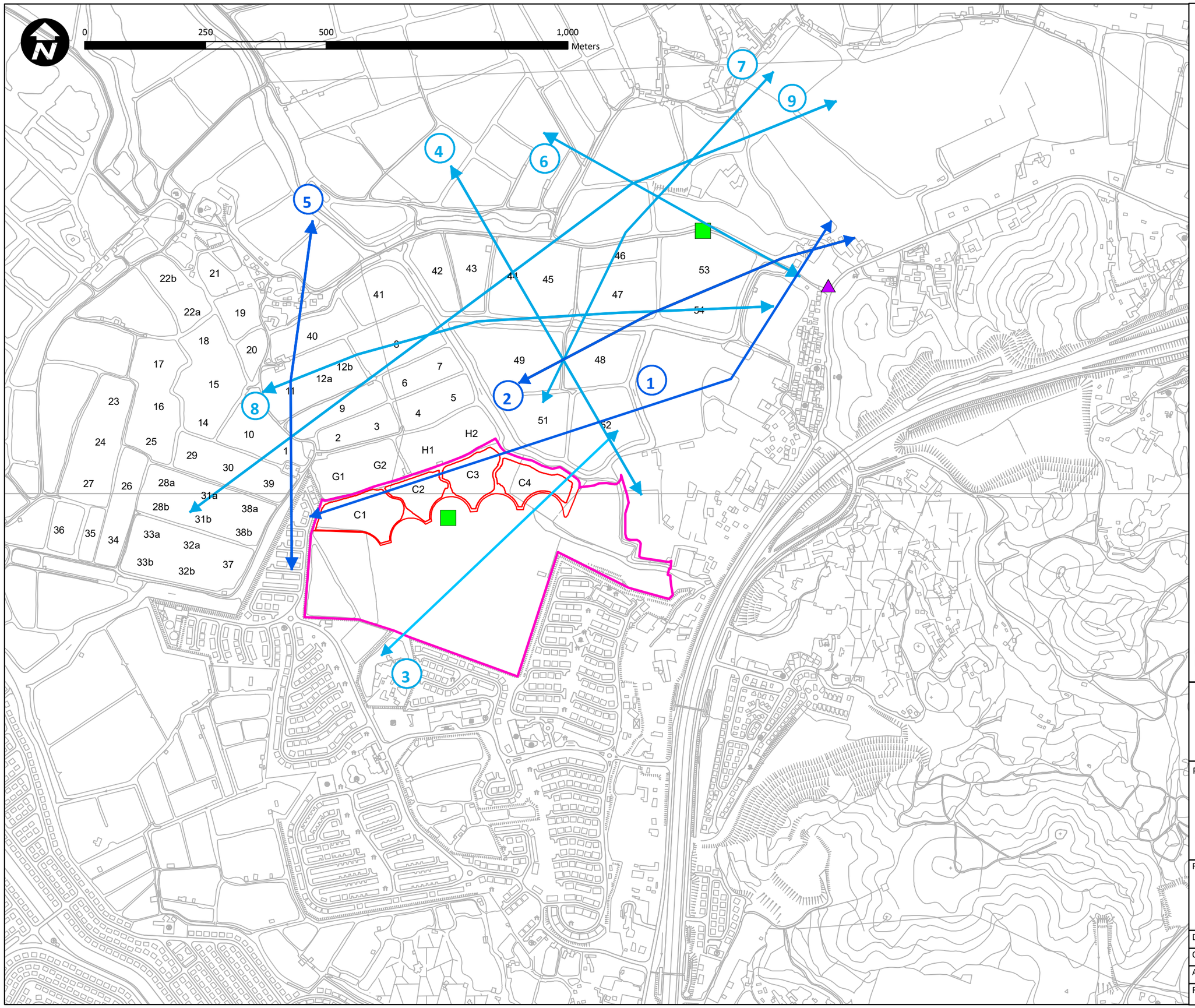

Project Area

Wetland Restoration Area

Egretry Location

Observation Point

Major Flightline

Minor Flightline

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Flightline in Wet Season (2024)

Drawn by:	NT	Scale:	1:7,400 on A3
Checked By:	MM	Date:	23 Jan 2025
Approved by:	PJL		
Figure Number:	Figure 4	Revision:	0

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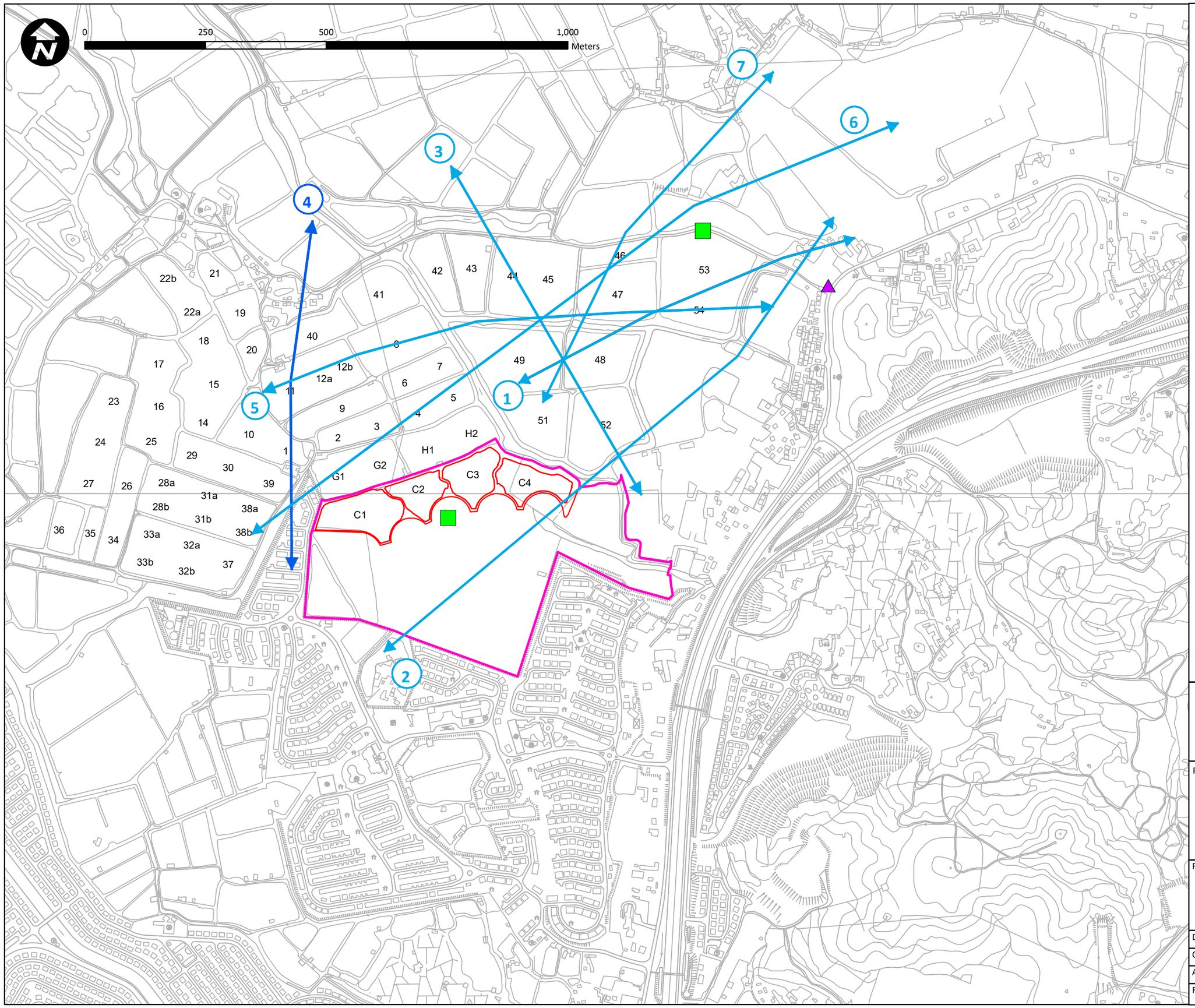

Project Area

Wetland Restoration Area

Egretry Location

Observation Point

Major Flightline

Minor Flightline

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Flightline in Dry Season (2024)

Drawn by:	NT	Scale:	1:7,400 on A3
Checked By:	MM	Date:	23 Jan 2025
Approved by:	PJL		
Figure Number:	Figure 5	Revision:	0

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Appendix 9: Traffic Impact Assessment

21/01/2025

Reference number CHK50800610

TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

TRAFFIC IMPACT ASSESSMENT

SYSTRA MVA

IDENTIFICATION TABLE	
Client/Project owner	Profit Point Enterprises Limited
Project	To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101
Study	Traffic Impact Assessment
Type of document	final Report_v2
Date	21/01/2025
File name	final rpt_WSW 12A TIA_v2_20250121.docx
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1. INTRODUCTION

1.1 Background

1.1.1 The subject site is located in Lots 77 and 50 S.A in D.D.101, Wo Shang Wai, Mai Po, Yuen Long. It is sited on the north of Royal Palms and Palm Springs residential developments. **Drawing 2.1** shows the location of the subject site.

1.1.2 The site falls within an area zoned as Other Specified Uses (Comprehensive Development to include wetland restoration area) on the Mai Po & Fairview Park OZP (OZP No. S/YL-MP/8). The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses.

1.1.3 According to the latest development schedule of San Tin Technopole (STT), the first population intake will start from Year 2031, while the bulk population intake of the Main Phase will start from Year 2034, around the same planned completion year of the Mass Transit Railway (MTR) Northern Link (NOL). The relevant site formation and engineering infrastructure (road works) for STT Development Phase 1 (under PWP Item Nos. 7899CL and 7852CL-2 (Part)) was gazetted on 1 March 2024 and these road works are planned for completion by Year 2031 and the proposed development traffic is expected to be served by the new STT Phase 1 road network (the gazetted new roads) with full road network completion by design year 2034.

1.1.4 A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/7. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site. This traffic impact assessment is to investigate the potential traffic impact on the adjacent local road network and transport facilities by this upzoning proposal. Upon pre-submission of the TIA report, comments were received from Transport Department (TD) and this revised TIA report was prepared to reflect the latest development programme and to address TD's comments.

1.2 Study Objectives

1.2.1 The objectives of this TIA study are summarised as follows:

- Present the proposed development schedule and its internal transport provisions;
- Review the current traffic conditions in the vicinity;
- Estimate the traffic generation/attraction of the proposed development;
- Produce traffic forecasts for the local road network at the adopted design year;
- Investigate the traffic impact on the local road network upon operation of the proposed development; and,
- Suggest any traffic improvement measures, if considered necessary, to alleviate the potential traffic problem.

1.3 Report Structure

1.3.1 Following this introductory chapter, there are five further chapters;

- Chapter 2 – Proposed Development, introduces the proposed development scheme;
- Chapter 3 – Existing Traffic Context, reviews the current traffic condition in the vicinity;
- Chapter 4 – Traffic Forecasting, describes the traffic forecasting methodology;
- Chapter 5 – Traffic Impact Assessment, describes the assessments conducted;
- Chapter 6 – Conclusions, summarises and concludes the study findings.

2. PROPOSED DEVELOPMENT

2.1 Proposed Development Schedule

2.1.1 Under the current proposed MLP, the number of residential units will be increased from 789 in the approved scheme in Section 16 application to 3,571, with provision of a 3,800 m^2 100-bed Residential Care Homes for the Elderly (RCHE). The current scheme will provide 3,571 units with average house size of 74.5 m^2.

2.1.2 The domestic GFA, flat mix, plot ratio will be changed, compared with those in the previous approved S16 application. **Table 2.1** summarises the changes in flat mix of the previous approved and current proposed scheme.

Table 2.1 Comparison of Flat Mix in Previous Approved Scheme and Current Proposed Scheme

	Previous Approved MLP (Application no. A/YL-MP/344)	Current Proposed MLP	Difference
Domestic GFA	82,963 m^2	265,847 m^2	+182,884 m^2
Domestic Plot Ratio	0.4	1.28	+0.88
No. of Units	789 Units	3,571 Units	+2,782 Units
Average House Size	105.1 m^2	74.5 m^2	-30.6 m^2
Non-domestic Plot Ratio	-	0.02	+0.02
Non-domestic GFA	-	3,800 m^2	+3,800 m^2

2.1.3 As indicated in **Table 2.1**, the current proposed MLP has an increase of 2,782 units with the change of both domestic and plot ratio, and leading to a decrease of average house size, with the provision of a RCHE.

2.1.4 It is anticipated that the proposed development will be completed by year 2031.

2.2 Vehicular Access

2.2.1 Same as the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po, which is abutting the site. The location of the vehicular access is illustrated in **Drawing 2.1**. With the gazetted new roads for STT to be completed on or before Year 2031, it is anticipated that the development traffic will mainly access via Fairview Park Boulevard Interchange and the new Shek Wu Wai

Interchange, Road L11 onto Castle Peak Road – San Tin and Castle Peak Road - Mai Po, with minority of traffic heading to/from Sheung Shui, as indicated in **Drawing 3.1**.

2.3 Internal Transport Facility

2.3.1 The provision of the internal transport facilities in the current proposed MLP is determined based on the latest Hong Kong Planning Standards and Guidelines (HKPSG). **Table 2.2** summarises the proposed provision of the internal transport facilities for the current proposed MLP, as shown in **Drawing 2.2**.

Table 2.2 Proposed Provision of the Internal Transport Facilities

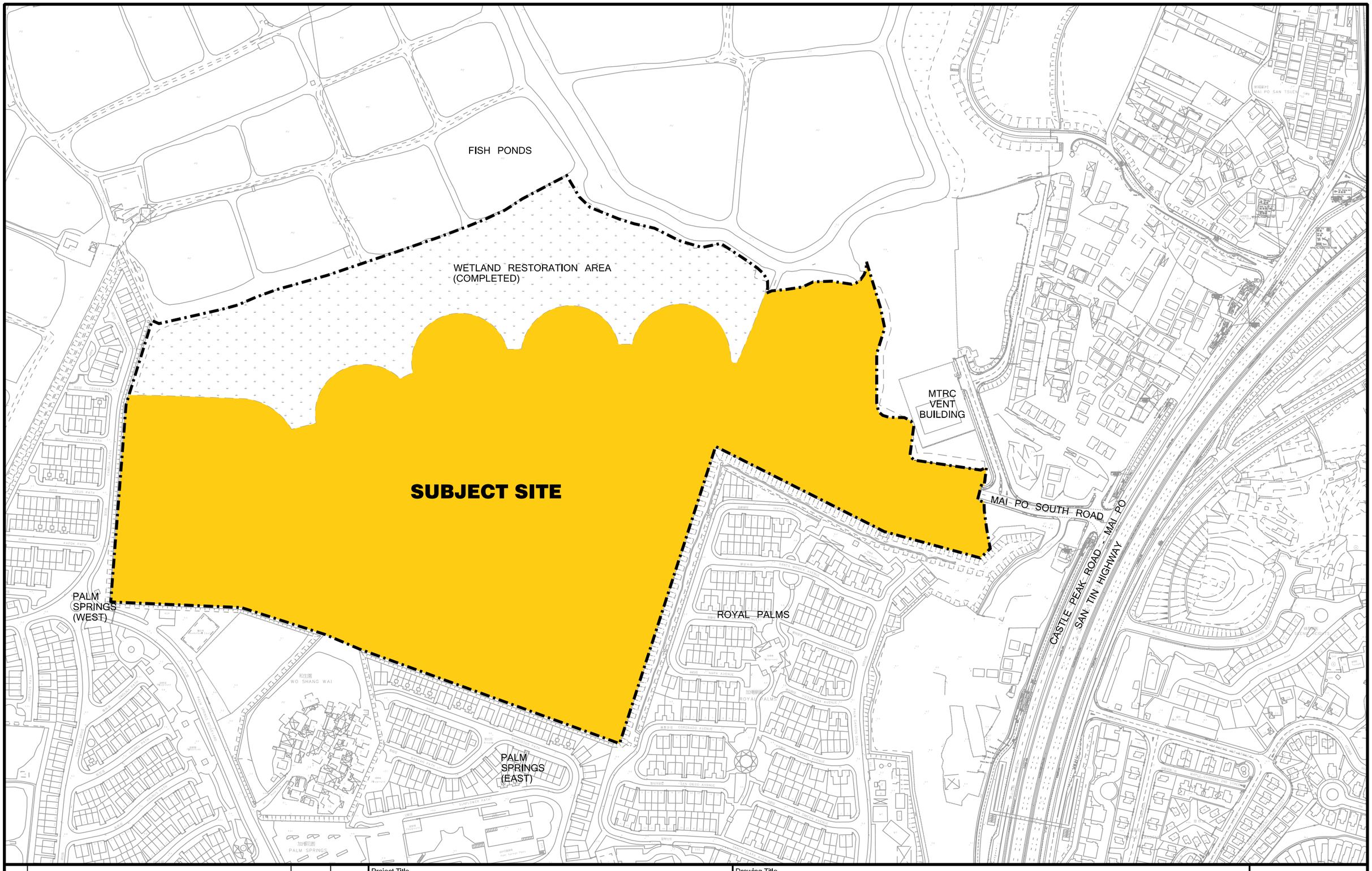
Internal Transport Facilities	Previous Approved MLP (Application no. A/YL-MP/344) – 789 Units		Current Proposed MLP – 3,571 Units (128 houses included) with RCHE		
	Proposed Requirement	Proposed Provision	Parameters	Proposed Requirement under HKPSG	Proposed Provision
Residential Parking Provision					
Residential Carparking Space	2 spaces per house[1]	1,578	128 Houses	2 spaces per house[2]	256
	-		1,291 units	1 space per 3.03 units for 40<FS≤70	428
			2,096 units	1 space per 1.52 units for 70<FS≤100	1,386
			56 units	1 space per 0.89 units for 100<FS≤130	64
	Sub -total	1,578		Sub-total	2,134
Visitor Parking Space	5 spaces[1]	5	47 blocks	5 spaces per block with more than 75 units	235
Accessible Parking Space	6 accessible car parking space for car parking space in lot above 450 by Building Authority	6	2,113 private car parking spaces	6 accessible car parking space for car parking space in lot above 450 by Building Authority	27
Motorcycle Parking Space	37 spaces[1]	37	2,113 spaces	1 per 10 car parking spaces[4]	212
Loading/unloading Bay	1 bay per 800 units[3]	1	47 blocks	1 bay per each housing block[4]	47
Bicycle Parking Spaces	-	-	1,291 units	1 space per 7.5 flats (unit size < 70m^2)[4]	173
RCHE Parking Provision[5]					
Ancillary Private Car Parking Space	-	-	100-bed	-	1
Loading Bay for LGV	-	-	100-bed	-	1
Taxi/Private Car Pick-Up/drop-off Space	-	-	100-bed	-	1

Remarks: (1) Requirement included in the approved land exchange application.
(2) Assume 2 parking spaces per house.
(3) Requirement adopted in previous approved S.16 application.
(4) According to latest comments from Transport Department.
(5) No relevant requirement in HKPSG, provided with nominal provision for operation only.

2.3.2 Since some of the units of the proposed development is smaller than 70m^2 in flat size, there will be provision of the bicycle parking spaces.

2.3.3 The actual carparking provisions may be subject to agreement by the authority.

2.3.4 The allocation of related parking provision will be studied and reviewed in later detailed design stage. Drop-bar gate will be provided within the site for access control. Sufficient waiting spaces between the drop-bar gate and public road will be provided for vehicle queueing within the development. The location of the drop-bar gate will be provided at later detailed design stage.



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-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

SITE LOCATION

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**2.1**	A

SYSTRA MVA

CHK50800610/TIA/F21-A.DGN/KCM/21JAN25

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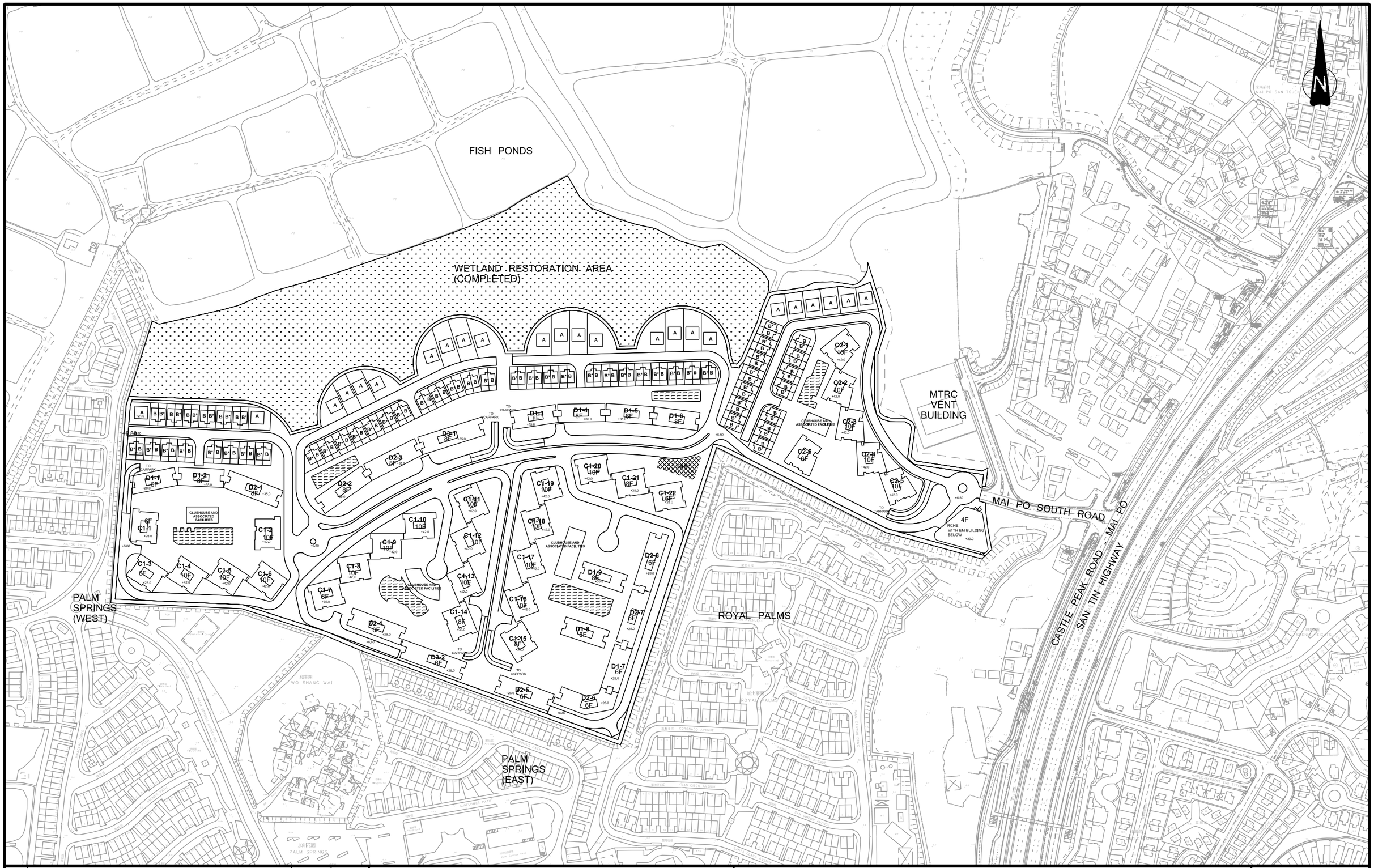

Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
A	MLP UPDATED	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED MASTER LAYOUT PLAN

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:3000(A3)	JUL 2024	2.2	A

CHK50800610/TIA/F22-A.DGN/KCM/21JAN25

Original Size : A3

3. EXISTING TRAFFIC CONTEXT

3.1 Surrounding Road Network

3.1.1 As indicated in **Drawing 2.1**, the site is bounded by Mai Po South Road to the east, fishponds to the north and Royal Palms & Palm Springs residential development to the south. The development traffic from San Tin Highway to Mai Po South Road connecting the site are either via Castle Peak Road – Mai Po Section from the south or Castle Peak Road – San Tin Section from the north.

3.1.2 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway. At the existing Shek Wu Wai Interchange (SWWI), apart from improvement of existing slip roads at its western side connecting to San Tin Highway, a pair of new slip roads is proposed at the eastern side of SWWI to facilitate traffic movement. Also, the existing junction of Castle Peak Road – San Tin / Shek Wu Wai Road would be upgraded from priority junction to 4-arm signalized junction. With the above consideration of enhanced road network, the future ingress and egress routes of the subject site are illustrated in **Drawing 3.1**.

3.1.3 San Tin Highway is a dual 3-lane expressway. It forms a section of Route 9 of the strategic highway network connecting Fanling Highway in the north and Yuen Long Highway/Tai Lam Tunnel in the south.

3.1.4 San Tam Road and Castle Peak Road - Mai Po are both single 2-lane carriageways running parallel to San Tin Highway serving the adjacent local developments.

3.1.5 Mai Po South Road is about 7.3m wide with 2m footpaths on both sides. It mainly serves as an access to MTRC ventilation building.

3.1.6 The existing nearby road network is subject to major changes upon completion of the new roads planned under STT project, with new roads connecting to the future upgraded Shek Wu Wai Interchange.

3.2 Current Junction Operational Performance

3.2.1 With the consideration of the road network upgrade due to San Tin Technopole project, a total of 9 local junctions and 5 screenlines, as indicated in **Drawing 3.2**, have been identified for assessment purpose in this study. For the strategic road San Tin Highway, as there will be upcoming planned transport infrastructures and enhanced railway network, including the Northern Metropolis Highway and the Northern Link, the traffic condition and efficiency would be significantly improved in the strategic level. The identified junctions are listed in **Table 3.1**, and their existing layouts are shown in **Drawings 3.3** to **Drawings 3.12**.

Table 3.1 Identified Local Key Junctions and Road Links

Ref.(1)	Junction/Road Links	Type	Drawing No.
A1	Shek Wu Wai Road / San Tin Highway Slip Road (2)	Priority	3.3
A2	Shek Wu Wai Road / Mai Po Lung Road (2)	Priority	3.4
B	Castle Peak Road – San Tin / Shek Wu Wai Road (2)	Priority	3.5
C	Castle Peak Road – Mai Po/San Tam Road	Priority	3.6
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	Priority	3.7
E	Castle Peak Road – Mai Po/Geranium Path	Priority	3.8
F	Castle Peak Road – Tam Mi/Yau Pok Road	Priority	3.9
G	Castle Peak Road – Tam Mi/Kam Pok Road	Priority	3.10
H	Fairview Park Interchange	Roundabout	3.11
I	Castle Peak Road – Mai Po/Mai Po South Road	Priority	3.12
Screenline L1	Mai Po South Road	Single 2-lane carriageway	3.2
Screenline L2	Castle Peak Road – Mai Po (South to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L3	Castle Peak Road – Mai Po (North to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L4	Castle Peak Road – Tam Mi	Single 2-lane carriageway	3.2
Screenline L5	Shek Wu Wai Road	Single 2-lane carriageway	3.2

Remark: (1) Refer to **Drawing 3.2** for junction reference.
(2) Junctions will be upgraded by San Tin Technopole project.

Traffic Surveys

3.2.2 A series of manual classified traffic surveys have been conducted at the identified junctions to establish the current traffic condition in the vicinity. The surveys were carried out during the morning and evening peak hour periods on a typical weekday in April 2024. The observed traffic data indicates that the morning peak hour and evening peak hour occurred from 8:00am to 9:00am and 5:00pm to 6:00pm. The observed peak periods are adopted for forecasting and assessment purposes in this study.

3.2.3 The observed peak hour traffic flows are shown in **Drawing 3.13**.

3.2.4 Junction capacity and Volume/Capacity Ratio (V/C Ratio) assessments have been conducted for the identified junctions and road links with respect to the observed traffic flows in order to evaluate their current operational performance during the weekday peak hours and the results are as shown in **Table 3.2** and **Table 3.3**. The junction calculation sheets are attached in **Annex A**.

Table 3.2 Current Junction Operational Performance

Ref. (1)	Junction	RC/RFC (2)	
		AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.38	0.38
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.48	0.29
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.77	0.67
C	Castle Peak Road – Mai Po/ San Tam Road	0.13	0.08
D	Castle Peak Road – Mai Po/ Palm Springs Boulevard	0.56	0.31
E	Castle Peak Road – Mai Po/ Geranium Path	0.02	0.02
F	Castle Peak Road – Tam Mi/ Yau Pok Road	0.03	0.03
G	Castle Peak Road – Tam Mi/ Kam Pok Road	0.12	0.10
H	Fairview Park Interchange	0.56	0.64
I	Castle Peak Road – Mai Po/ Mai Po South Road	0.01	0.02

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

Table 3.3 Current Road Links Performance

Ref.(1)	Road Link	Directions	Design Capacity, (veh/hr)	Design Capacity, (pcu/hr) (3)	2024 Traffic Flow			
					Traffic Flow (pcu/hr)		V/C (4)	
					AM	PM	AM	PM
L1	Mai Po South Road	EB	700(2)	910	0	10	0.00	0.01
		WB	700(2)	910	15	10	0.02	0.01
L2	Castle Peak Road – Mai Po	NB	700(2)	910	185	210	0.20	0.23
		SB	700(2)	910	185	155	0.20	0.17
L3	Castle Peak Road – Mai Po	NB	700(2)	910	175	210	0.19	0.23
		SB	700(2)	910	190	155	0.21	0.17
L4	Castle Peak Road – Tam Mi	NB	700(2)	910	420	390	0.46	0.43
		SB	700(2)	910	470	345	0.52	0.38
L5	Shek Wu Wai Road	NB	700(2)	910	340	305	0.37	0.34
		SB	700(2)	910	365	290	0.40	0.32

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) PCU factor of 1.3 adopted
(4) V/C = volume to capacity ratio

3.2.5 The results in **Table 3.2** and **Table 3.3** have indicated that all identified junctions and road links are currently operating with ample capacity during the typical weekday morning and evening peak hours.

3.3 Nearby Public Transport

3.3.1 The current road-based public transport services are available at Castle Peak Road and San Tam Road, with service stops located within 500-metre walking distance from the subject site, as shown in **Drawing 3.14** and as summarized in **Table 3.4** below.

Table 3.4 Existing Nearby Public Transport Services

Route No.	Destination	Frequency (min)
Franchised Bus		
76K	Sheung Shui (Ching Ho) – Long Ping Estate	20 - 30
Green Minibus (GMB)		
75	Yuen Long (Fook Hong Street) – Lok Ma Chau Spur Line PTI	10 - 20
76	Yuen Long (Fook Hong Street) – Siu Hom Tsuen	15 - 20
78	Lok Ma Chau (San Tin) PTI – Pat Heung Road (near Tai Lam Bus-Bus Interchange)	20 - 25
Public Light Bus (PLB)		
17	Sheung Shui – Yuen Long	Flexible(1)

Remarks: (1) Peak hour frequency is observed to be 3-5 minutes.

Public Transport Utilization

3.3.2 A traffic survey was also conducted on a typical weekday in April 2024 to identify the peak hour public transport utilization at the existing nearest bus stops near Royal Palms at Castle Peak Road and Maple Garden at San Tam Road. The survey results are summarized in **Table 3.5**.

Table 3.5 Observed Peak Hour Public Transport Utilization

Bound	Mode	Route No.	Observed No. of Vehicles	Total Service Capacity (pax)(1)	Observed Occupancy (pax)	Occupancy Rate (%)
AM Peak (07:00 – 09:00)						
Yuen Long	Bus	76K	5	450	119	26%
	GMB	75	12	198	166	84%
		76	5	83	68	82%
		78	4	76	30	39%
	PLB	17	49	817	579	71%
			Total	**1624**	**962**	**59%**
Sheung Shui / San Tin	Bus	76K	4	360	47	13%
	GMB	75	14	233	157	67%
		76	4	67	45	67%
		78	5	92	42	46%
	PLB	17	41	674	449	67%
			Total	**1426**	**740**	**52%**
PM Peak (17:30 – 19:30)						
Yuen Long	Bus	76K	4	360	135	38%
	GMB	75	18	309	297	96%
		76	6	96	70	73%
		78	4	76	32	42%
	PLB	17	43	718	653	91%
			Total	**1559**	**1187**	**76%**
	Bus	76K	6	540	47	9%

Sheung Shui / San Tin	GMB	75	10	172	139	81%
		76	6	96	92	96%
		78	4	76	33	43%
	PLB	17	40	667	535	80%
			Total	**1551**	**846**	**55%**

Remarks: (1) The bus carrying capacity is assumed to be taken at 75% of 120, which equals to 90.

3.3.3 From **Table 3.5**, it can be noted that the passenger demands are mostly served by KMB 76K, GMB 75 and PLB 17. The bus service has an extensive service coverage running between Yuen Long and Sheung Shui, however its service level is still relatively low at a peak hour frequency of 20-30 minutes. For the PLB 17, it is a public light bus service with no designated routing, headway and fares.

3.3.4 Based on the number of boarding and alighting passengers from the survey, it is noted that the directional split of local residents in the vicinity is about 65% towards Yuen Long and 35% towards Sheung Shui in AM peak periods, while 68% towards Yuen Long and 32% towards Sheung Shui in PM peak periods.

3.4 Pedestrian Flow and Queuing Space Assessment

3.4.1 A pedestrian flows survey was also conducted on a typical weekday in October 2024, the operational performance of identified footpaths and concerned queuing area of bus stops at Castle Peak Road – Mai Po and San Tam Road in term of average flow of Level of Services (LOS), as stipulated in Highway Capacity Manual 2000 and Transport Planning & Design Manual (TPDM), has been assessed. The peak hour pedestrian flows in 2024 are shown in **Drawing 3.15**, and the results are summarized in below **Table 3.6** and **Table 3.7**.

Table 3.6 2024 Observed Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2024 Observed Peak Hourly Flow (ped/hr)		2024 Observed Peak Flow Rate (ped/min/m) (3)		LOS (4)	
			AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	11	9	0.17	0.14	A	A
Fp2	2.3	1.3	20	41	0.26	0.53	A	A
Fp3	1.5	0.5	22	37	0.73	1.23	A	A
Fp4	1.7	0.7	5	6	0.12	0.14	A	A

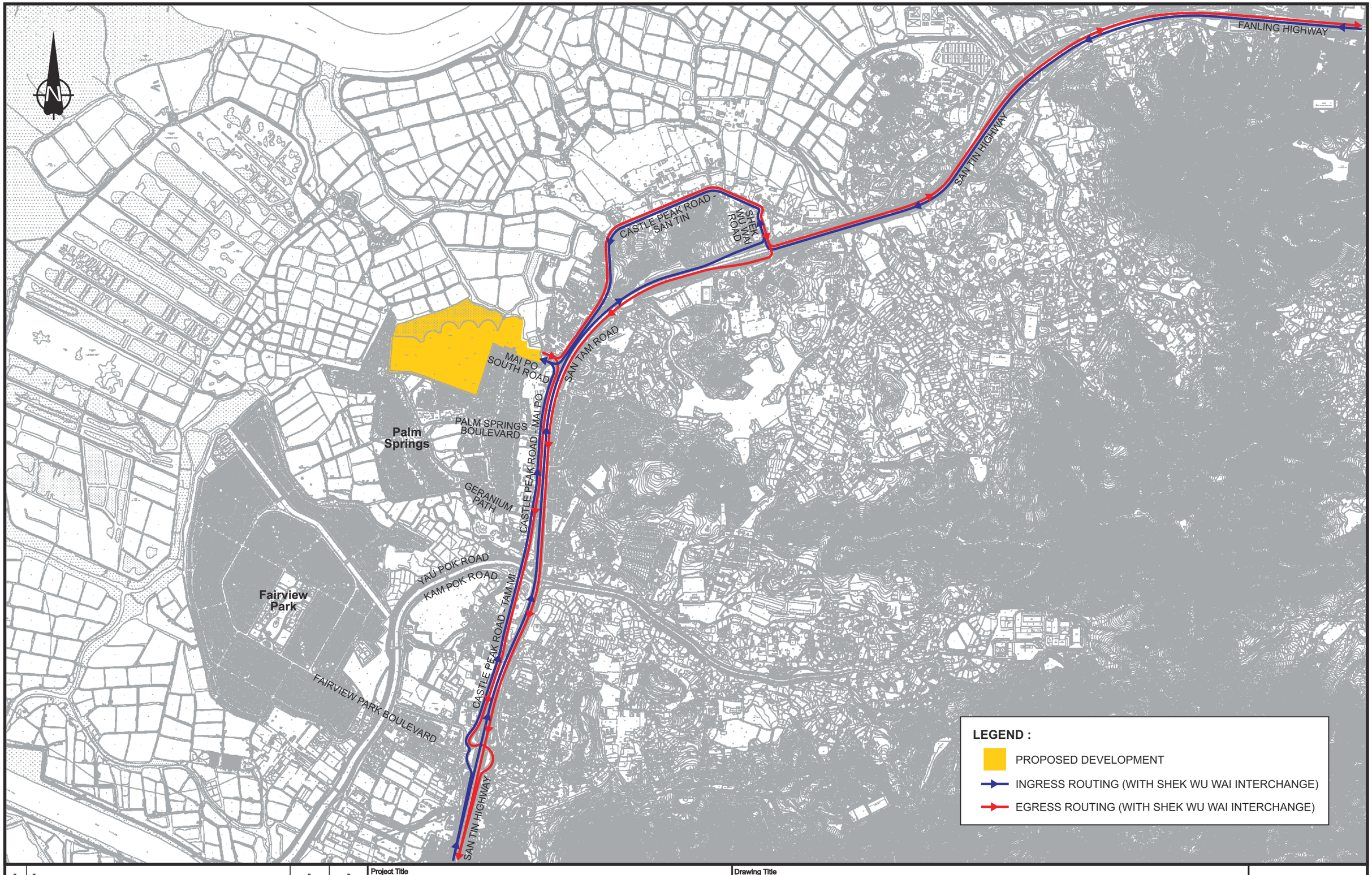
Remarks: (1) Refer to **Drawing 3.15** for locations and operational performance of identified footpaths
(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath)
(3) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width
(4) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.

Table 3.7 2024 Observed Queuing Area Level-Of-Service Assessment at Bus Stops

Ref. (1)	2024 Observed Peak Hourly Passenger Flow at Bus Stop (pax/hr)	2024 Observed Maximum Queue at Queuing Area (pax)	Queuing Area (m^2)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	2	1 (i.e. 2/60x25)	5.8	5.8	A
Palm Springs Bus Stop – Sheung Shui Bound (NB)	2	1 (i.e. 2/60x25)	20.3	20.3	A

Remarks: (1) Refer to **Drawing 3.15** for locations and operational performance of identified queuing area
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9.

3.4.2 As shown in **Table 3.6** and **3.7**, the identified footpaths and queuing area at concerned bus stops are currently operating with adequate spare capacities during the typical weekday morning and evening peak hours.



Rev.	Description	Checked	Date
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A	MINOR AMENDMENT	CFC	24DEC24

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

MAJOR INGRESS AND EGRESS ROUTE

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JUN 2024	3.1	A

SYSTRA MVA

CHK50800610/TIA/F31-A.CDR/LLH/24DEC24

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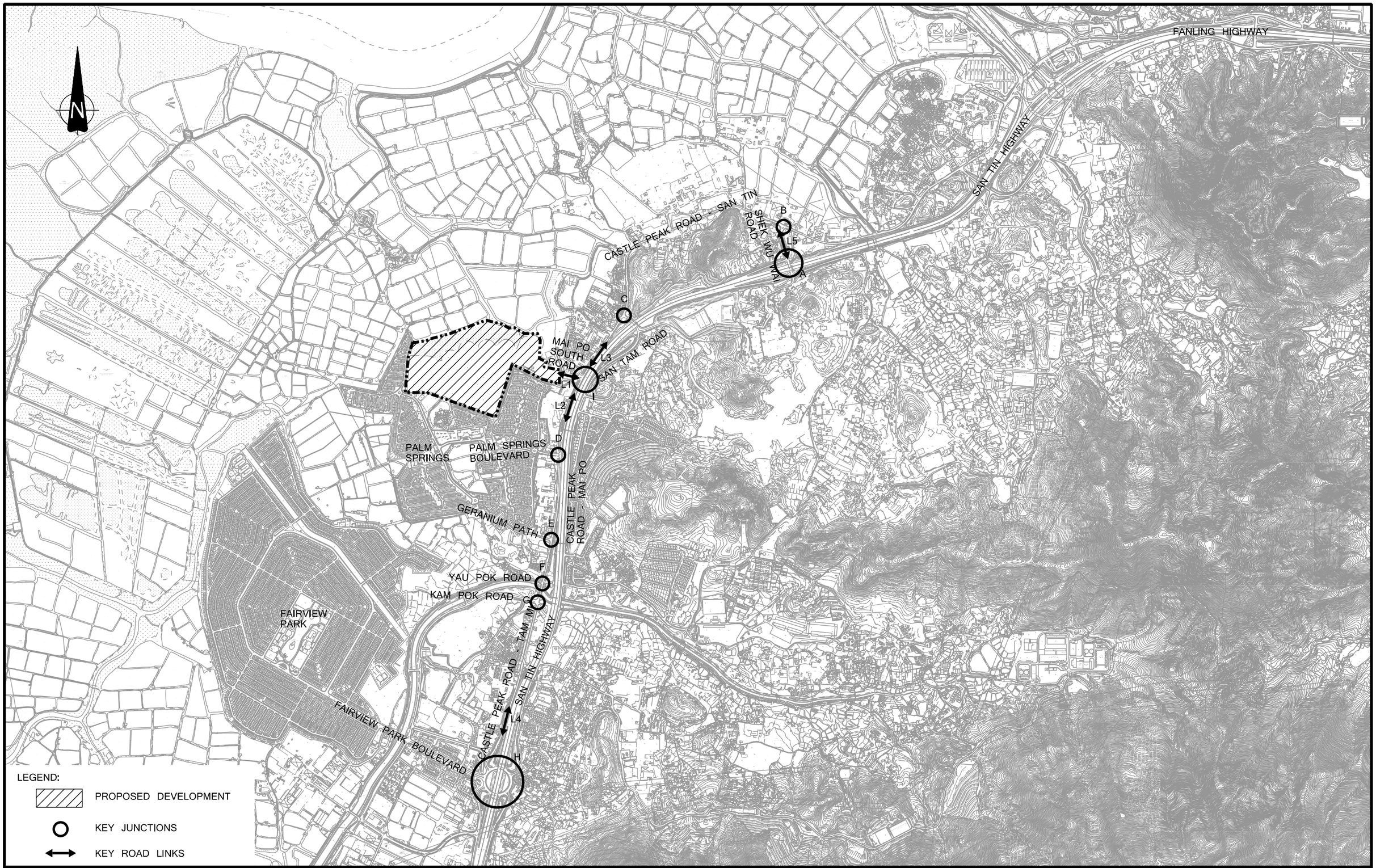

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A	TD COMMENT INCORPORATED	CFC	02JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

KEY JUNCTIONS AND ROAD LINKS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	3.2	A

SYSTRA MVA

CHK50800610/TIA/F32-A.DGN/LHO/02JAN25

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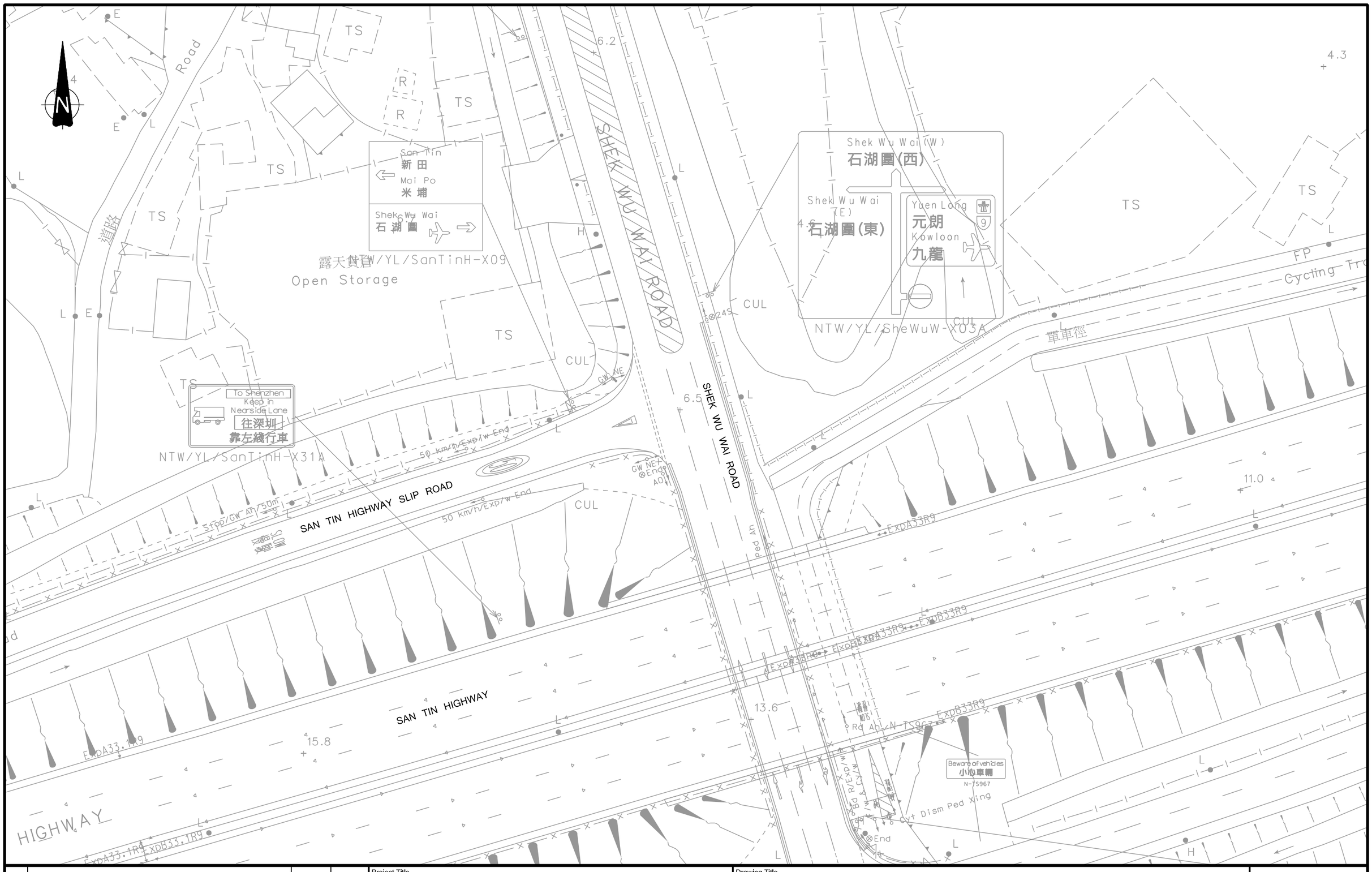

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A1)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DED 2024	**3.3**	-

SYSTRA MVA

CHK50800610/TIA/F33.DGN/LHO/31DEC24

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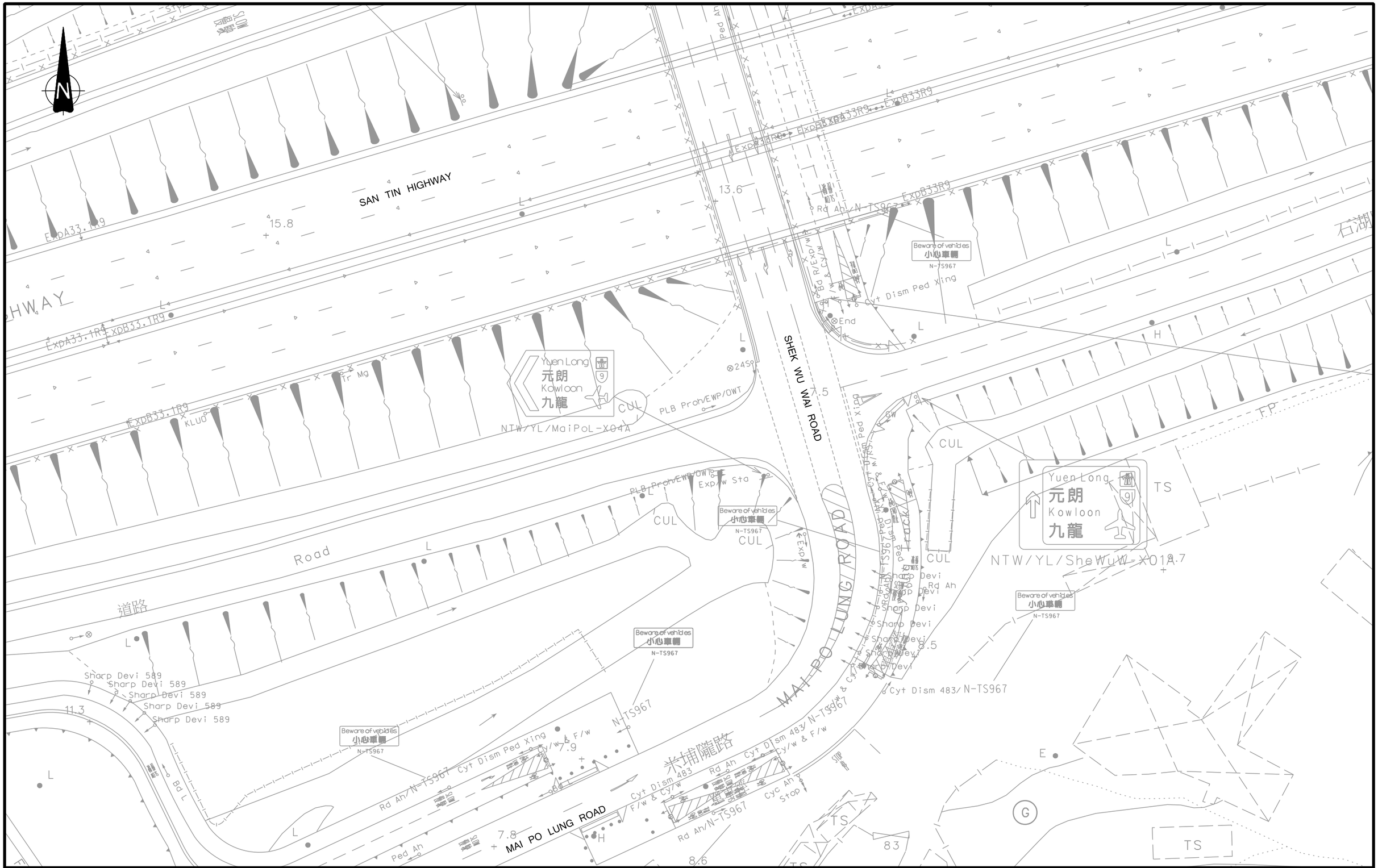

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

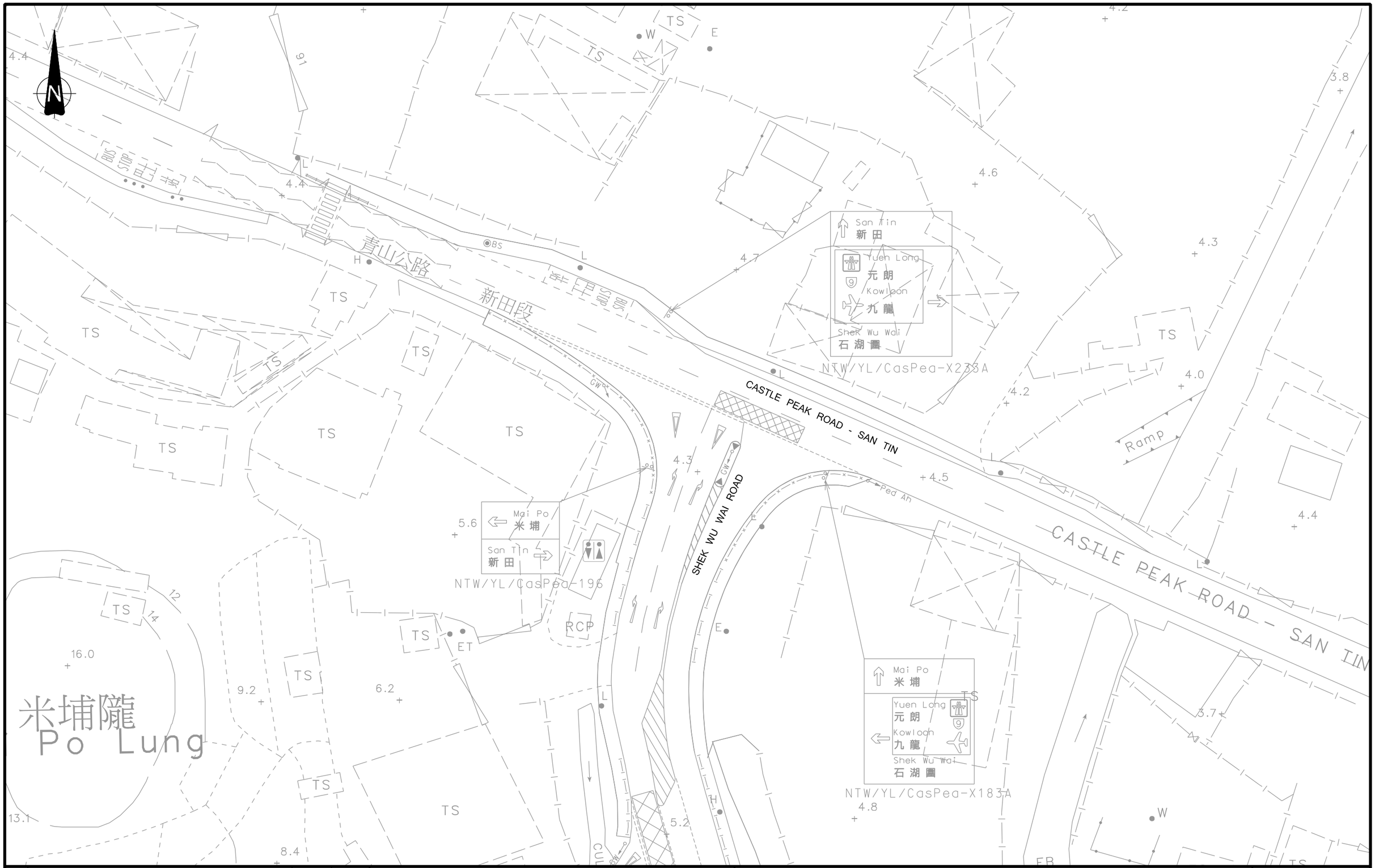
EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / MAI PO LUNG ROAD (A2)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.4**	-

SYSTRA MVA

CHK50800610/TIA/F34.DGN/LHO/03JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

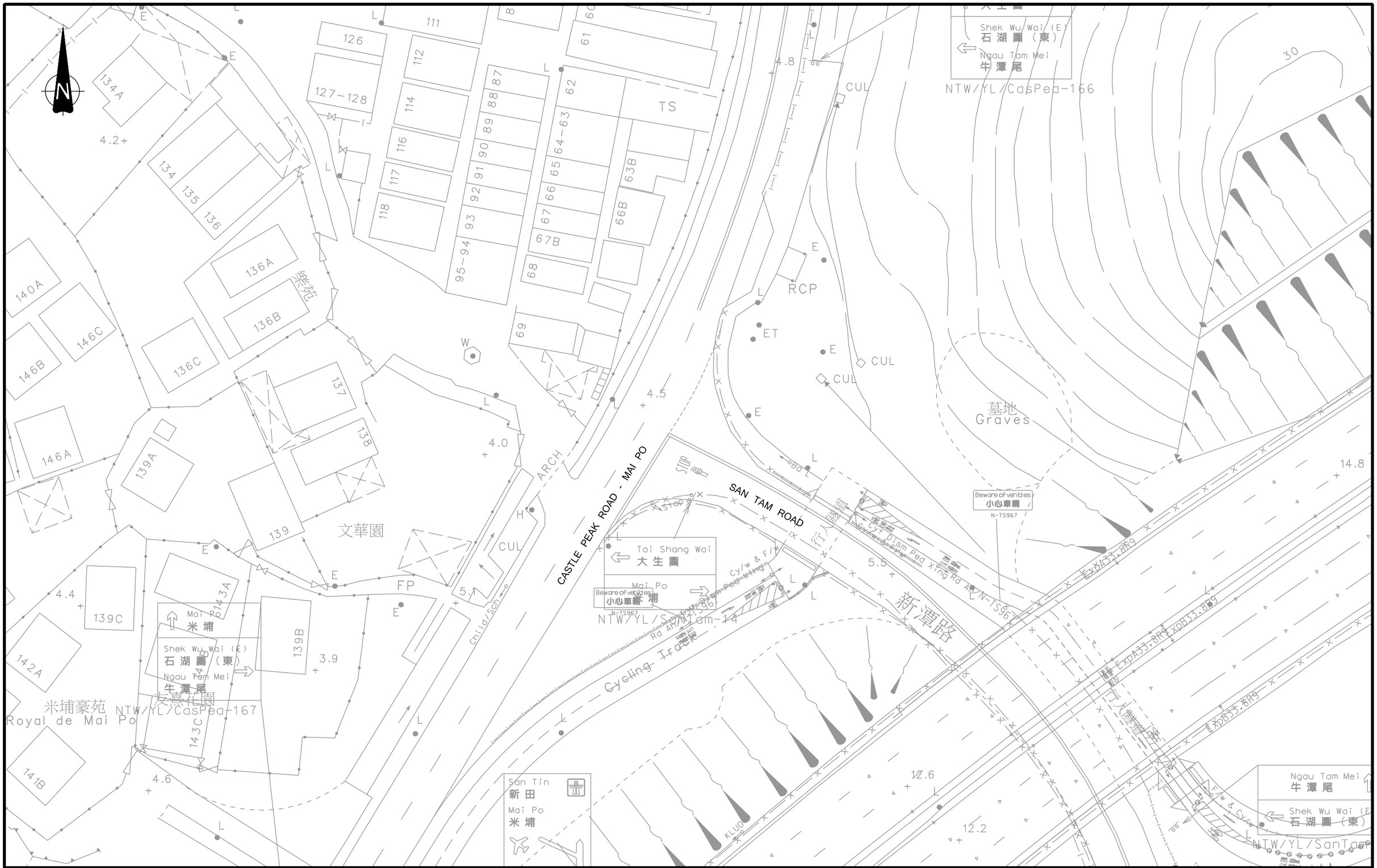
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD-SAN TIN / SHEK WU WAI ROAD (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.5**	-

SYSTRA MVA

CHK50800610/TIA/F35.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / SAN TAM ROAD (C)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.6**	-

SYSTRA MVA

CHK50800610/TIA/F36.DGN/LHO/02JAN25

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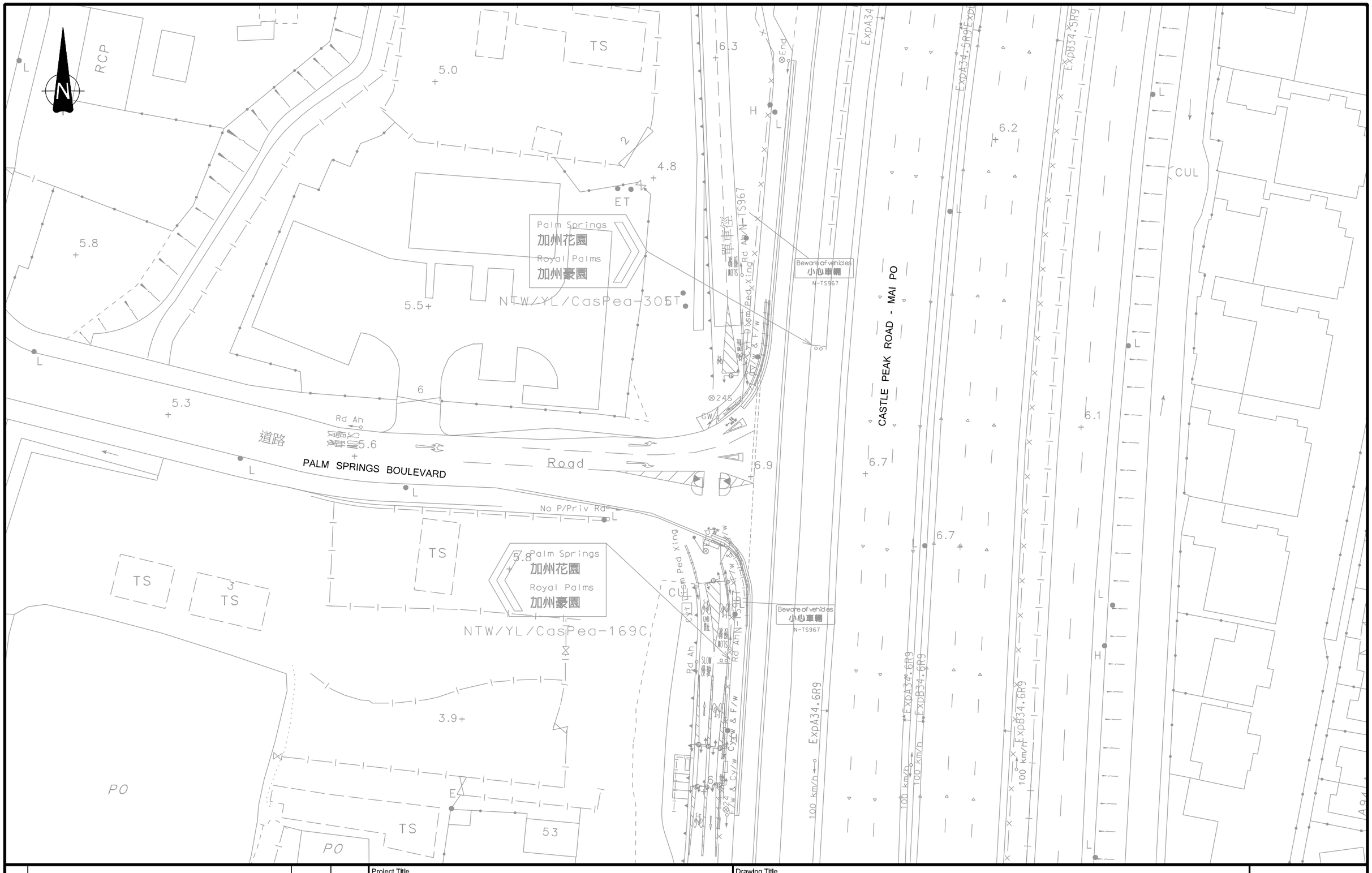

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

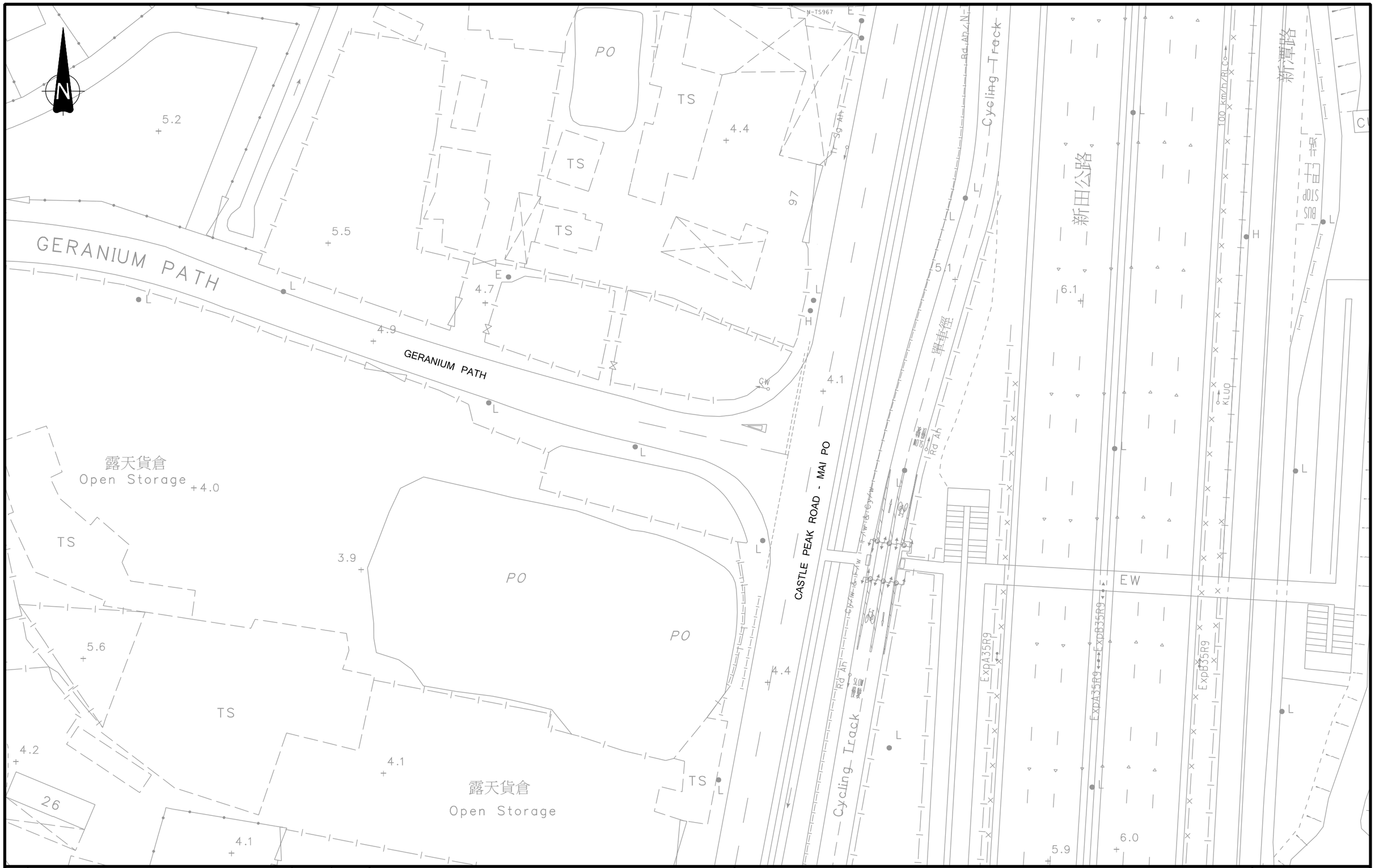
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / PALM SPRINGS BOULEVARD (D)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	3.7	-

SYSTRA MVA

CHK50800610/TIA/F37.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / GERANIUM PATH (E)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.8**	-

SYSTRA MVA

CHK50800610/TIA/F38.DGN/LHO/02JAN25

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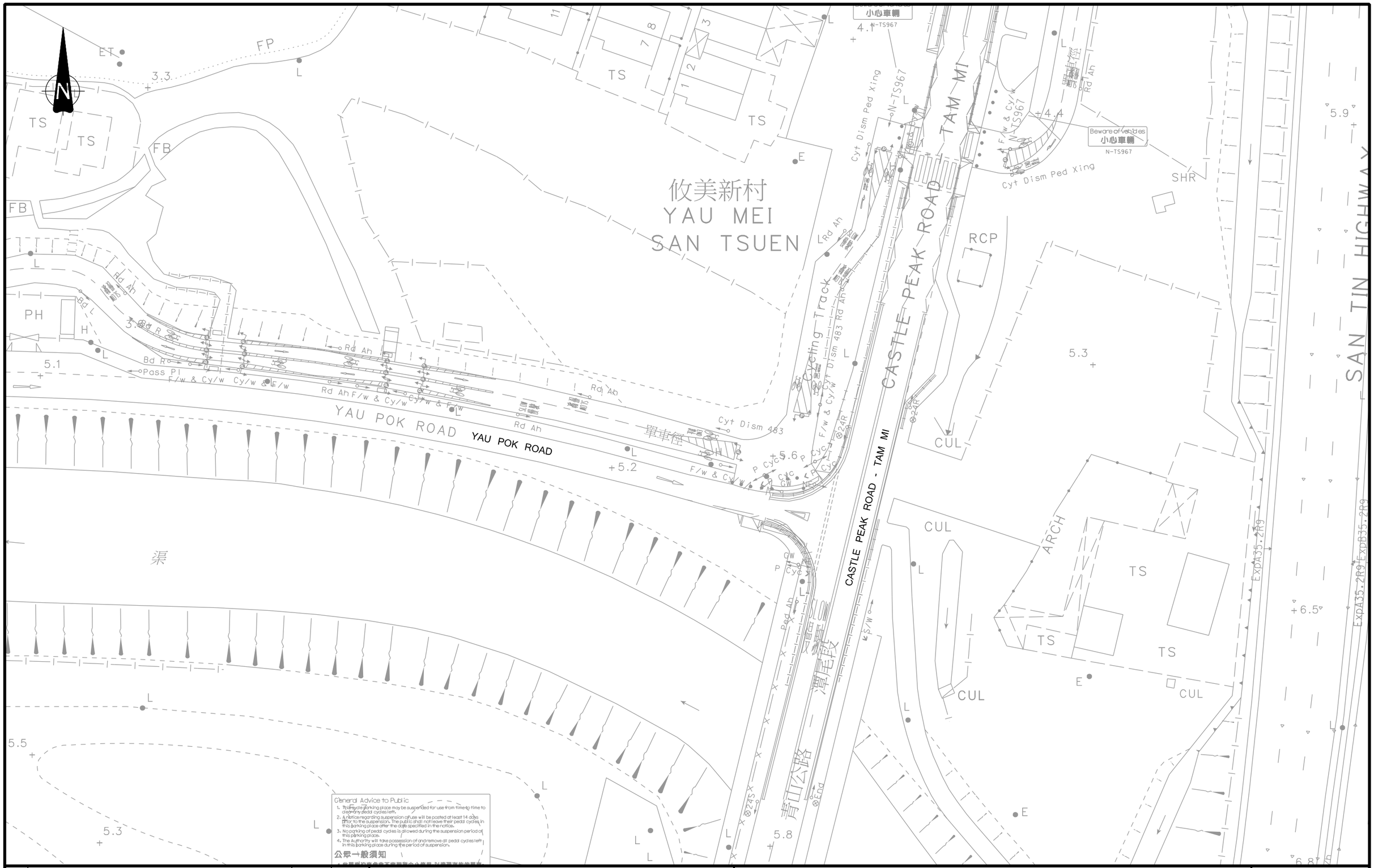
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EXPB35.2R9
SAN TIN HIGHWAY
佐美新村
YAU MEI
SAN TSUEN
PH
H
Bd L
Rd Ah
3.8
Bd R
5.1
Pass Pl
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Cy/w & F/w
Rd Ah
F/w & Cy/w
Cy/w & F/w
Rd Ah
Rd Ah
YAU POK ROAD
YAU POK ROAD
+5.2
Cyt Dism 483
單車徑
Cycling Track
Cyt Dism 483
Rd Ah
F/w & Cy/w
Cy/w & F/w
5.6
P Cyc
C Cyc
GW
NE
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Ø24R
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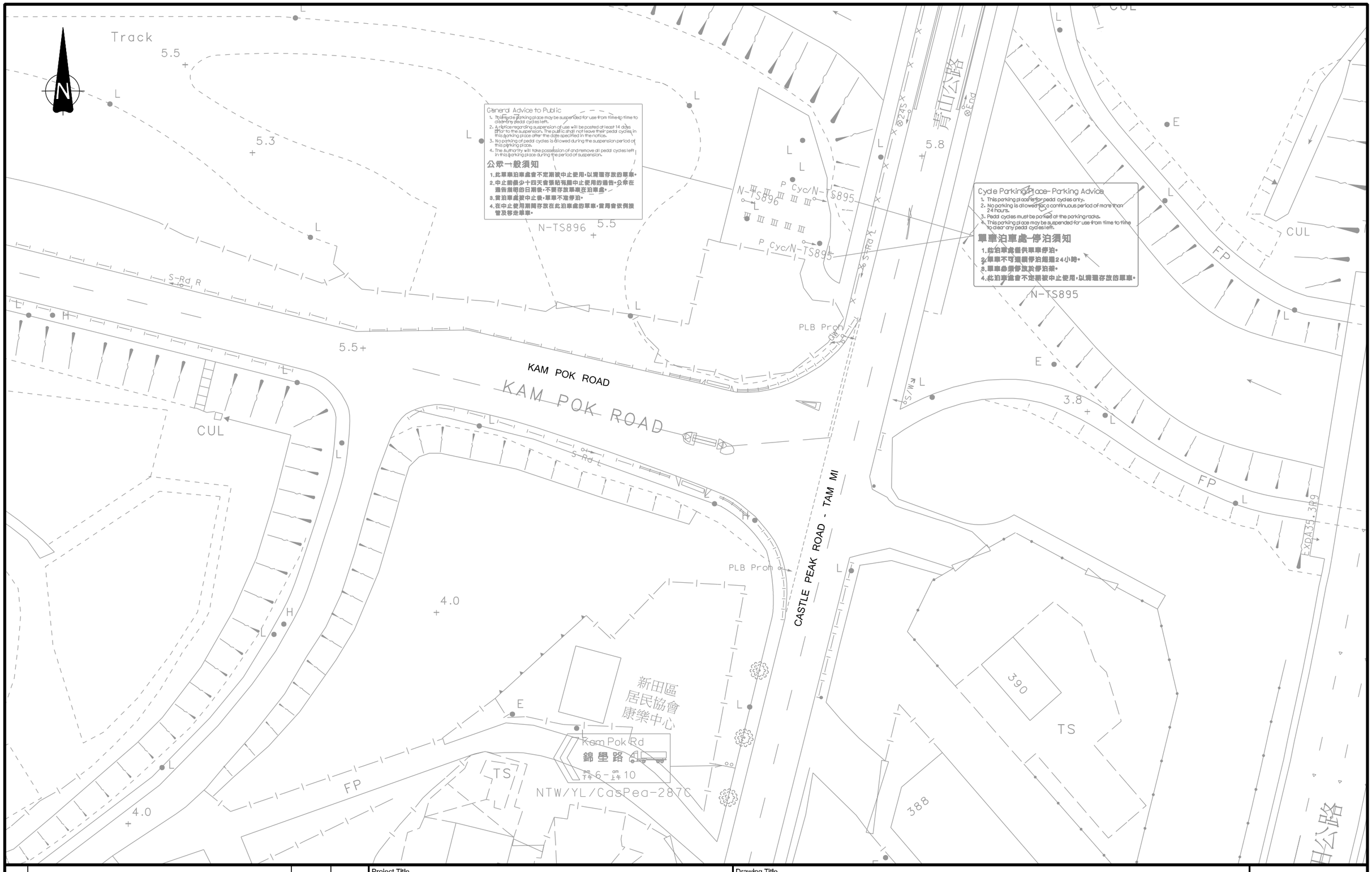

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - TAM MI / KAM POK ROAD (G)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.10**	-

SYSTRA MVA

CHK50800610/TIA/F310.DGN/LHO/02JAN25

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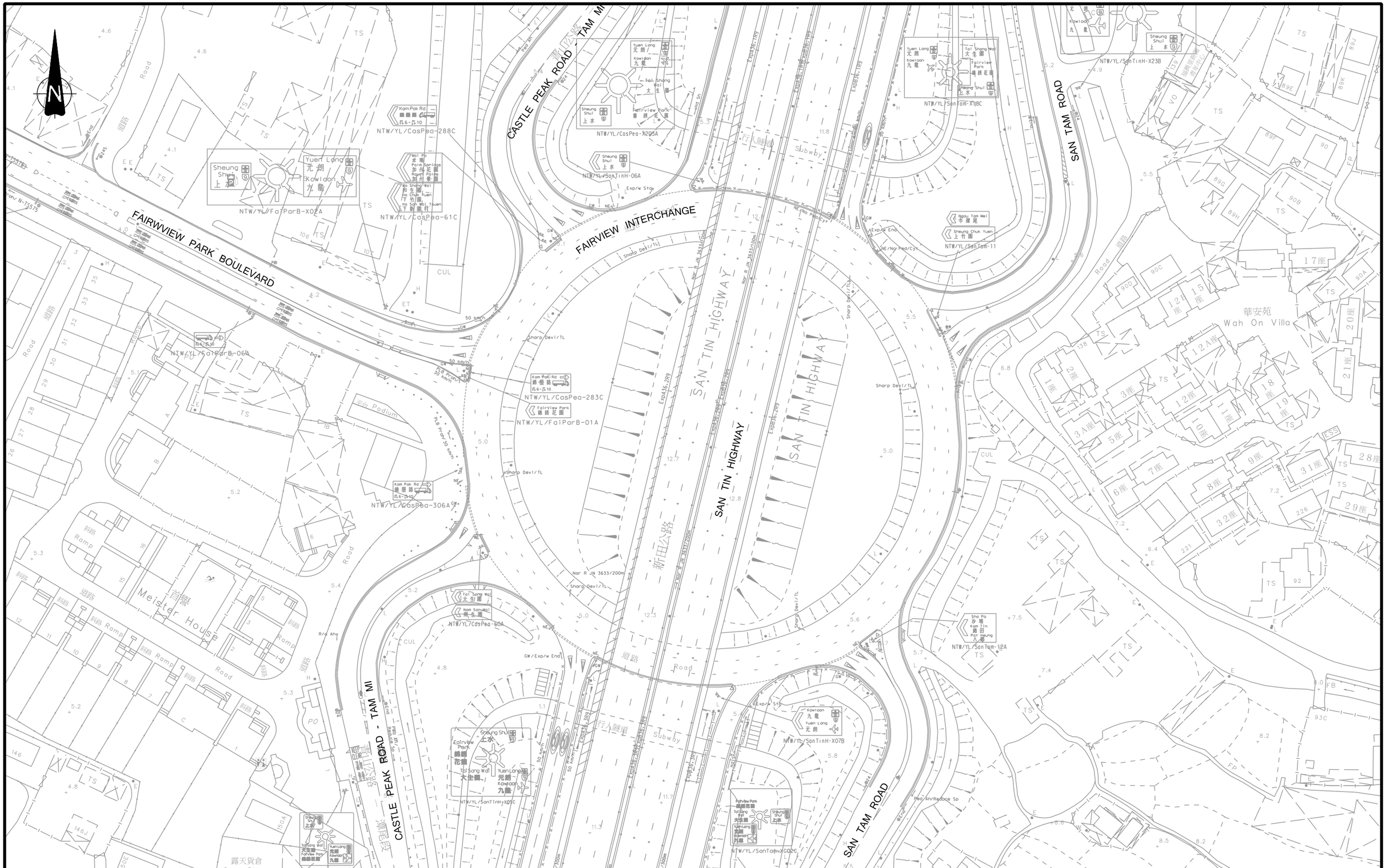
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FAIRVIEW PARK BOULEVARD
FAIRVIEW INTERCHANGE
SAN TIN HIGHWAY
SAN TAM ROAD
Yuen Long 元朗 Kowloon 九龍
Sheung Shui 上水
Tai Shang Wai 大生圍
Fairview Park 錦繡花園
Kam Pok Rd 錦伯路
Mai Po 米埔
Palm Springs 棕灣花園
Ho Chuk Yuen 何竹園
Ha San Wai Tsuen 下新圍村
Ngau Tam Mei 牛潭尾
Shek Wu Hui 石湖墟
Sha Po 沙埔
Kam Tin 錦田
Pat Heung 八鄉
NTW/YL/CasPea-288C
NTW/YL/CasPea-X20A
NTW/YL/CasPea-61C
NTW/YL/FaiParB-X02A
NTW/YL/FaiParB-06A
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NTW/YL/SanTam-GO2C
NTW/YL/CasPea-X54B
華安苑
Wah On Villa
Meister House
Podium
Ramp
Subway
Open Storage
Sharp Devi/TL
Nar R JN 3633/200m
Exp/w Stop
Exp/w End
GW/Exp/w End
Exp/w Strt
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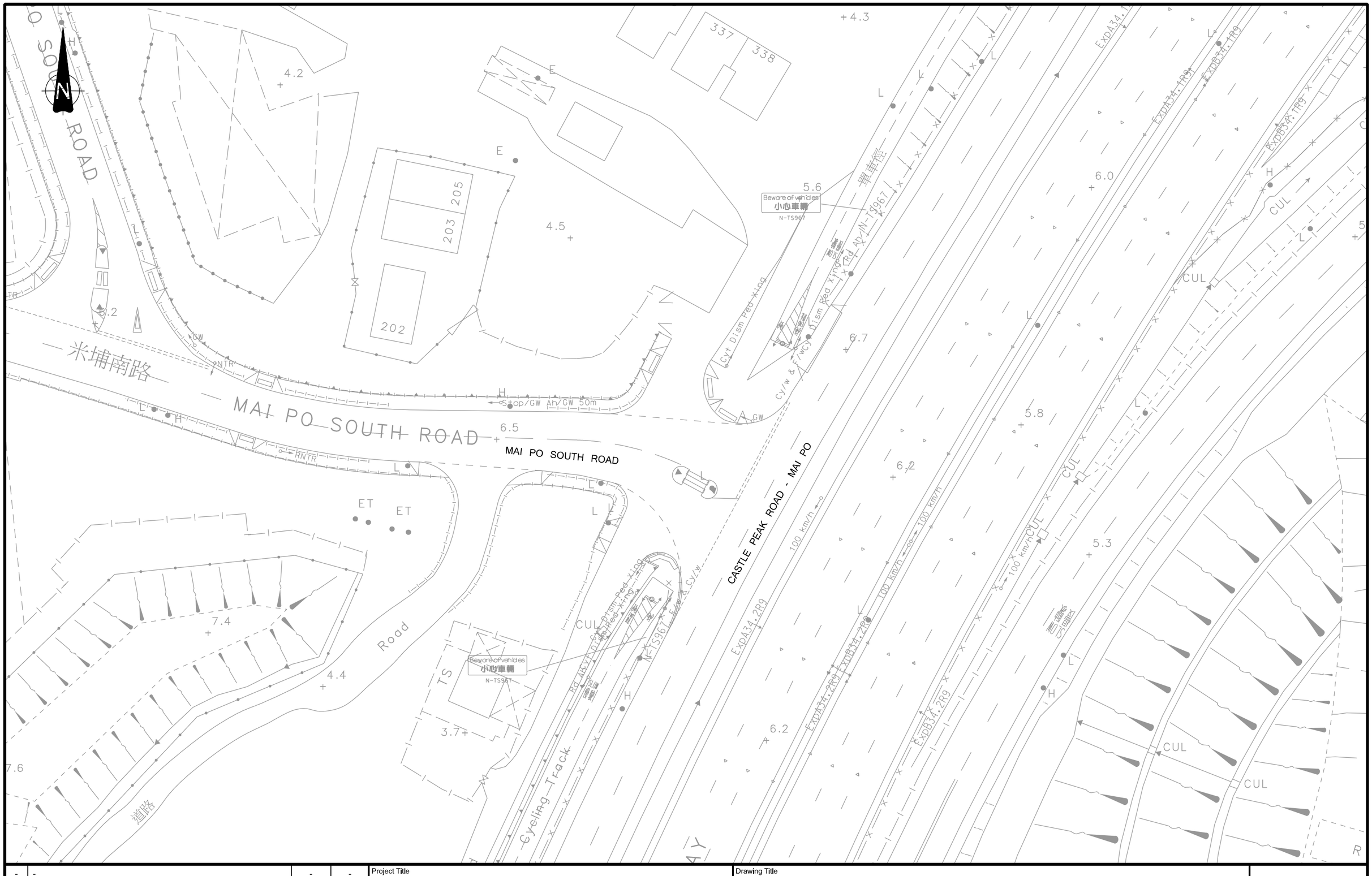

Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

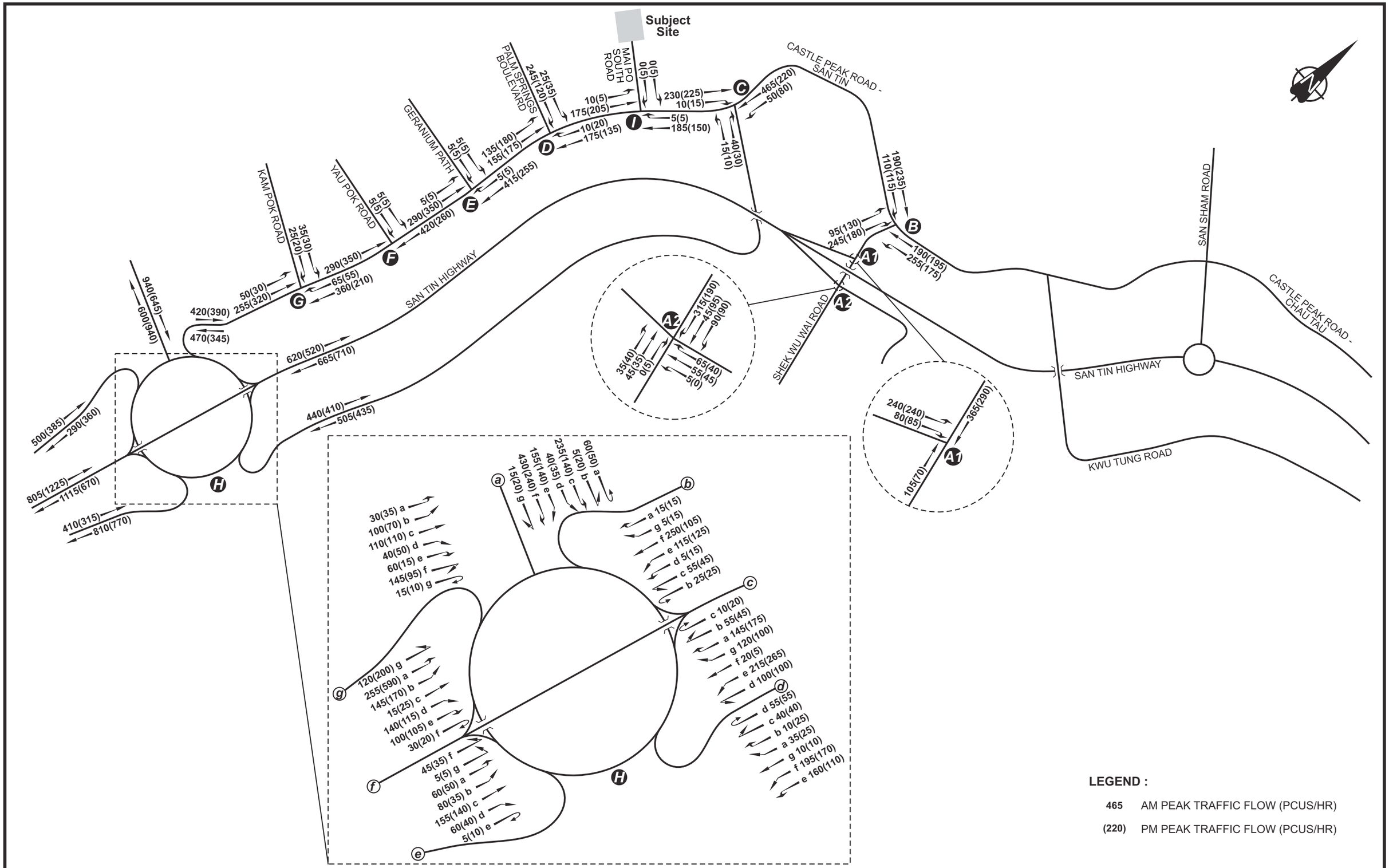
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / MAI PO SOUTH ROAD (I)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.12**	-

SYSTRA MVA

CHK50800610/TIA/F312.DGN/LHO/03JAN25

Original Size : A3



LEGEND :

465 AM PEAK TRAFFIC FLOW (PCUS/HR)

(220) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED AND MINOR AMENDMENT	CFC	31DEC24

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

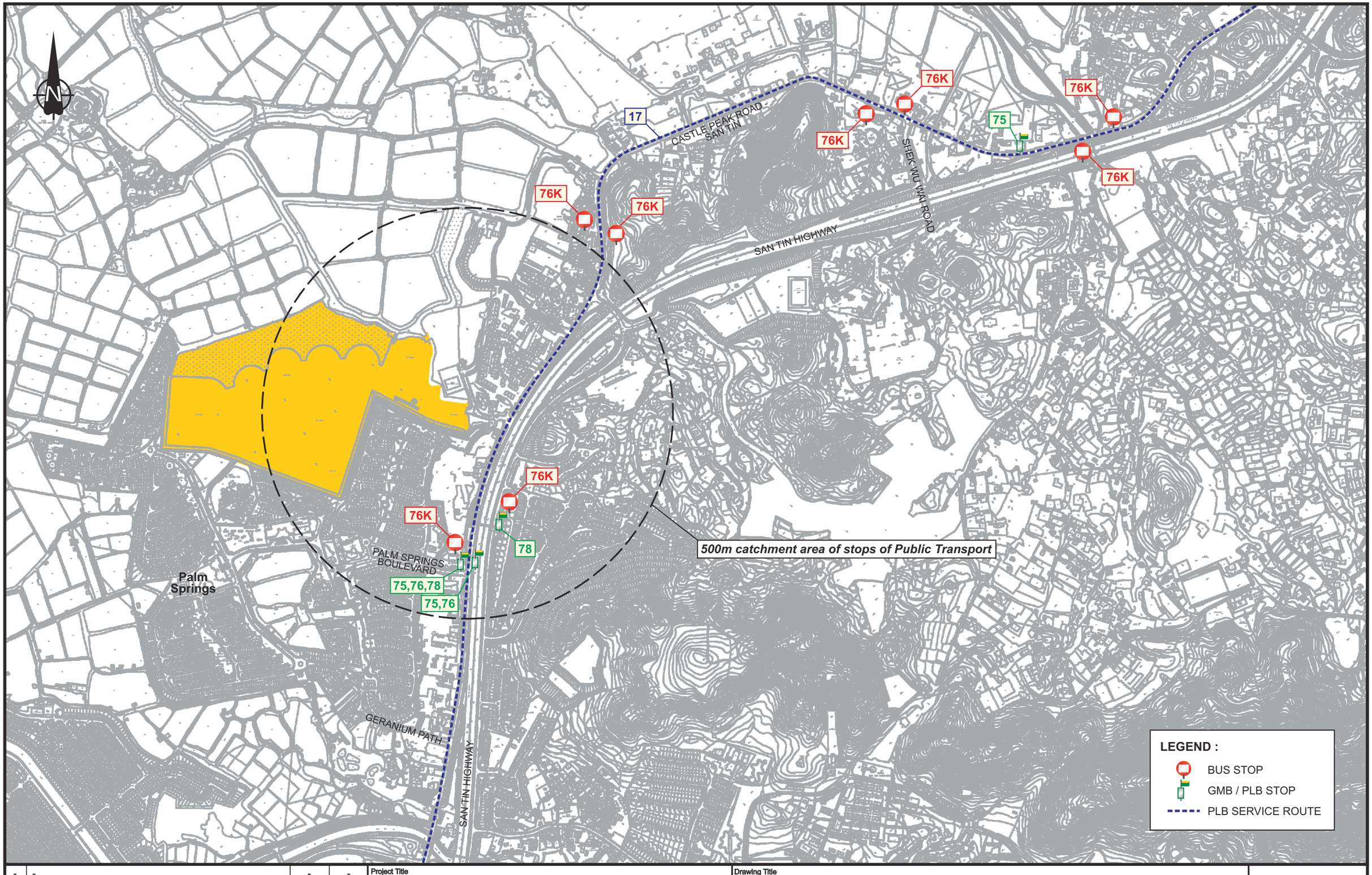
2024 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	3.13	A

SYSTRA MVA

CHK50800610/TIA/F313-A.CDR/LLH/31DEC24

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

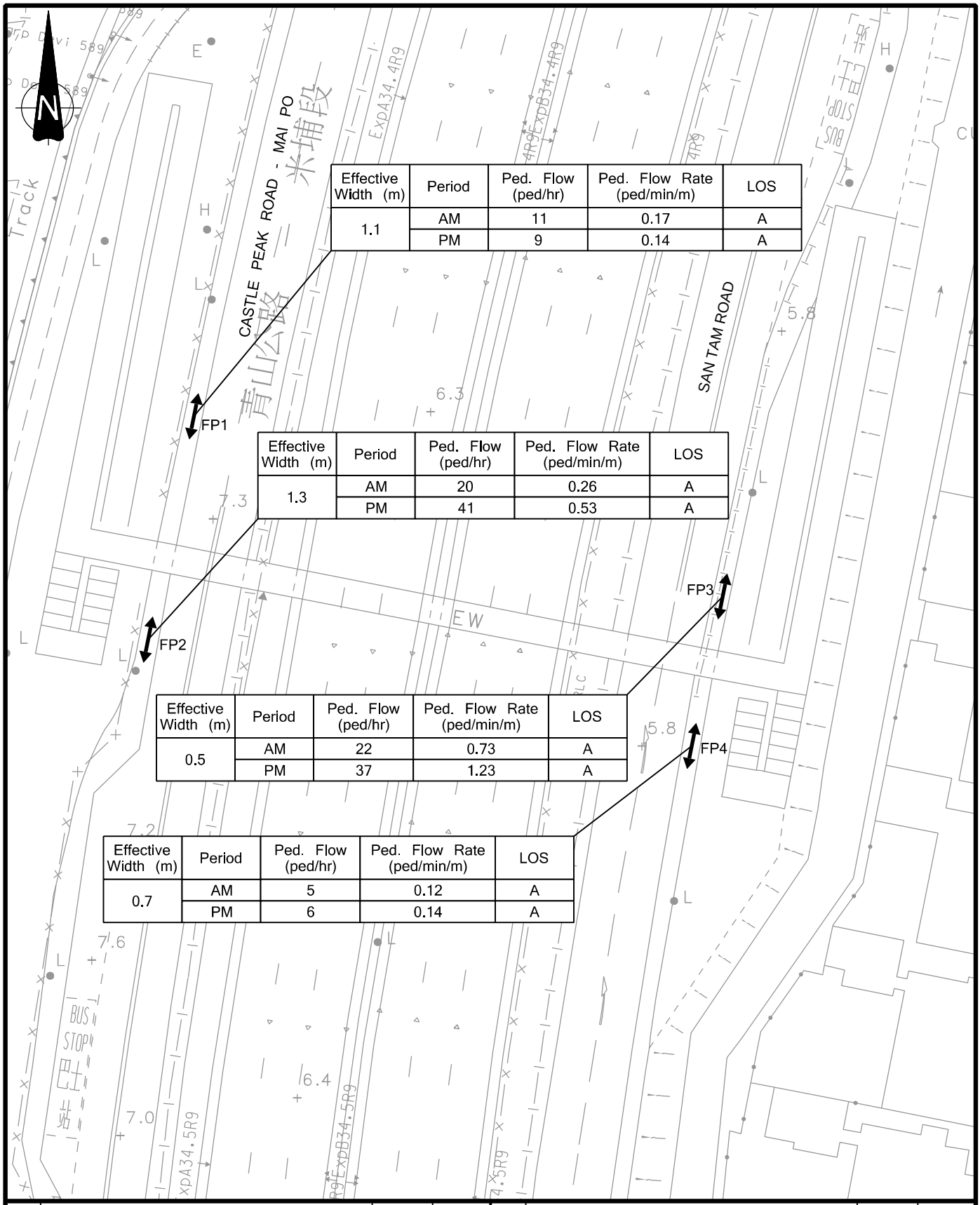
CURRENT PROVISION OF PUBLIC TRANSPORT SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	3.14	-

SYSTRA MVA

CHK50800610/TIA/F314.CDR/LLH/24DEC24

Original Size : A3



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	PM	9	0.14	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	20	0.26	A
	PM	41	0.53	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	22	0.73	A
	PM	37	1.23	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	5	0.12	A
	PM	6	0.14	A

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

YEAR 2024 OBSERVED PEAK HOUR PEDESTRIAN FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	DEC 2024	3.15	-

CHK50800610/TIA/F315.DGN/LHO/03JAN25

Original Size : A4

4. TRAFFIC FORECAST

4.1 Design Year

4.1.1 The tentative operation year of the proposed development is by 2031. Hence, the design year of 2034, three years upon operation, has been adopted for traffic forecast and assessment purposes.

4.2 Reference Traffic Forecast

Historical Traffic Growth Trend

4.2.1 In order to produce the traffic forecast for the strategic highway and other local road links at the design year of 2034, background traffic growth rates are to be determined. Reference has been made to the historic traffic flow data in the Annual Traffic Census (ATC) report to derive the appropriate background traffic forecast for various road links in this Study. To establish the background traffic growth rates, five ATC traffic count stations within the study area are referenced. The annual average daily traffic counts at the identified stations over a period between Year 2018 and Year 2023 are summarised in **Table 4.1** below.

Table 4.1 ATC Traffic Counts between 2018 and 2023

Road	Section	Stn No.	Average Annual Daily Traffic (A.A.D.T.)						Growth Rate (p.a.)
			2018	2019	2020	2021	2022	2023	18/23
Local Road Links									
San Tin Highway, Castle Peak Road & San Tam Road	Kam Tin Road ↔ Fairview Park Boulevard	5016	86,230	90,860	81,870	86,620	82,820	88,760	+0.58%
Castle Peak Rd - Tam Mi, Mai Po & San Tin	Fairview Park Boulevard ↔ Lok Ma Chau Rd	5257	11,980	11,910	11,420*	11,880*	11,520*	10,740	-2.16%
San Tam Rd	Castle Peak Rd - Mai Po ↔ Fairview Park Boulevard RA	5297	8,540	7,530	7,220*	7,510*	7,280*	10,960	+5.12%
San Tam Rd	Fairview Park Boulevard RA ↔ End	5505	12,700*	13,330	13,420	13,960*	13,540*	13,860*	+1.76%
		Total	**119,450**	**123,630**	**113,930**	**119,970**	**115,160**	**124,320**	**+0.80%**

Remark: *AADT estimated by Growth Factor

4.2.2 As indicated in **Table 4.1**, it is noted that over the past six years (i.e., 2018 to 2023), the average annual traffic growth pattern in the area shows a slightly ascending trends at the local road links.

Future Local Planning Data

4.2.3 For the local road links, apart from the historical traffic data, references have been made to the latest "Projections of Population Distribution 2023-2031" as published by PlanD's Working Group on Population Distribution Projections in March 2024. The available projected

population for the local Tertiary Planning Unit (TPU) in the vicinity, as shown in **Drawing 4.1,** are referenced to derive the annual growth rates as summarised in **Table 4.2**.

Table 4.2 Projected Populations of Selected Tertiary Planning Units

Tertiary Planning Unit (TPU)	Projected Population		Growth Rate (p.a.)
	2021	2027	21/27
541	19,100	19,900	+0.7%
542	12,500	11,700	-1.1%
543 & 546	3,300	5,000	+7.2%
544	3,500	3,200	-1.5%
Total	**38,400**	**39,800**	**+0.6%**

4.2.4 As shown in **Table 4.2**, the projected population planning data suggest that the annual growth rate between Year 2021 and Year 2027 is +0.6% when considering the local TPUs.

Adopted Traffic Growth Rate for Local Road Links

4.2.5 Taking account of the historical traffic pattern and the future local population projection planning data, a conservative estimation of +1.0% per annum is adopted for the background traffic growth of the local road links from Year 2024 to Year 2034.

San Tin Technopole

4.2.6 The large-scale development of San Tin Technopole (STT) will be constructed and intake by different phases, as illustrated in **Annex B** and **Annex C**. The summary will be as shown in **Table 4.3**.

Table 4.3 Phasing of San Tin Technopole

Phases(1)	Proposed Commencement of Works	Proposed Intake Year
Initial Phase	Year 2024	Year 2031
Main Phase	Year 2026	Year 2034
Remaining Phase	Year 2032	Year 2039

Remark: (1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.

4.2.7 The development trips in “Initial Phase” and “Main Phase” would be considered in the assessment of Year 2034. The related development schedules and estimated traffic generations are summarized in below **Table 4.4**. The estimated traffic flows of STT under Year 2034 are shown in **Drawing 4.2**.

Table 4.4 Development Trips of San Tin Technopole Adopted in Assessment

Ref.[1]	Development Schedule	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
San Tin Technopole (Initial Phase and Main Phase)	Information and Technology (I&T) Section	(120,000 Employment)	2,139[2]	3,080[2]	1,976[2]	1,477[2]
	Logistics & Storage and Workshop	(Approximate 758,000 m^2)	702[3]	1,051[3]	1,023[3]	795[3]
	Public Housing	Approximate 25,805 units (Average house/flat size of about 50 m^2)	1,605[4]	1,099[4]	766[4]	1,035[4]
	Private Housing	Approximate 12,200 units (Average house/flat size of about 60 m^2)	876[5]	519[5]	349[5]	451[5]

Remark:
(1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.
(2) Based on 120,000 I&T employment in TPB Land Use Proposal; average daily mechanised home-based work trips per employed person of 1.41 trips, peak hour percentage to daily total trips of 12%, distribution of boardings by transport mode (LRT, tram and ferry excluded) in TCS 2011 (87.4% of PT trips and 12.6% of PC/Taxi trips); and assumed capacity of franchised bus, PLB, shuttle bus and PC.
(3) Based on site area measurement, plot ratio of 2/ 5 in RODP, and traffic generation and attraction rates for industrial building in TPDM.
(4) Based on site area measurement, plot ratio of 6.5 in RODP, assumed average flat size of 50 m^2, consideration of new flat units about 50,000-54,000 in TPB land use proposal, and traffic generation and attraction rates for subsidised housing: HOS/PSPS in TPDM.
(5) Based on site area measurement, plot ratio of 6 in RODP, assumed average flat size of 60 m^2, consideration of new flat units about 50,000 - 54,000 in TPB land use proposal, and traffic generation and attraction rates for private housing: high-density/R(A) in TPDM.

Development Proposal of Ngau Tam Mei

4.2.8 The Government has recently disclosed the broad development proposal of Ngau Tam Mei (NTM) under Legislative Council Paper (No. CB(1)1487/2024(04). It is proposed to reserve land in NTM for use of post-secondary education institutions (self-sustained UniTown) with integrated residential neighbourhood. The first population intake is expected to take place gradually from Year 2034 onwards to tally with the commissioning of NOL Main Line.

4.2.9 According to the broad land use concept plan, NTM is expected to be served by the new Northern Metropolis (NM) Highway, while direct road connections/interchange are proposed to San Tin Highway and STT. Besides, upon NOL opening by Year 2034, MTR Ngau Tam Mei Station is expected to attract and shift some of the existing road traffic into railway, it is anticipated that the traffic conditions along San Tam Road and the existing Fairview Park Boulevard Interchange will be largely improved. As the NTM development proposal is still in the conceptual stage without detailed land use planning and development parameters, it will not be considered in this TIA Study.

Other Planned/Committed Developments

4.2.10 Apart from San Tin Technopole, there are also a number of other planned/committed developments located in the vicinity that are expected to be completed by year 2034. The Proposed temporary light public housing development (in various lots in D.D. 104 and adjoining government land, Yau Pok Road, Yuen Long) is excluded in the assessment due to its anticipated completion year (2024/2025), and the proposed 5-year operation period. The development schedules of these developments and estimated traffic generations are

summarized in **Table 4.5** and the locations of these developments are indicated in **Drawing 4.3**.

Table 4.5 Other Planned/Committed Developments

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	71 units (average flat size of about 186 m^2)	20	13	12	17
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10[2]	10[2]	10[2]	10[2]
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5	Lots 8 RP (Part), 14S.B. RP (Part), 45 and 1740S.A. RP in D.D.107 and adjoining government land to the south of Wing Kei Tsuen, Yuen Long, A/YL-NSW/241	37,171 m^2 GFA	85	90	115	132
6	Castle Peak Road – Tam Mei, Y/YL-NSW/3	Hotel 700 beds	94	102	91	109
		Retail 38,300 m^2	88	94	119	137
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	2,811 units (average flat size of about 50 m^2)	202	119	80	104
		Eating place / Shop & Services (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	109	65	43	56
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[2]	10[2]	10[2]	10[2]
		Special Child Care Centre	10[2]	10[2]	10[2]	10[2]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home	10[2]	10[2]	10[2]	10[2]

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
		142 Beds				
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[2]	10[2]	10[2]	10[2]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12
14	Lots 3054 S.A RP (Part), 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (Part), 3250 S.B ss.23 RP (Part), 3250 S.B ss.33 RP (Part) in D.D. 104, and Adjoining Government Land, Yuen Long, Y/YL-MP/3	106 Houses (average house size of about 163 m^2)	30	19	18	26
		Retail 607 m^2	2	2	2	3
15	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m^2)	45	27	18	23
		Retail 1,165 m^2	3	3	4	5
16	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m^2)	7	4	3	4
		5,400 m^2 residential care home for the elderly 127 Beds	10[2]	10[2]	10[2]	10[2]
17	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m^2 residential care home for the elderly 530 Beds	23[3]	27[3]	21[3]	27[3]

Remark: (1) Refer to **Drawing 4.3** for development locations.
(2) Assume Nominal Trips of 10 pcu/hr.
(3) Trips generation from project's TIA report.

4.2.11 Based on the above, the year 2034 reference traffic flows, as shown in **Drawing 4.4** are produced according to the following:

Local Road Links: = Year 2024 Observed Flows x $(1 + 1.0\%)^{10}$
+ Other Planned/Committed Development Trip Generation

4.3 Development Traffic Generations

Trip Generation of Proposed Scheme

4.3.1 The proposed development will provide 3,571 units with an average flat size of approximately 74.5 m^2, with provision of a 3,800 m^2 100-bed RCHE. The trip generations of the proposed development are estimated in accordance with the relevant trip rates as tabulated in the Transport Planning Design Manual (TPDM). **Table 4.6** summarises the trip generations of the proposed development.

Table 4.6 Estimated Trip Generation of Proposed Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Residential Trips				
Trip Rates (pcu/units/hr) (1)	0.0965	0.0556	0.0388	0.0530
No. of Residential Unit	3,571			
Residential Trips (pcu/hr)	345	199	139	190
RCHE Trips(2)				
Residential Trips (pcu/hr)	5	5	5	5
Induced Mechanized Trips(3)				
Induced Mechanized Trips (pcu/hr)	14	14	14	14
Enhancement of Public Transport(4)				
Enhancement of Public Transport (pcu/hr)	2.5	0	0	2.5
Total (pcu/hr):	367	218	158	212

Remark: (1) Trip Rates deduced from interpolation of TPDM for private housing: high-density R(A) with average flat sizes of 70 m^2 and 80 m^2
(2) Assume Nominal Trip Generation of 10 pcu/hr (2-way).
(3) By referring to **Para 4.3.6**.
(4) By referring to **Table 4.9** and **Para 4.3.10**.

4.3.2 As indicated in **Table 4.6**, the proposed development would generate a two-way total of 582 pcu/hr and 370 pcu/hr (including induced mechanized trips and enhanced public transport trips) during the weekday morning and evening peak hour periods respectively. The development trip distributions are shown in **Drawing 4.5**.

Public Transport Trips

4.3.3 With reference to TD's Travel Characteristics Survey (TCS) 2011, the public transport demands for the Rezoning Site was estimated with reference to the average daily mechanised trips, the peak hour factor of mechanised trips and public transport modal share, with the assumptions of 90% inbound/outbound trips during AM and PM peak hours respectively. Based on the above assumptions, the public transport demands for the proposed development are estimated in **Table 4.7**.

Table 4.7 Estimated Trip Generation of Approved Development

Index	Parameter	Formula	Result
(a)	Proposed No. of Units	-	3,571
(b)	Average Domestic Household Size (1)	-	2.8
(c)	Estimated Total Population	(a)*(b)	9,999
(d)	Average Daily Mechanised Trips per Person (2)	-	1.61
(e)	Peak Hour Percentage of Daily Total (3)	-	12%
(f)	Assumed Percentage of Major Outbound Trips in Peak Hour	-	90%
(g)	Estimated Peak Hour Trips by Proposed Development	(c)*(d)*(e)*(f)	1,739
(h)	Major Public Transport Modal Share (4)	-	49%
(i)	Estimated Peak Hour Public Transport Demand	(g)*(h)	853
(j)	Estimated Passenger using Railway and SPB	(i)*47.4%(5)	404
(k)	No. of induced coach (veh/hr)	(j)/60(6)	7
(l)	Estimated Passenger using Franchised Bus	(i)*52.6%(7)	449
(m)	- Yuen Long Bound Demand [AM Peak (PM peak)]	65% (68%)	292(305)
(n)	- San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]	35% (32%)	157(144)
(o)	No. of Additional Bus Required during Peak Hour(8) - Yuen Long Bound Demand [AM Peak (PM peak)] - San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]		1 (1) 0 (0)

Remarks: (1) For Yuen Long District in 2023 Period from Census and Statistics Department website

(2) Exclude NHB and EB trips, calculated with reference to Table E.2 and Table A.2 in TCS 2011.

(3) Peak hour percentage to daily total, with reference to Para. 3.3.7 in TCS 2011.

(4) Refer to the previous in-house traffic survey of Royal Palms and assumption of no. of passengers of shuttle bus (coach) and private car/taxi. The result of passenger using coach is found to be 49%. Therefore, it is assumed that the public transport modal share of 49% could be reasonably applied to the subject site due to the similar location and characteristic of the development.

(5) Exclude LRT, tram, ferry, consider MTR trip and SPB trips with reference to Table 3.6 in TCS 2011.

(6) Assumed passenger using Railway and SPB would be served by coach between the subject site and future San Tin Station of Northern Link, while 60 pax/coach adopted as coach capacity.

(7) Exclude LRT, tram, ferry, consider Franchised Bus trip and PLB trips with reference to Table 3.6 in TCS 2011.

(8) Referring to **Table 4.9**.

4.3.4 From **Table 4.7**, it is estimated that there will be one-way of approx. 853 pax/hr of public transport demand generated from the proposed residential development during the peak hour.

4.3.5 With reference to HBW trips of Table 3.6 in TCS 2011, the transport mode of PT passengers of Railway and SPB is 47.4%, and the passengers of Franchised Bus and GMB is 52.6%, respectively. Therefore, the induced PT demand will be distributed accordingly, i.e. 404 pax are assumed using shuttle bus to the nearest railway station (future San Tin Station of Northern Link), and the remaining 449 pax are assumed using Franchised Bus, which being adopted in the assessment.

4.3.6 The Railway and SPB demand are proposed to be served by coach (i.e. 60 pax/veh), which is equivalent to 14 pcu/hr, running between the subject development and the nearest railway station (future San Tin Station of Northern Link).

4.3.7 The estimated overall public transport demands at Year 2034 are summarized in **Table 4.8**.

Table 4.8 Estimated Year 2034 Public Transport Demands

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Estimated Year 2034 Occupancy (pax)(1)	Additional Passenger Demands (pax)(2)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	532	292	824	101%
	San Tin/Sheung Shui	713	409	157	566	79%
PM Peak	Yuen Long	780	656	144	800	103%
	San Tin/Sheung Shui	776	468	305	773	100%

Remarks: (1) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand;
(2) Refer to **Table 4.7** and **Para 4.3.5**.

4.3.8 From **Table 4.8**, it can be shown that the demand for public transport service for PM peak periods of Yuen Long bound would be over capacity in Year 2034 upon occupation of the proposed residential development.

4.3.9 It is proposed to enhance the nearby public transport service by increasing the frequency of KMB 76K during PM peak. The estimated overall public transport demands at Year 2034 with proposed PT service enhancement are summarized in **Table 4.9**.

Table 4.9 Estimated Year 2034 Public Transport Demands – With Service Enhancement

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Enhanced Peak Hour Service Capacity (pax)(1)	Estimated Year 2034 Occupancy (pax)(2)	Additional Passenger Demands (pax)(3)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	902 (812+90)	532	292	824	91%
	San Tin/Sheung Shui	713	713	409	157	566	79%
PM Peak	Yuen Long	780	870 (780+90)	656	144	800	92%
	San Tin/Sheung Shui	776	776	468	305	773	100%

Remarks: (1) The bus capacity is assumed to be 90 passengers;
(2) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand;
(2) Refer to **Table 4.7** and **Para 4.3.5**.

4.3.10 From **Table 4.9**, it is demonstrated that with the service enhancement (with 1 additional bus for Yuen Long bound at both AM and PM peak periods, which is equivalent to 2.5 pcu/hr), the public transport would operate within capacity in Year 2034.

4.3.11 The detailed arrangement of public transport service enhancement such as frequency improvement of the existing services and shuttle bus service will be subject to actual passenger demand and further review with the corresponding public transport operators and government departments, if necessary.

Trip Generation of Approved Scheme

4.3.12 In the approved scheme, the development will provide 789 houses with an average flat size of approximately 105.1 m^2. The trip generations of the approved development are summarised in **Table 4.10**.

Table 4.10 Estimated Trip Generation of Approved Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Trip Rates (pcu/units/hr) (1)	0.1961	0.1116	0.0955	0.1321
No. of House Unit	789			
Trips (pcu/hr)	155	88	75	104

Remark: (1) Trip Rates extracted from TPDM for private housing: low-density R(B) with average flat sizes of 100m^2

4.3.13 The net difference of the trip generation between the approved and proposed schemes is summarised in **Table 4.11**. As shown in **Table 4.11**, the trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme.

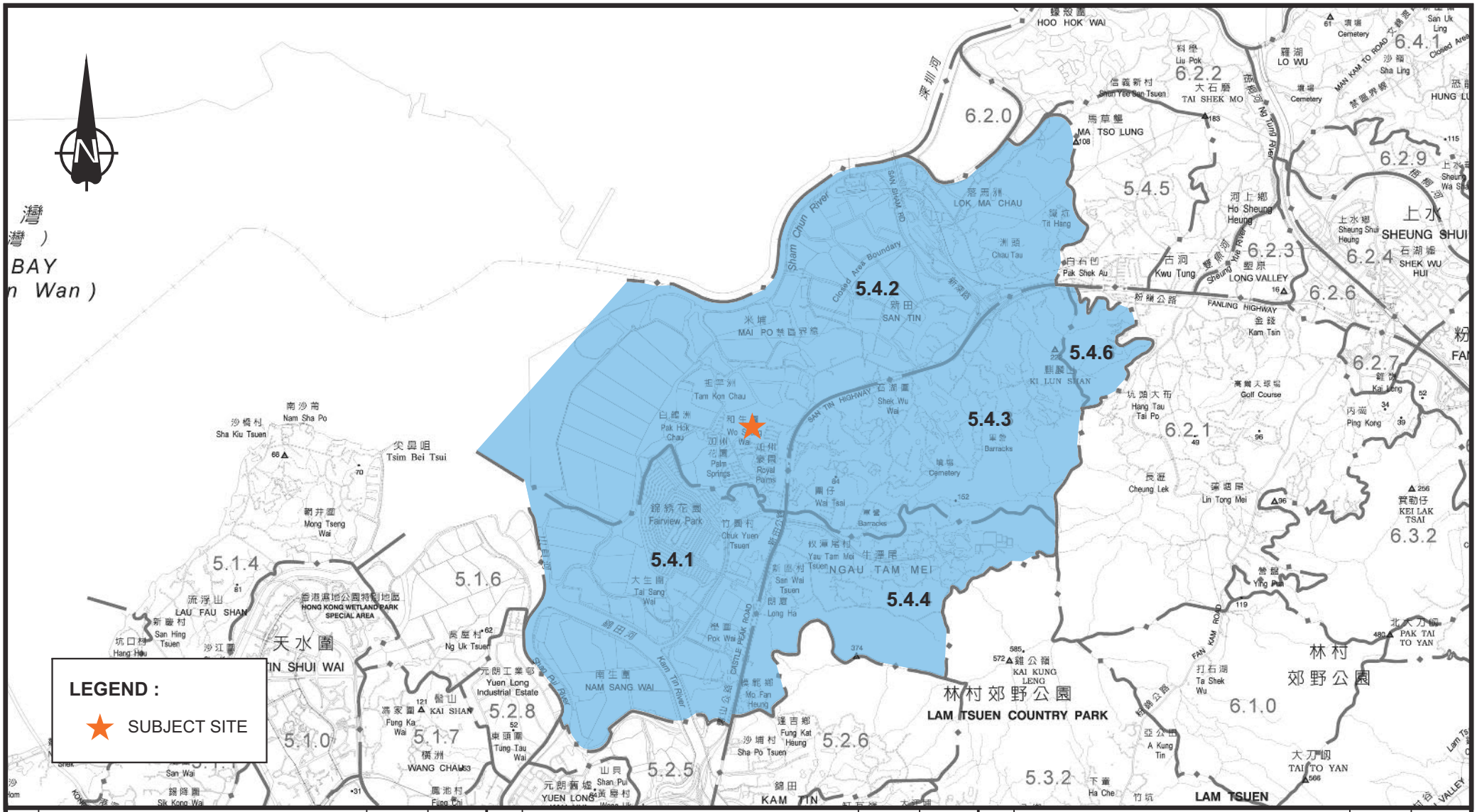
Table 4.11 Net Difference of Trip Generations between the Approved and Proposed Schemes

	Trip Generations (pcu/hr)			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Approved Scheme [A]	155	88	75	104
Proposed Scheme [B]	367	218	158	212
Trip Difference [B] – [A]	+212	+130	+83	+108

4.4 Traffic Forecast Data

4.4.1 Based on the above, the year 2034 design flows, as shown in **Drawing 4.6** are produced according to the following.

Year 2034 Design Case = Year 2034 Reference Case + Proposed Development Trip Generation, induced shuttle bus trips and the additional public transport trips



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

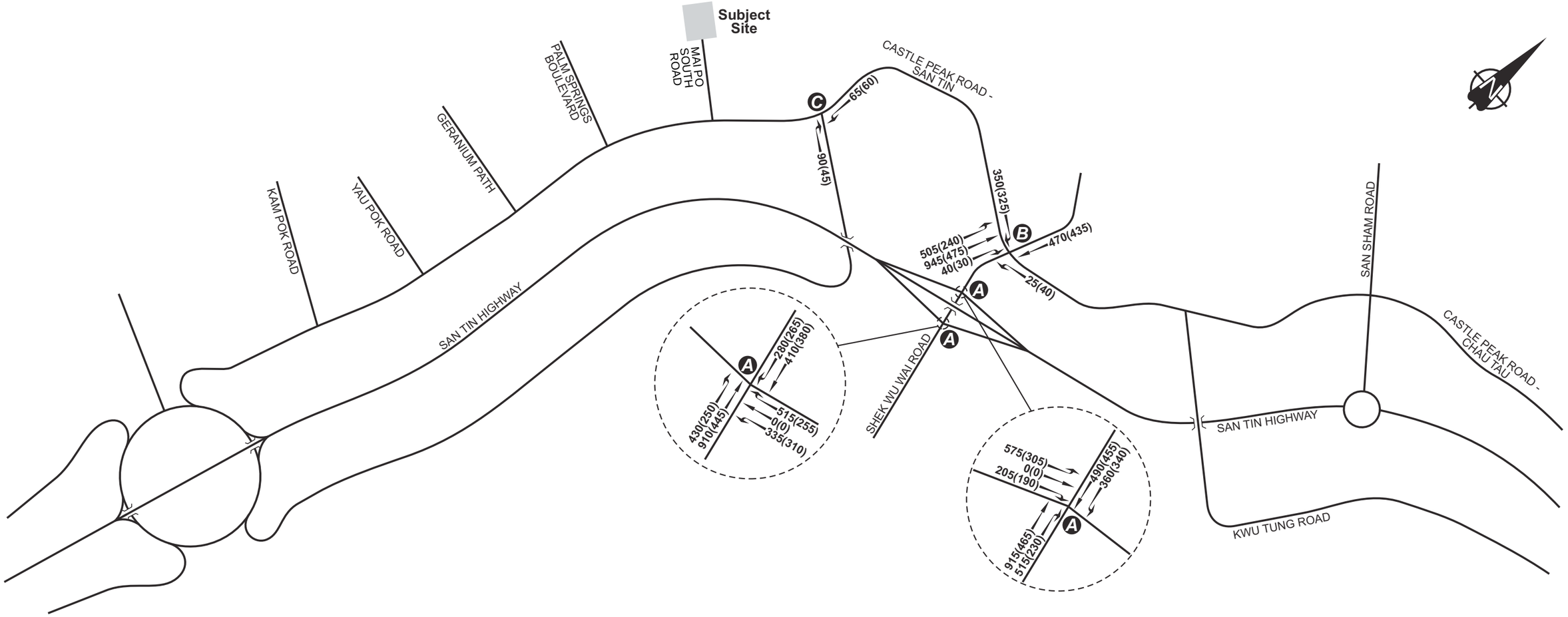
TERTIARY PLANNING UNIT (TPU) BOUNDARIES

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.1	-

SYSTRA MVA

CHK50800610/TIA/F41-A.CDR/LLH/24DEC24

Original Size : A4



LEGEND :

65 AM PEAK TRAFFIC FLOW (PCUS/HR)

(60) PM PEAK TRAFFIC FLOW (PCUS/HR)

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

ESTIMATED TRAFFIC FLOWS OF SAN TIN TECHNOPOLE (STT)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	**4.2**	-

SYSTRA MVA

CHK50800610/TIA/F42.CDR/LLH/31DEC24

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. RESIDENTIAL DEVELOPMENT R(D) AT KAM POK ROAD (TO THE WEST OF CHUK YUEN TSUEN), A/YL-MP/205.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 14S.B. RP (PART), 45 AND 1740 S.A. RP IN D.D. 107 AND ADJOINING GOVERNMENT LAND TO THE SOUTH OF POK WAI AND WING KEI TSUEN, YUEN LONG, A/YL-NSW/241.
6. CASTLE PEAK ROAD - TAM MEI; COMMERCIAL, Y/YL-NSW/3.
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A-YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3054 S.A RP (PART), 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (PART), 3250 S.B SS.23 RP (PART), 3250 S.B SS.33 RP (PART) IN D.D. 104, AND ADJOINING GOVERNMENT LAND, YUEN LONG, Y/YL-MP/3.
15. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
16. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
17. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
18. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
FAIRVIEW PARK BOULEVARD
KAM POK ROAD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

LOCAL PLANNED AND COMMITTED DEVELOPMENTS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A3)	JUN 2024	**4.3**	-

SYSTRA MVA

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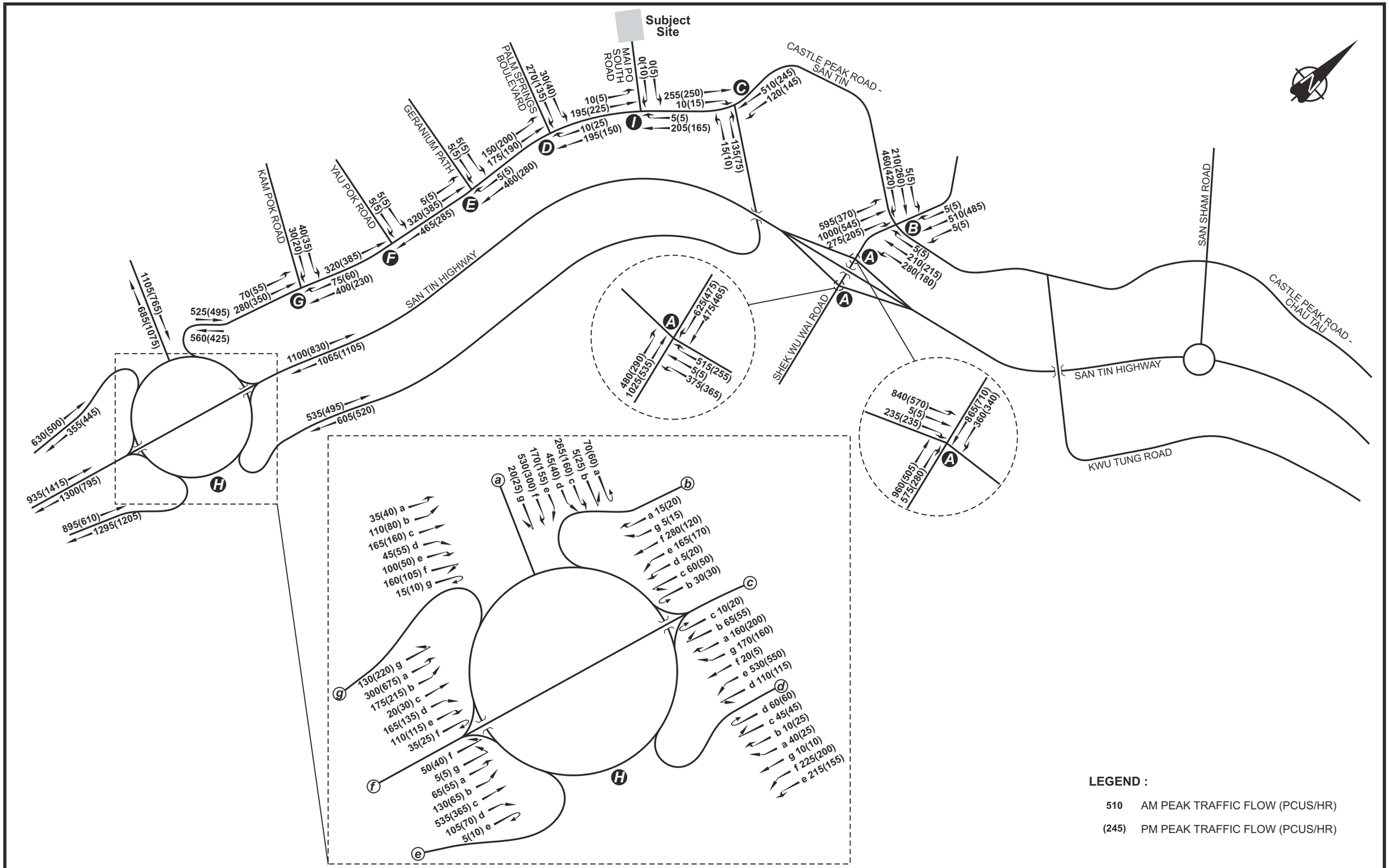

LEGEND :

510 AM PEAK TRAFFIC FLOW (PCUS/HR)

(245) PM PEAK TRAFFIC FLOW (PCUS/HR)

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

2034 REFERENCE TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.4	-

SYSTRA MVA

CHK50800610/TIA/F44.CDR/LLH/31DEC24

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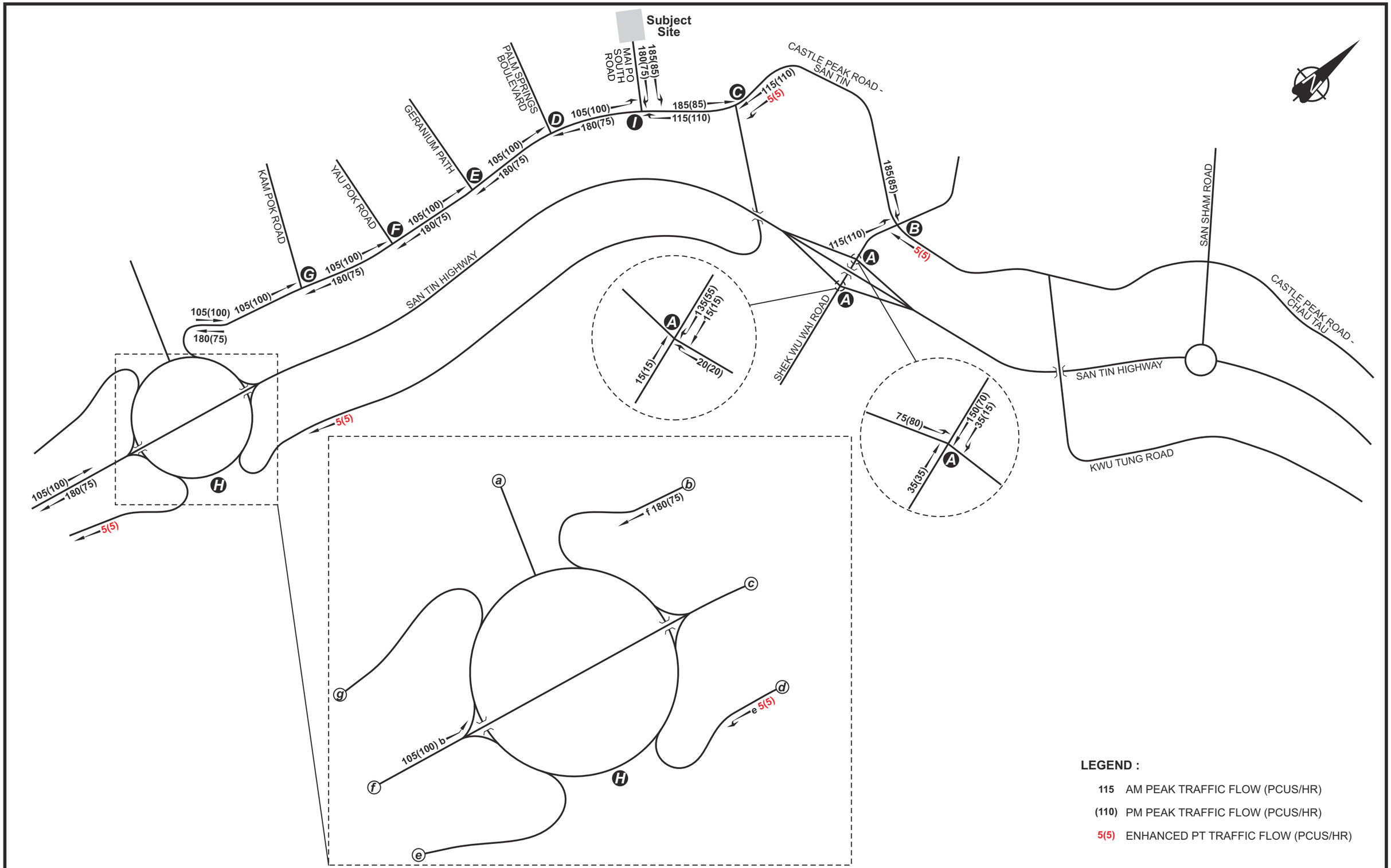

LEGEND :

115	AM PEAK TRAFFIC FLOW (PCUS/HR)
(110)	PM PEAK TRAFFIC FLOW (PCUS/HR)
5(5)	ENHANCED PT TRAFFIC FLOW (PCUS/HR)

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

DEVELOPMENT TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.5	-

SYSTRA MVA

CHK50800610/TIA/F45.CDR/LLH/16JAN25

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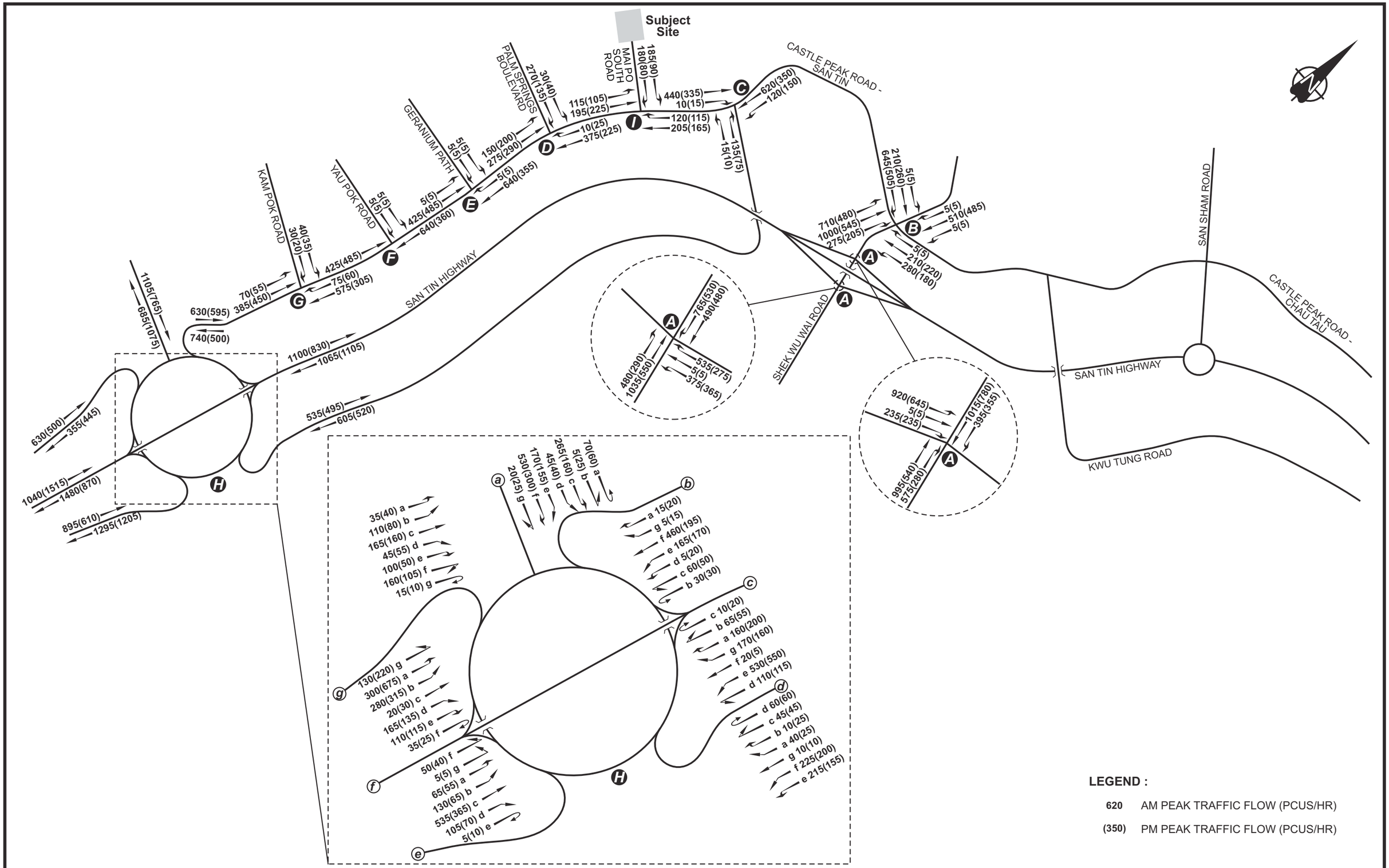

LEGEND :

620 AM PEAK TRAFFIC FLOW (PCUS/HR)

(350) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
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Project Title: PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A. IN DD101

Drawing Title: **2034 DESIGN TRAFFIC FLOWS**

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.6	-

SYSTRA MVA

CHK50800610/TIA/F46.CDR/LLH/16JAN25

Original Size : A3

5. TRAFFIC IMPACT ASSESSMENT

5.1 Year 2034 Junction Operational Performance

5.1.1 To investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases. The assessment results for the year 2034 reference and design cases are summarised in **Table 5.1**. The junction calculation sheets are attached in **Annex A**.

Table 5.1 Year 2034 Junction Operational Performance

Ref.(1)	Junction	RC/RFC (2)			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	56%	>100%	46%	>100%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	34%	83%	21%	70%
C	Castle Peak Road – Mai Po/San Tam Road	0.39	0.19	0.45	0.21
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	0.63	0.36	0.71	0.39
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.02	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.03	0.03	0.03	0.03
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.14	0.11	0.16	0.12
H	Fairview Park Interchange	1.05	0.86	1.16	0.90
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.03	0.68	0.31

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.

5.1.2 The anticipated trip generations of the current proposed scheme would be larger in both AM peak and PM peak periods, compared with the previous approved scheme. The assessment results in **Table 5.1** indicated that the majority of identified key junctions would operate with ample capacity in year 2034, except for Junction H, which will be operated over capacity.

5.1.3 For Junction H, with reference to the Preliminary Technical Review on Site Formation and Infrastructure Works for Proposed Public Housing Developments at Sha Po, Shap Pat Heung and Tai Kei Leng, Yuen Long – Feasibility Study under Agreement No. CE 10/2020 (CE), there will be a planned junction improvement scheme for Fairview Park Interchange, as illustrated in **Drawing 5.3**. It is proposed to widen the entry lanes at San Tam Road and the slip road from San Tin Highway southbound. In addition, an additional exclusive left-turn lane is proposed at San Tin Highway northbound for the traffic to Castle Peak Road – Tam Mi southbound.

Table 5.2 Year 2034 Junction Operational Performance (With Improvement)

Ref.	Junction	RC/RFC [2]			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
H	Fairview Park Interchange [1]	0.77	0.71	0.83	0.77

Remarks: (1) Refer to **Drawing 5.3** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.1.4 **Table 5.2** indicates that with the junction improvement schemes, Junction H will be operating within capacity in Year 2034.

5.1.5 The road link performance for identified road links was conducted as summarised in **Table 5.3**.

Table 5.3 Year 2034 Road Links Performance

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[4]	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C [5]		Traffic Flow (pcu/hr)		V/C [5]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	15	0.00	0.02	365	170	0.40	0.19
		WB	700[2]	910	15	10	0.02	0.01	235	220	0.26	0.24
L2	Castle Peak Road – Mai Po	NB	700[2]	910	205	230	0.23	0.25	310	330	0.34	0.36
		SB	700[2]	910	205	175	0.23	0.19	385	245	0.42	0.27
L3	Castle Peak Road – Mai Po	NB	700[2]	910	195	230	0.21	0.25	380	315	0.42	0.35
		SB	700[2]	910	210	170	0.23	0.19	325	280	0.36	0.31
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	525	495	0.58	0.54	630	595	0.69	0.65
		SB	700[2]	910	560	425	0.62	0.47	740	500	0.81	0.55
L5	Shek Wu Wai Road	NB	4,200[3]	5,460	870	575	0.16	0.11	985	685	0.18	0.13
		SB	4,200[3]	5,460	740	600	0.14	0.11	925	685	0.17	0.13

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a dual 3-lane single carriageway for PD will be taken as 4200 veh/hr for one-way direction
(4) PCU factor of 1.3 adopted
(5) V/C = volume to capacity ratio

5.1.6 The assessment results in **Table 5.3** indicate that all identified key road links would operate with ample capacity in year 2034 upon completion of the proposed development.

5.1.7 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

5.2 Year 2034 Pedestrian Flow and Queuing Space Assessment

5.2.1 The reference and design scenarios of pedestrian assessment in Year 2034 are then assessed by applying the adopted annual growth rate of +1.0% onto the Year 2024 peak hour pedestrian flows for year 2024 to 2034, and the consideration of the induced pedestrian trips for franchised bus demand of **Table 4.7**.

5.2.2 The peak hour pedestrian flows in Year 2034 under both reference and design scenarios are shown in **Drawing 5.4** and **5.5**, and the results of the operational performance of identified footpaths and concerned queuing area of bus stops are summarized in **Table 5.4** and **5.5.**

Table 5.4 2034 Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2034 Reference Peak Hourly Flow (ped/hr) (3)		2034 Reference Peak Flow Rate (ped/min/m) (4)		LOS (5)		2034 Design Peak Hourly Flow (ped/hr)(6)		2034 Design Peak Flow Rate (ped/min/m) (4)		LOS (5)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	12	10	0.18	0.15	A	A	461	459	6.98	6.95	A	A
Fp2	2.3	1.3	22	45	0.28	0.58	A	A	179	350	2.29	4.49	A	A
Fp3	1.5	0.5	24	41	0.80	1.37	A	A	316	185	10.53	6.17	A	A
Fp4	1.7	0.7	6	7	0.14	0.17	A	A	6	7	0.14	0.17	A	A

Note: (1) Refer to **Drawing 5.4** and **Drawing 5.5** for locations and operational performance of identified footpaths
(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath)
(3) Reference pedestrian flow = Year 2024 peak hour pedestrian flows*(1+adopted growth rate of 1.0%)^10
(4) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width
(5) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.
(6) Design pedestrian flow = Reference pedestrian flow + induced pedestrian trips for franchised bus demand

Table 5.5 2034 Queuing Area Level-Of-Service Assessment for Bus Stops

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)(1)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)(2)	LOS (3)	Passenger Flow at Bus Stop (pax/hr)(4)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	5.8	3	2 (i.e. 3/60x25)	2.9	A	295	87 (i.e. 295/60x17.5)	0.1	F
Palm Springs Bus Stop – Sheung Shui Bound (NB)	20.3	3	2 (i.e. 3/60x25)	10.2	A	160	67 (i.e. 160/60x25)	0.3	D

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9.
(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.3 As shown in **Table 5.4** and **5.5**, the results indicate that the identified footpaths are operating with adequate spare capacities to cater for the future demand during the peak hours under reference and design scenarios. However, the LOS of queuing area at bus stop would be operated with LOS D and F under the Year 2034 design scenario.

5.2.4 Therefore, it is proposed to widen the queuing area at both concerned bus stops to allow the LOS queuing area to reach LOS C, (i.e. the average pedestrian space = 0.6 m^2/p). The queuing area assessment under both 2034 reference and design scenarios are shown in **Table 5.6**, and the propose widening scheme is illustrated in **Drawing 5.6**.

Table 5.6 2034 Queuing Area Level-Of-Service Assessment for Bus Stops (With Widening)

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)(1)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)(2)	LOS (3)	Passenger Flow at Bus Stop (pax/hr)(4)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	51.6 (5.8+45.8)	3	2 (i.e. 3/60x25)	25.8	A	295	86 (i.e. 295/60x17.5)	0.6	C
Palm Springs Bus Stop – Sheung Shui Bound (NB)	40.2 (20.3+19.9)	3	2 (i.e. 3/60x25)	20	A	160	67 (i.e. 160/60x25)	0.6	C

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9.

(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.5 **Table 5.6** indicates that with the widening scheme, the LOS of the identified queuing area at bus stops would be operating within capacity in Year 2034.

5.3 Sensitivity Assessment

Assessment 1: Existing Junction Layout for Junction A and Junction B in Design Year 2034

5.3.1 Upon TD's comments on pre-submission of the TIA report, the layout of Junction A (Shek Wu Wai Road / San Tin Highway Slip Road) and Junction B (Shek Wu Wai Road / Road D3 / Road L11 / Road L12) has assumed to be modified as per the proposed road network under San Tin Technopole. In case there is delay on the proposed road work under San Tin Technopole, the junction operational performance for Junction A and Junction B based on the existing junction layout under Design scenario is required to be assessed. However, as the junction improvement works are mostly to accommodate the development of STT, therefore the STT related traffic trips would also be excluded in the sensitivity assessment. The assessment results for the year 2034 reference and design cases based on existing junction layouts of Junctions A and B are summarised in **Table 5.7**. The junction calculation sheets are attached in **Annex D**.

Table 5.7 Year 2034 Junction Operational Performance for Junction A and B

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.43	0.42	0.52	0.51
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.53	0.32	0.75	0.41
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.88	0.76	1.15	0.94

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.2 The assessment results in **Table 5.7** indicated that the Junction A1 and A2 would operate with ample capacity in year 2034, based on the existing junction layout, except for Junction B, which would be operated over capacity.

5.3.3 For Junction B, the existing priority junction is proposed to be upgraded into a roundabout junction with cautionary crossings proposed to the east of the junction. The proposed improved layout of Junction C, which will be constructed subject to further review of San Tin Technopole's project, is illustrated in **Drawing 5.7**.

Table 5.8 Year 2034 Junction Operational Performance for Junction B (With Improvement)

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.41	0.36	0.48	0.44

Remarks: (1) Refer to **Drawing 5.7** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.4 **Table 5.8** indicates that with the junction improvement schemes, Junction B would be operating within capacity in Year 2034. Nevertheless, the junction improvement scheme for Junction B would be assessed based on a hypothetical approach in the sensitivity test, as the proposed road works related to STT should be in place.

Assessment 2: Adjacent Potential Planning Applications

5.3.5 Upon TD's comments on pre-submission of the TIA report, due to the similar population intake year of the residential developments, apart from STT, traffic generations of a number of potential planning applications would be included in the assessment as a sensitivity test in Year 2034. The development schedules of these potential developments and estimated traffic generations are summarized in **Table 5.9** and the locations of these developments are indicated in **Drawing 5.8**.

Table 5.9 Planned/Committed Developments in Sensitivity Test

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	71 units (average flat size of about 186 m^2)	20	13	12	17
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10(3)	10(3)	10(3)	10(3)
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5(2)	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/8	6,825 units (Average Flat Size 37.5 m^2)	491(4)	291(4)	196(4)	253(4)
		Retail (3,950m^2)	10(4)	10(4)	13(4)	15(4)
		GIC Facilities (2 nos.)	10(4)	10(4)	10(4)	10(4)
		Kindergarten (8 Classrooms)	25(4)	25(4)	1(4)	1(4)
6(2)	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/9	3,115 units (Average Flat Size 37.2 m^2)	224(4)	133(4)	90(4)	116(4)
		Retail (3,900 m^2)	9(4)	10(4)	13(4)	14(4)
		1 School	7(4)	30(4)	1(4)	1(4)
		Kindergarten (8 Classrooms)	25(4)	25(4)	1(4)	1(4)
		Relocated Soy Sauce Factory (13,700 m^2)	0(4)	4(4)	10(4)	2(4)

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	2,811 units (average flat size of about 50 m^2)	202	119	80	104
		Eating place / Shop & Services (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	109	65	43	56
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[3]	10[3]	10[3]	10[3]
		Special Child Care Centre	10[3]	10[3]	10[3]	10[3]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home 142 Beds	10[3]	10[3]	10[3]	10[3]
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[3]	10[3]	10[3]	10[3]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12
14[2]	Lots 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, 3250 S.B ss.23 RP and 3250 S.B ss.33 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/7	1,228 units (Average Flat Size 43 m^2)	89[4]	53[4]	36[4]	46[4]
		Retail (831m^2)	2[4]	2[4]	3[4]	3[4]
		Kindergarten (6 Classrooms)	32[4]	32[4]	1[4]	1[4]
		Public Transport	15[4]	15[4]	15[4]	15[4]
15[2]		1,249 units	90[4]	54[4]	36[4]	47[4]

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
	Lots 3054 S.A ss.1, 3156 S.A, 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP and 3205 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/8	(Average Flat Size 44 m^2)				
		Public Transport	15(4)	15(4)	15(4)	15(4)
16	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m^2)	45	27	18	23
		Retail 1,165 m^2	3	3	4	5
17	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m^2)	7	4	3	4
		5,400 m^2 residential care home for the elderly 127 Beds	10(3)	10(3)	10(3)	10(3)
18	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m^2 residential care home for the elderly 530 Beds	23(4)	27(4)	21(4)	27(4)

Remark: (1) Refer to **Drawing 5.8** for development locations.
(2) Planning Application subject to TD's comment.
(3) Assume Nominal Trips of 10 pcu/hr.
(4) Trips generation from project's TIA report.

5.3.6 The traffic flows of the above potential development are further included into the Year 2034 Design Case and the traffic flows for reference and design cases under Year 2034 Sensitivity Test are shown in **Drawing 5.9** and **5.10**.

Year 2034 Junction Operational Performance under Sensitivity Test (with Potential Planning Applications)

5.3.7 Similarly, to investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases in Sensitivity Test. The assessment results for the year 2034 sensitivity test are summarised in **Table 5.9**. The junction calculation sheets are attached in **Annex D**.

Table 5.10 Year 2034 Junction Operational Performance in Sensitivity Test

Ref.(1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	56%	>100%	46%	>100%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	34%	80%	21%	68%
C	Castle Peak Road – Mai Po/San Tam Road	0.40	0.19	0.46	0.21
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	0.65	0.36	0.73	0.39
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.03	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.03	0.03	0.03	0.03
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.28	0.21	0.32	0.23
H	Fairview Park Interchange (with improvement) (5)	0.78	0.69	0.83	0.75
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.03	0.69	0.32

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.
(5) Refer to **Drawing 5.11** for junction reference.

5.3.8 For Junction H, with reference to the proposed junction improvement layout in the planning application of Y/YL-MP/7, further improvement works are proposed, as illustrated in **Drawing 5.11**. It is proposed to further widen the entry lanes at Fairview Park Boulevard and provide an additional exclusive left-turn lane is proposed at the slip road from San Tin Highway southbound to San Tam Road northbound.

5.3.9 The assessment results in **Table 5.10** indicated that the majority of identified key junctions would operate with ample capacity in year 2034 under sensitivity test, except for Junction H. Since the junction is already over capacity in the reference scenario with the potential planned developments, it would expect that further junction improvement would be required in later stage.

5.3.10 The road link performance for identified road links was conducted as summarised in **Table 5.11.**

Table 5.11 Year 2034 Road Links Performance in Sensitivity Test

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[4]	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C [5]		Traffic Flow (pcu/hr)		V/C [5]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	15	0.00	0.02	365	170	0.40	0.19
		WB	700[2]	910	15	10	0.02	0.01	235	220	0.26	0.24
L2	Castle Peak Road – Mai Po	NB	700[2]	910	235	240	0.26	0.26	340	340	0.37	0.37
		SB	700[2]	910	235	195	0.26	0.21	415	265	0.46	0.29
L3	Castle Peak Road – Mai Po	NB	700[2]	910	225	240	0.25	0.26	410	325	0.45	0.36
		SB	700[2]	910	240	190	0.26	0.21	355	300	0.39	0.33
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	640	585	0.70	0.64	745	685	0.82	0.75
		SB	700[2]	910	595	450	0.65	0.49	775	525	0.85	0.58
L5	Shek Wu Wai Road	NB	4,200[3]	5,460	870	575	0.16	0.11	985	685	0.18	0.13
		SB	4,200[3]	5,460	740	600	0.14	0.11	925	685	0.17	0.13

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a dual 3-lane single carriageway for PD will be taken as 4200 veh/hr for one-way direction
(4) PCU factor of 1.3 adopted
(5) V/C = volume to capacity ratio

5.3.11 The assessment results in **Table 5.11** indicate that all identified key road links would operate with ample capacity in year 2034 sensitivity test.

5.3.12 Therefore, it is anticipated that all identified key junctions and road links would operate with ample capacity in year 2034 sensitivity test.



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

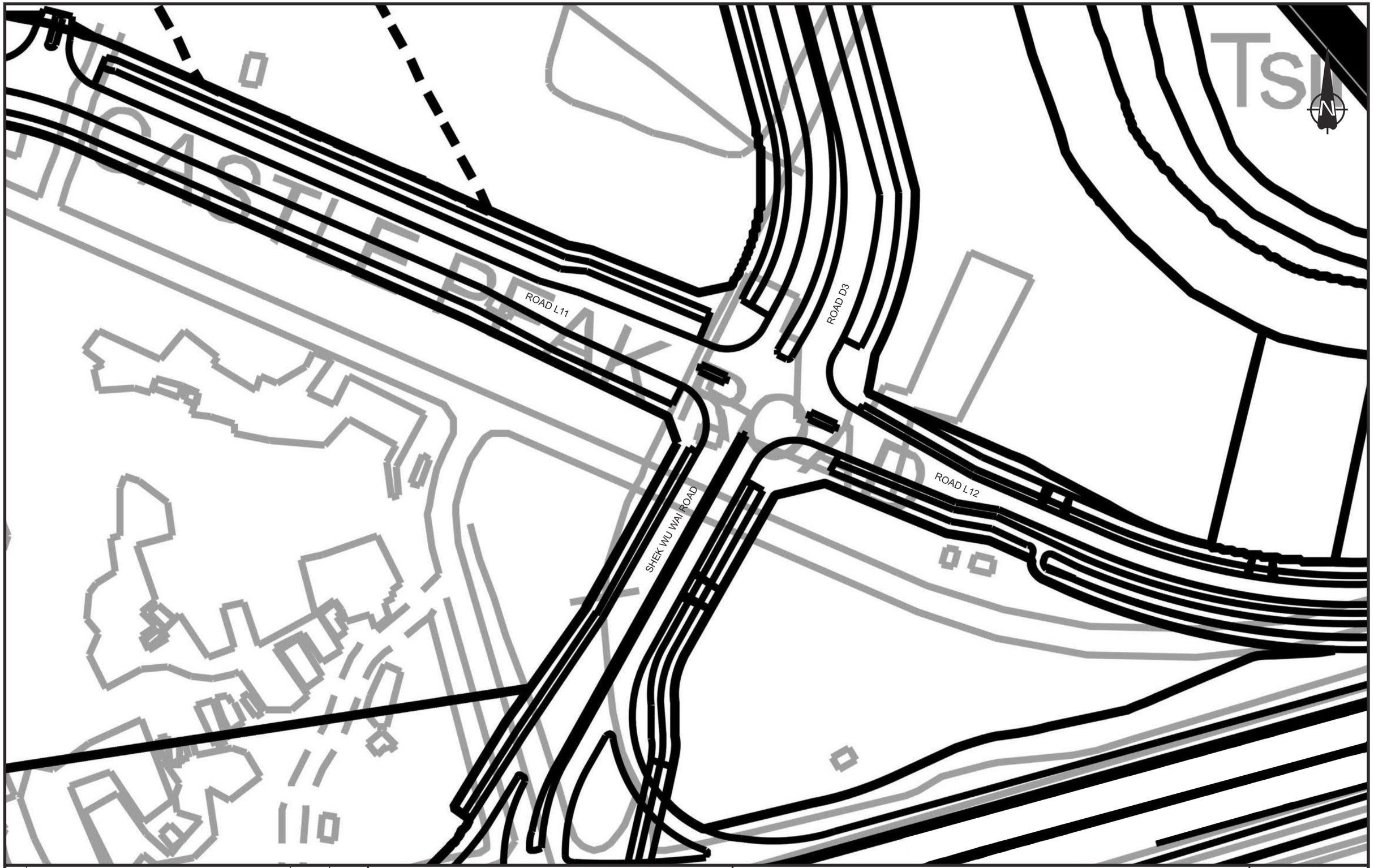
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.1	-

SYSTRA MVA

CHK50800610/TIA/F51.CDR/LLH/24DEC24

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

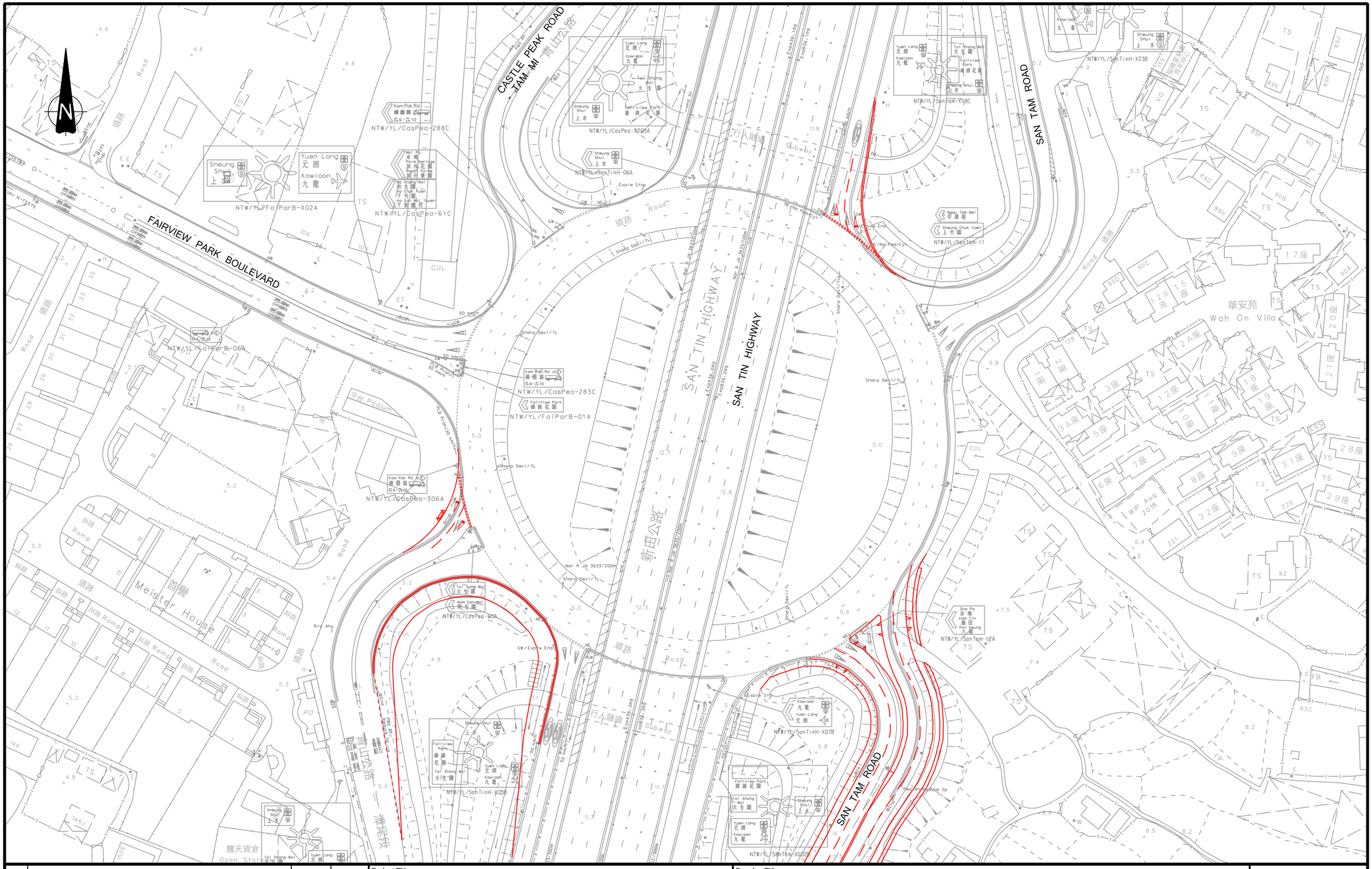
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / ROAD D3 / ROAD L11 / ROAD L12 (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.2	-

SYSTRA MVA

CHK50800610/TIA/F52.CDR/LLH/24DEC24

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

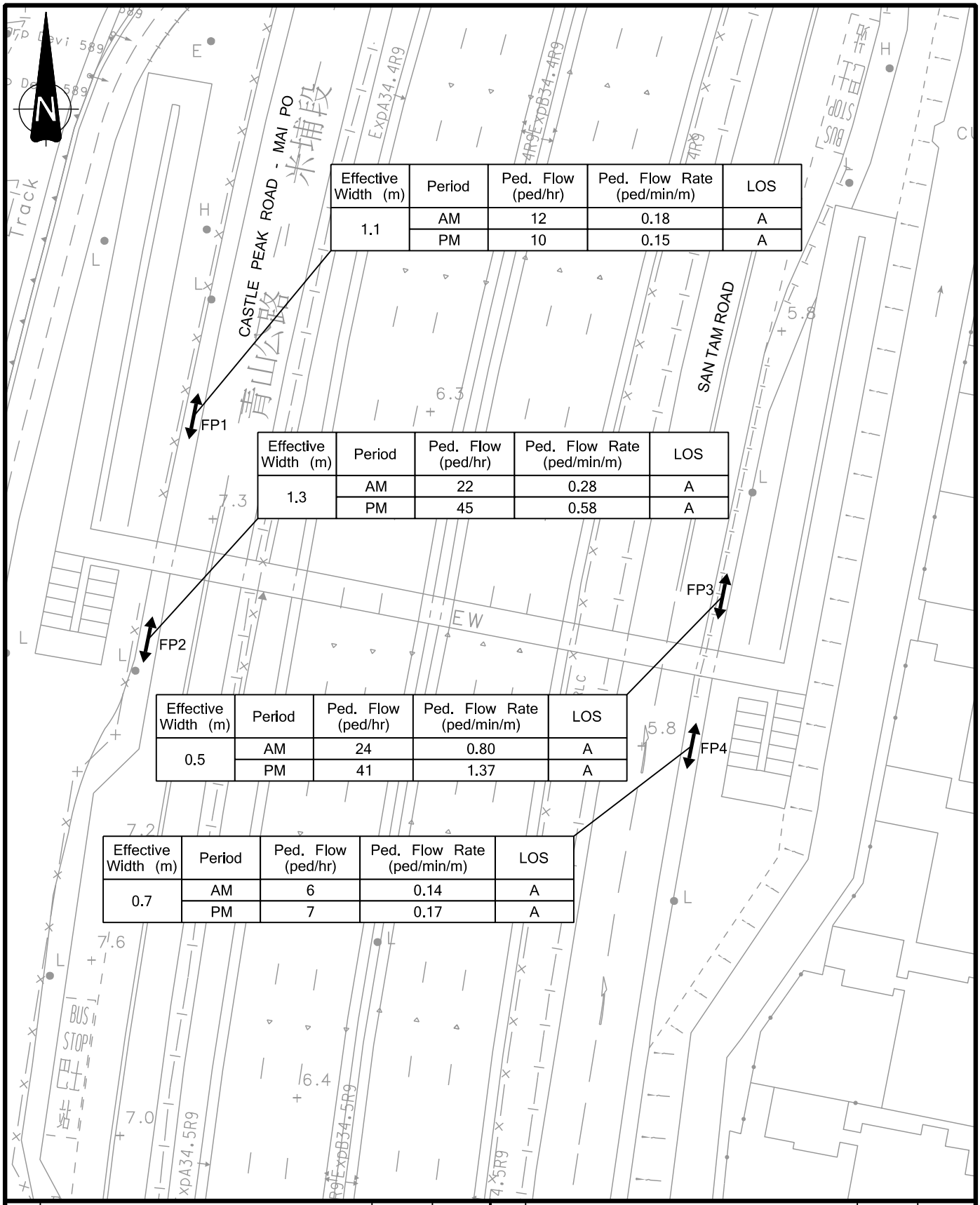
PLANNED JUNCTION IMPROVEMENT LAYOUT OF FAIRVIEW PARK INTERCHANGE (H)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	JUN 2024	**5.3**	-

SYSTRA MVA

CHK50800610/TIA/F53.DGN/LHO/31DEC24

Original Size : A3



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	12	0.18	A
	PM	10	0.15	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	22	0.28	A
	PM	45	0.58	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	24	0.80	A
	PM	41	1.37	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

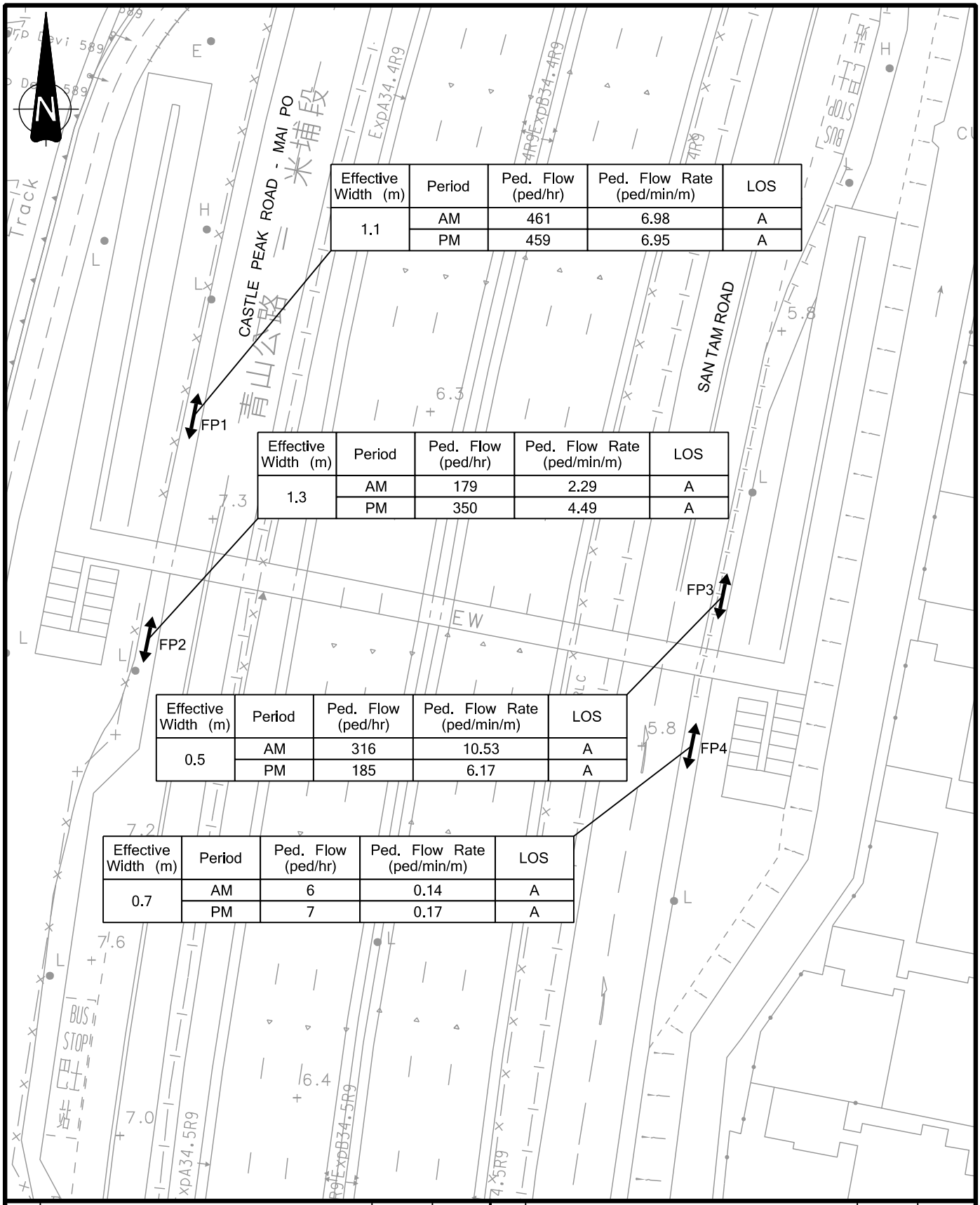
YEAR 2034 REFERENCE PEAK HOUR PEDESTRIAN FLOWS

SYSTRA MVA

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	DEC 2024	**5.4**	-

CHK50800610/TIA/F54.DGN/LHO/02JAN25

Original Size : A4



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1.1	AM	461	6.98	A
	PM	459	6.95	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	179	2.29	A
	PM	350	4.49	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	316	10.53	A
	PM	185	6.17	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

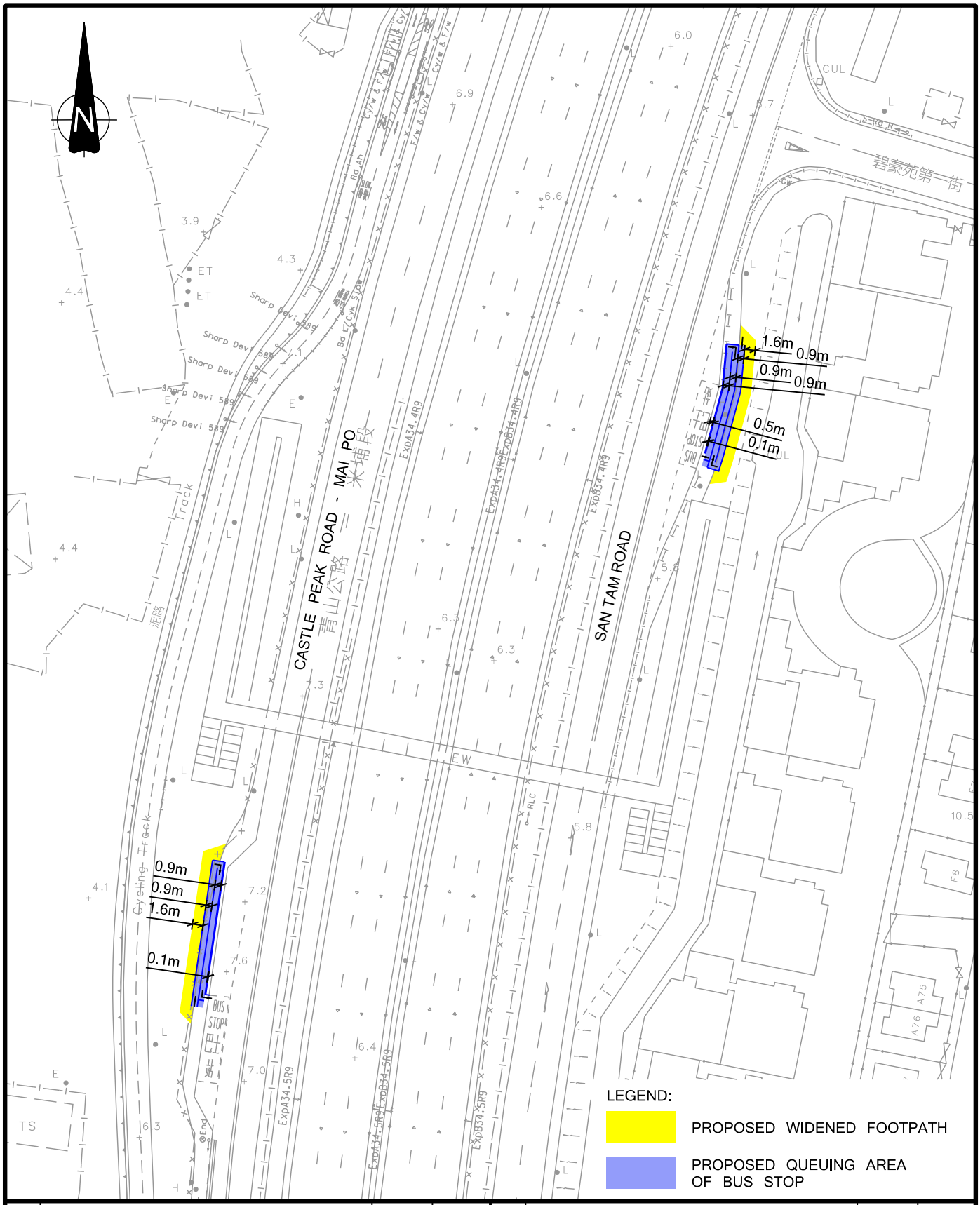
Drawing Title

YEAR 2034 DESIGN PEAK HOUR PEDESTRIAN FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	JAN 2025	5.5	-

CHK50800610/TIA/F55.DGN/KCM/21JAN25

Original Size : A4



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED WIDENING OF BUS STOPS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:800(A4)	JAN 2025	**5.6**	-

CHK50800610/TIA/F56.DGN/KCM/21JAN25

Original Size : A4

青山公路 新田段

CASTLE PEAK ROAD - SAN TIN

SHEK WU WAI ROAD

Mai Po 米埔
San Tin 新田
NTW/YL/CasPea-196

San Tin 新田
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖
NTW/YL/CasPea-X233A

Mai Po 米埔
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖
NTW/YL/CasPea-X183A

Ramp

Ped Ah

PROPOSED CONVERSION TO MINI ROUNDABOUT JUNCTION

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

INDICATIVE JUNCTION IMPROVEMENT LAYOUT OF CASTLE PEAK ROAD - SAN TIN / SHEK WU WAI ROAD

Designed	Checked	Scale	Date	Drawing No.	Rev.
LTY	CFC	1:500(A3)	DEC 2024	**5.7**	-

SYSTRA MVA

CHK50800610/TIA/F57.DGN/LHO/02JAN25

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. RESIDENTIAL DEVELOPMENT R(D) AT KAM POK ROAD (TO THE WEST OF CHUK YUEN TSUEN), A/YL-MP/205.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A AND 1740 S.A RP IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/8
6. LOTS 1910 RP (PART) AND 1743 S.C RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/9.
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A/YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, Ó250 S.B SS.23 RP AND 3250 S.B SS.33 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/7.
15. LOTS 3054 S.A SS.1, 3156 S.A, 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP AND 3205 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/8.
16. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
17. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
18. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
19. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
FAIRVIEW PARK BOULEVARD
KAM POK ROAD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

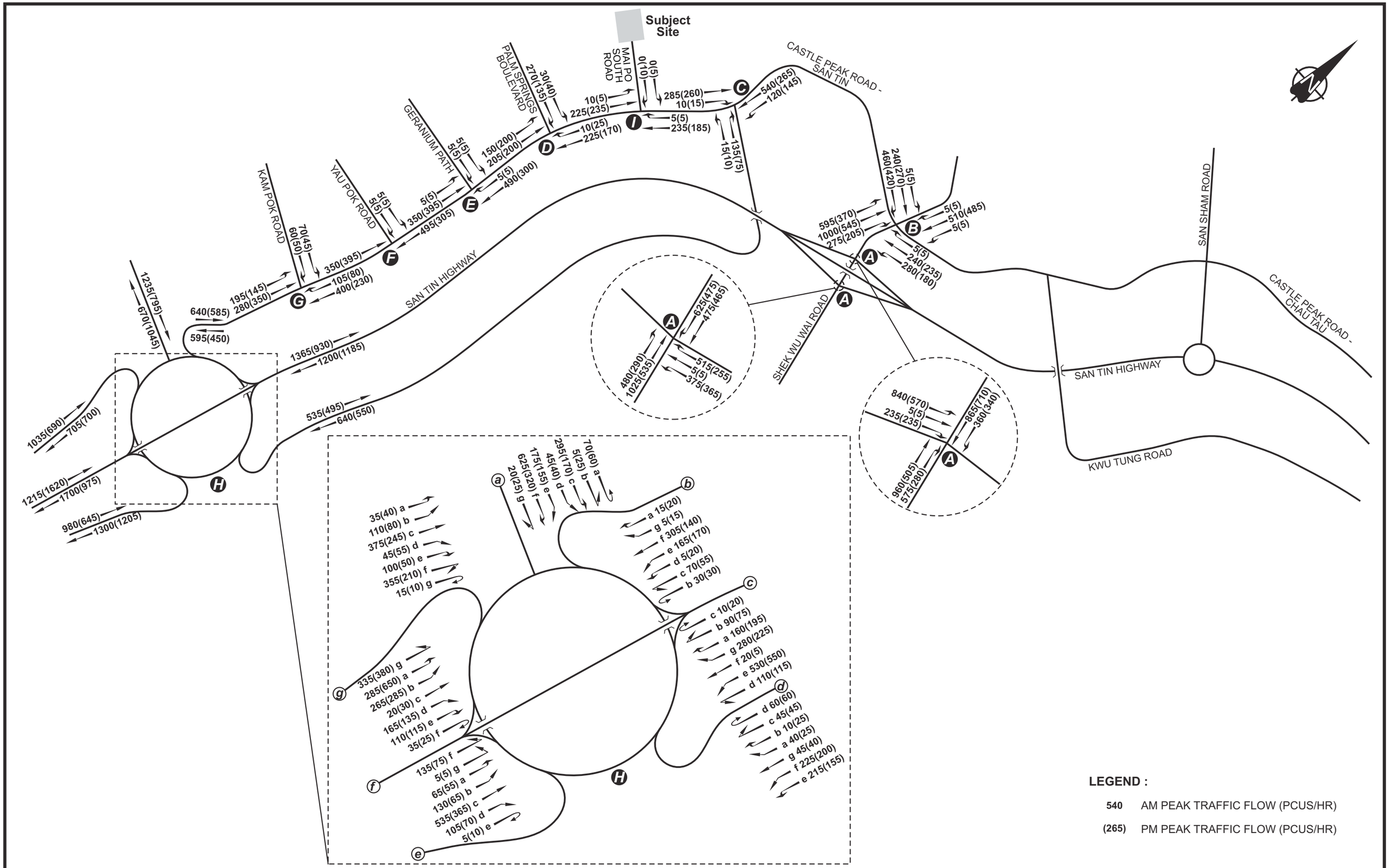
LOCAL PLANNED AND COMMITTED DEVELOPMENTS (SENSITIVITY TEST)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**5.8**	-

SYSTRA MVA

CHK50800610/TIA/F58.DGN/LHO/03JAN25

Original Size : A3



LEGEND :

540	AM PEAK TRAFFIC FLOW (PCUS/HR)
(265)	PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

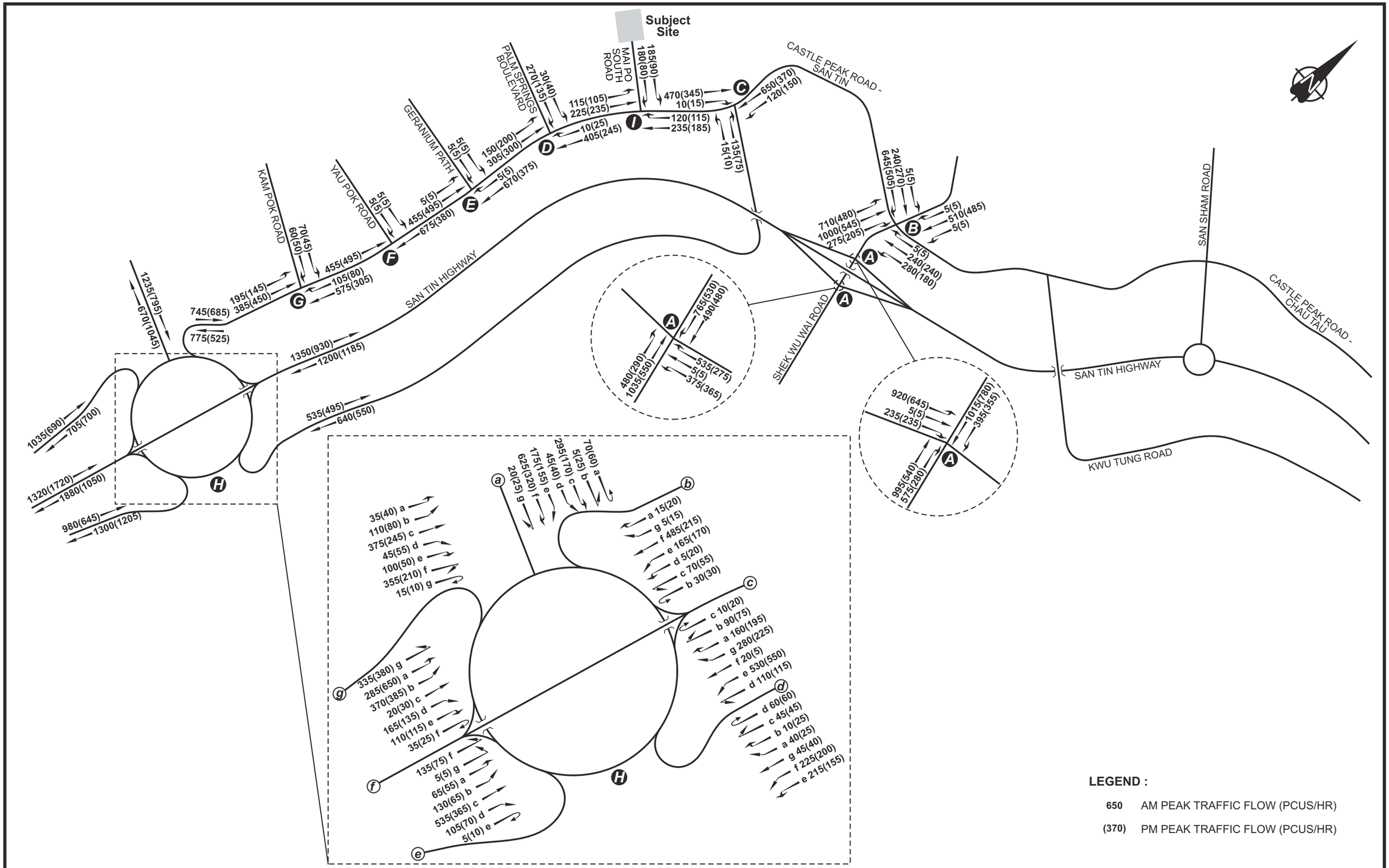
2034 REFERENCE TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.9	-

SYSTRA MVA

CHK50800610/TIA/F59.CDR/LLH/31DEC24

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

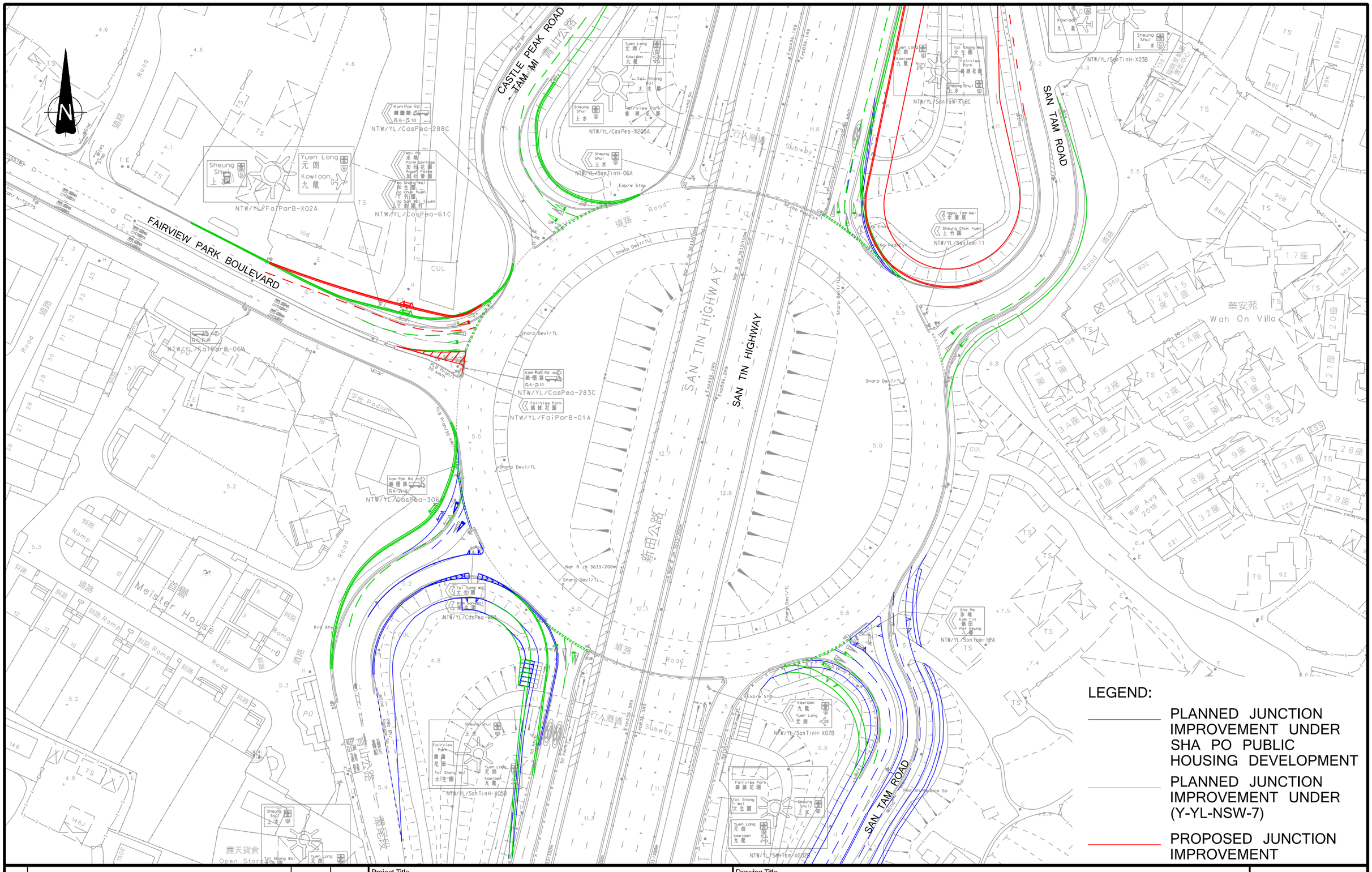
2034 DESIGN TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.10	-

SYSTRA MVA

CHK50800610/TIA/F510.CDR/LLH/31DEC24

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PLANNED JUNCTION IMPROVEMENT LAYOUT OF FAIRVIEW PARK INTERCHANGE (H) IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	DEC 2024	5.11	-

SYSTRA MVA

CHK50800610/TIA/F511.DGN/LHO/03JAN25

Original Size : A3

6. CONCLUSION

6.1 Summary

6.1.1 The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses. A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site.

6.1.2 Same to the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po.

6.1.3 The provision of the internal transport facilities in the current proposed MLP is determined in accordance with the latest updated HKPSG requirements and TD's further comment.

6.1.4 Traffic surveys have been conducted to establish the current traffic condition, the public transport utilization and footpath condition in the vicinity of the subject site.

6.1.5 The tentative operation year of proposed development is 2031. Thus, the design year of 2034 is adopted for traffic forecast and assessment purposes.

6.1.6 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway.

6.1.7 Public transport service capacity has also been assessed upon the completion of the proposed development. The assessment results suggests that with appropriate bus service enhancements, the public transport service capacity in the vicinity could serve the additional passenger demands. The public transport service enhancement and shuttle bus service provision will be subject to further review in later stage, if necessary.

6.1.8 Operational performance of the identified local junctions and road link capacity have been assessed based on the anticipated year 2034 traffic flows and the upgrade road junctions of San Tin Technopole project. The anticipated trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme. The assessment results as shown in **Table 5.1** revealed that the majority of key junctions will operate with ample capacity upon completion of the proposed development. With the planned junction improvement at Fairview Park Interchange (Junction H), the results indicate that all the identified junctions and road links would be operated within capacity in Year 2034.

6.1.9 Operational performance of pedestrian flows and queuing space assessment have been assessed based on the anticipated year 2034 pedestrian flows, subject to the induced pedestrian trips for additional franchised bus demand. With the proposed widening of existing

queuing area at concerned bus stops, the LOS of the identified road link and queuing area at bus stops would be operating within capacity in Year 2034.

6.1.10 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

6.1.11 Subject to TD comment, two sensitivity tests are also included in the assessment. In conservative hypothetical approach, with certain junction improvements, the assessed junctions and road links would be operated within capacity in Year 2034.

6.2 Conclusion

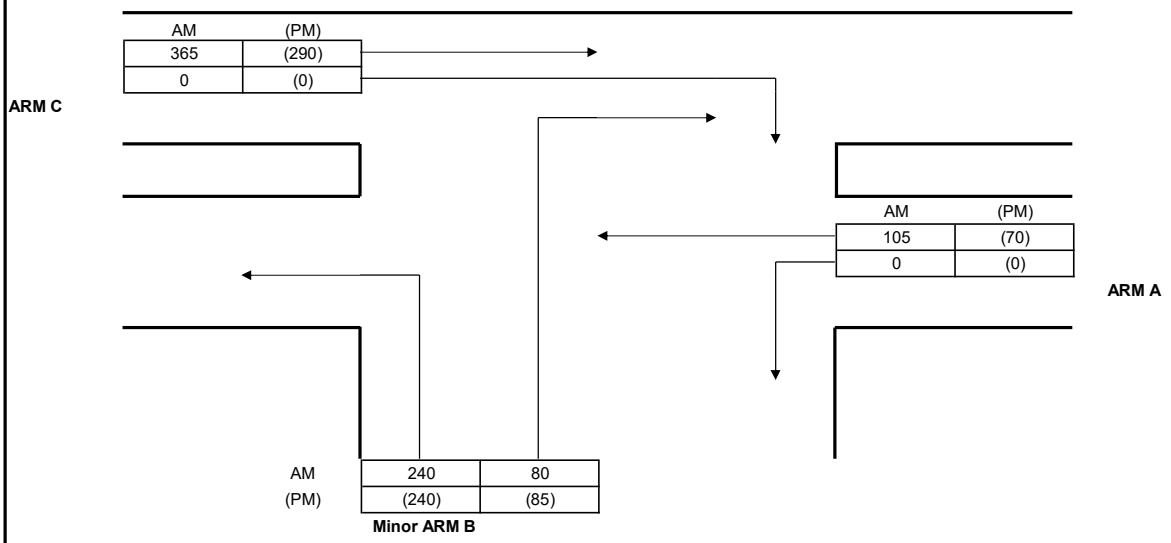
6.2.1 In conclusion, the traffic impact assessment has demonstrated that the traffic generated by the proposed development can be absorbed by the nearby road network. Hence, it can be concluded that the proposed development is considered acceptable in traffic terms.

ANNEX A –
DETAIL OF JUNCTION CALCULATION SHEETS

Calculation Spreadsheets
for
2024 Observed Scenario

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		365	290
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		105	70
	q(b-a)		80	85
	q(b-c)		240	240
	f		0.75	0.74
		Factor		
CAPACITIES	Q(b-a)	1	646	673
	Q(b-c)	1	937	949
	Q(c-b)	1	420	425
	Q(b-ac)	1	842	857
RFC's	b-a		0.124	0.126
	b-c		0.256	0.253
	c-b		0.000	0.000
	b-ac		0.380	0.379
Worst RFC			**0.380**	**0.379**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

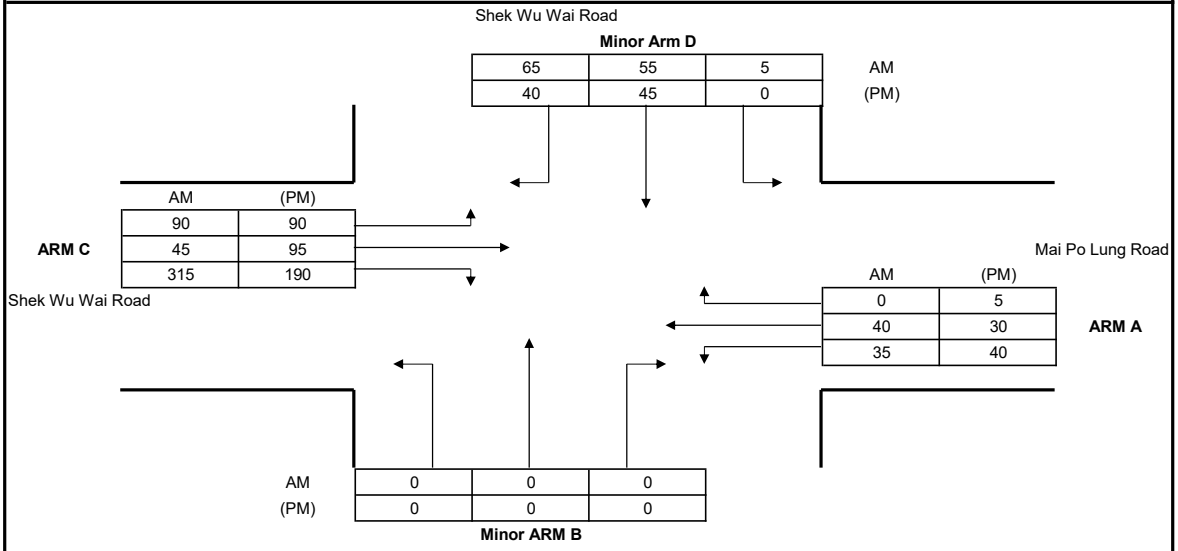
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	95	q(a-c)	40	30
	q(c-b)	315	190	q(a-d)	0	5
	q(a-b)	35	40	q(c-d)	90	90
	q(a-c)	105	70	q(c-a)	45	95
	q(b-a)	0	0	q(d-c)	120	85
	q(b-c)	0	0	q(d-a)	5	0
	f	0.00	0.00	f	0.04	0.00
CAPACITIES	Q(b-a)	259	282	Q(d-c)	598	586
	Q(b-c)	420	425	Q(d-a)	773	761
	Q(c-b)	652	658	Q(a-d)	634	624
	Q(b-ac)	259	282	Q(d-ca)	604	586
	Q(c-a)	930	1280	Q(a-c)	1800	1786
RFC's	b-a	0.000	0.000	d-c	0.201	0.145
	b-c	0.000	0.000	d-a	0.006	0.000
	c-b	0.483	0.289	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.207	0.145
	c-a	0.054	0.074	a-c	0.022	0.017

	AM	(PM)
Worst RFC	**0.483**	**0.289**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

Capacity of combined streams

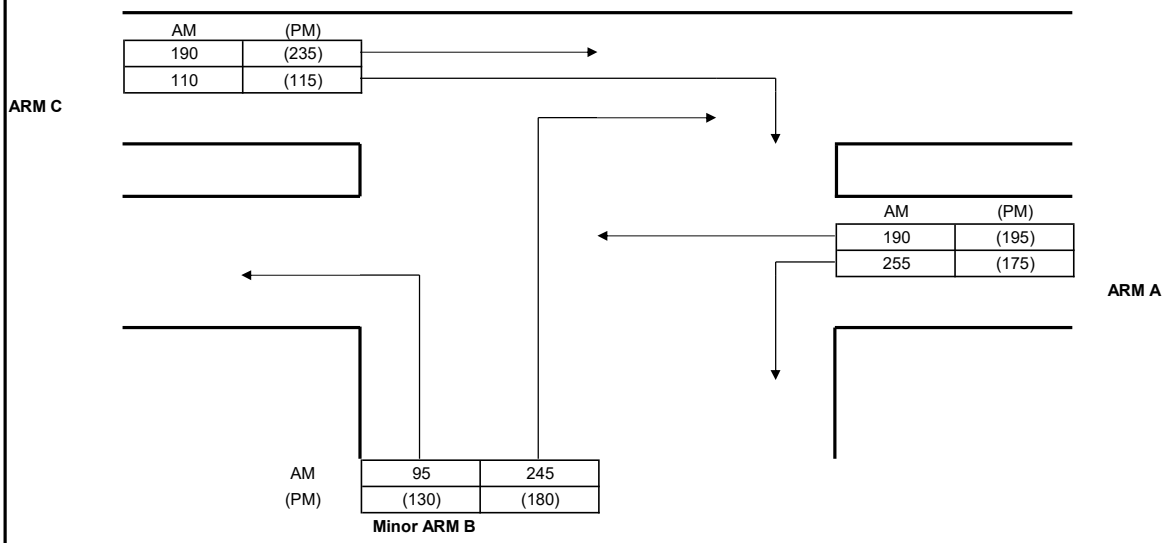
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

E:\myc__\000 - Project\000 - WSW 12A\20241224 WSW_12A_Calculation\Junction Calculation\[J01_2_P-Shek_Wu_Wai_Road-Mai_Po_Lung_Road.xlsm]2024O

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.85
	Vl(b-a)	30		E	0.92
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		190	235
	q(c-b)		110	115
	q(a-b)		255	175
	q(a-c)		190	195
	q(b-a)		245	180
	q(b-c)		95	130
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	396	394
	Q(b-c)	1	612	619
	Q(c-b)	1	567	586
	Q(b-ac)	1	440	465
RFC's	b-a		0.619	0.457
	b-c		0.155	0.210
	c-b		0.194	0.196
	b-ac		0.773	0.667
Worst RFC			**0.773**	**0.667**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

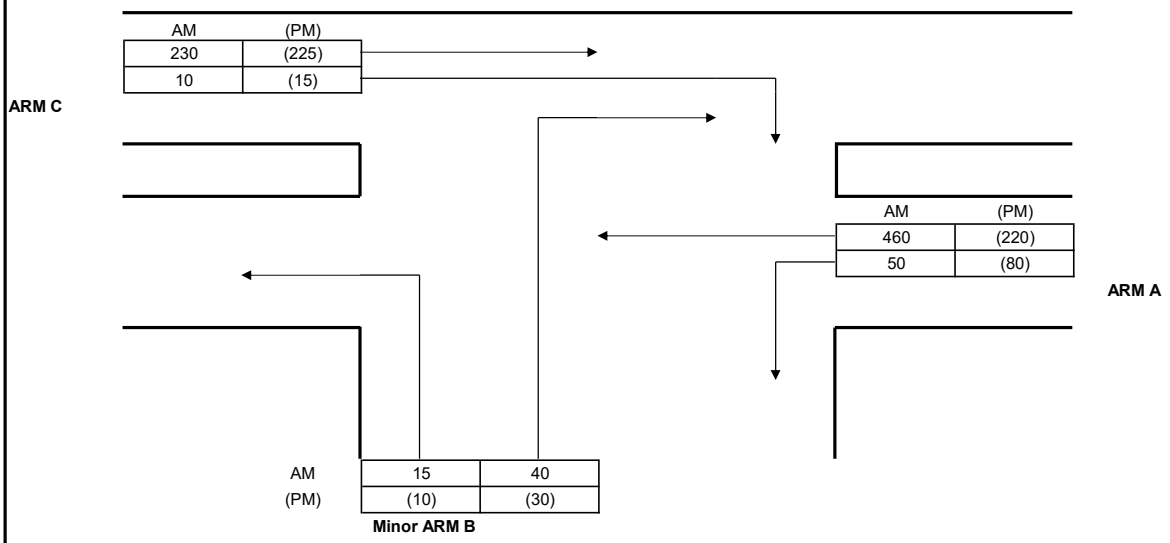
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		230	225
	q(c-b)		10	15
	q(a-b)		50	80
	q(a-c)		460	220
	q(b-a)		40	30
	q(b-c)		15	10
	f		0.27	0.25
		Factor		
CAPACITIES	Q(b-a)	1	394	444
	Q(b-c)	1	557	610
	Q(c-b)	1	598	651
	Q(b-ac)	1	428	476
RFC's	b-a		0.102	0.068
	b-c		0.027	0.016
	c-b		0.017	0.023
	b-ac		0.129	0.084
Worst RFC			**0.129**	**0.084**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

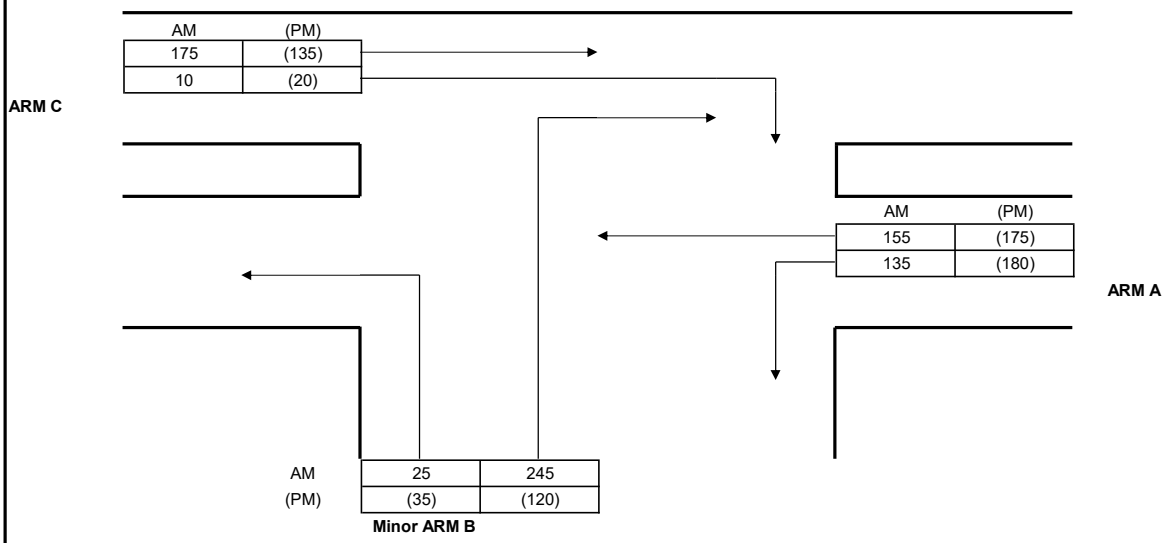
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		175	135
	q(c-b)		10	20
	q(a-b)		135	180
	q(a-c)		155	175
	q(b-a)		245	120
	q(b-c)		25	35
	f		0.09	0.23
		Factor		
CAPACITIES	Q(b-a)	1	471	465
	Q(b-c)	1	653	643
	Q(c-b)	1	574	558
	Q(b-ac)	1	483	496
RFC's	b-a		0.520	0.258
	b-c		0.038	0.054
	c-b		0.017	0.036
	b-ac		0.559	0.313
Worst RFC			**0.559**	**0.313**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

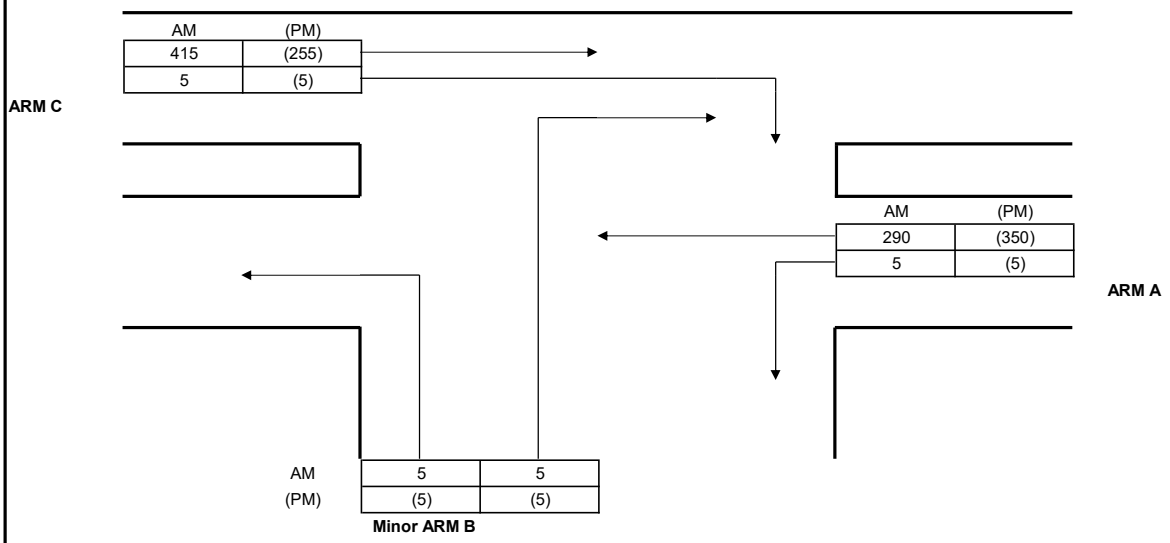
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		415	255
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	386	395
	Q(b-c)	1	584	570
	Q(c-b)	1	619	603
	Q(b-ac)	1	465	467
RFC's	b-a		0.013	0.013
	b-c		0.009	0.009
	c-b		0.008	0.008
	b-ac		0.022	0.021
Worst RFC			**0.022**	**0.021**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

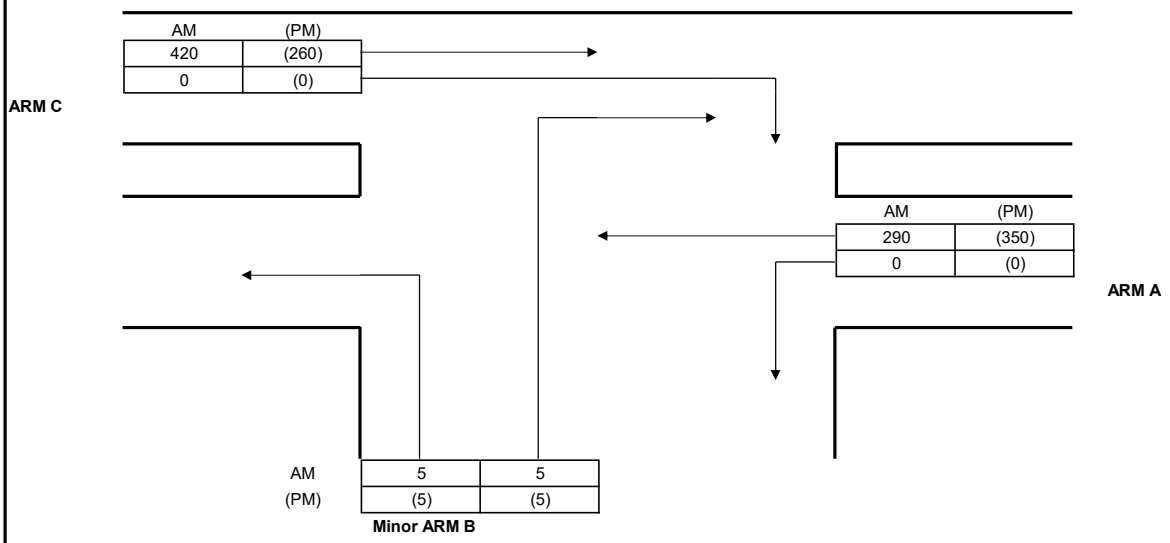
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

E:\myc__\000 - Project\000 - WSW 12A\20241224 WSW_12A_Calculation\Junction Calculation\[J05_P-Castle_Peak_Road_Mai_Po-Geranium_Path.xlsm]2024O

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		420	260
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	330	338
	Q(b-c)	1	501	488
	Q(c-b)	1	389	379
	Q(b-ac)	1	398	400
RFC's	b-a		0.015	0.015
	b-c		0.010	0.010
	c-b		0.000	0.000
	b-ac		0.025	0.025
Worst RFC			**0.025**	**0.025**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

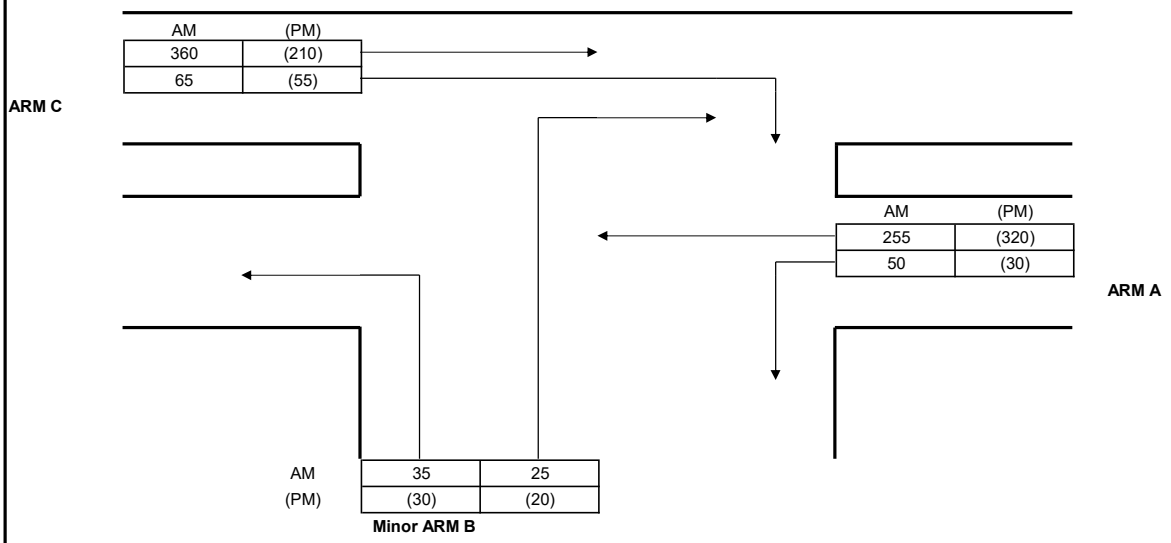
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	210
	q(c-b)		65	55
	q(a-b)		50	30
	q(a-c)		255	320
	q(b-a)		25	20
	q(b-c)		35	30
	f		0.58	0.60
		Factor		
CAPACITIES	Q(b-a)	1	398	410
	Q(b-c)	1	618	604
	Q(c-b)	1	610	599
	Q(b-ac)	1	502	508
RFC's	b-a		0.063	0.049
	b-c		0.057	0.050
	c-b		0.107	0.092
	b-ac		0.120	0.098
Worst RFC			**0.120**	**0.098**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

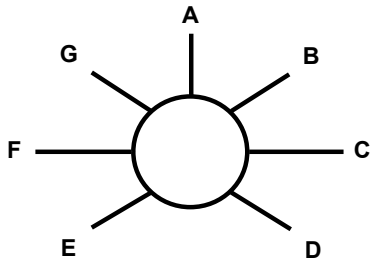
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	5	235	40	155	430	15	1395	940	600
B	15	25	55	5	115	250	5	1915	470	420
C	145	55	10	100	215	20	120	1765	665	620
D	35	10	40	55	160	195	10	1990	505	440
E	60	80	155	60	5	45	5	1685	410	810
F	255	145	15	140	100	30	120	980	805	1115
G	30	100	110	40	60	145	15	1495	500	290

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	50	20	140	35	140	240	20	1220	645	940
B	15	25	45	15	125	105	15	1475	345	390
C	175	45	20	100	265	5	100	1300	710	520
D	25	25	40	55	110	170	10	1600	435	410
E	50	35	140	40	10	35	5	1265	315	770
F	590	170	25	115	105	20	200	910	1225	670
G	35	70	110	50	15	95	10	1775	385	360

CALCULATIONS

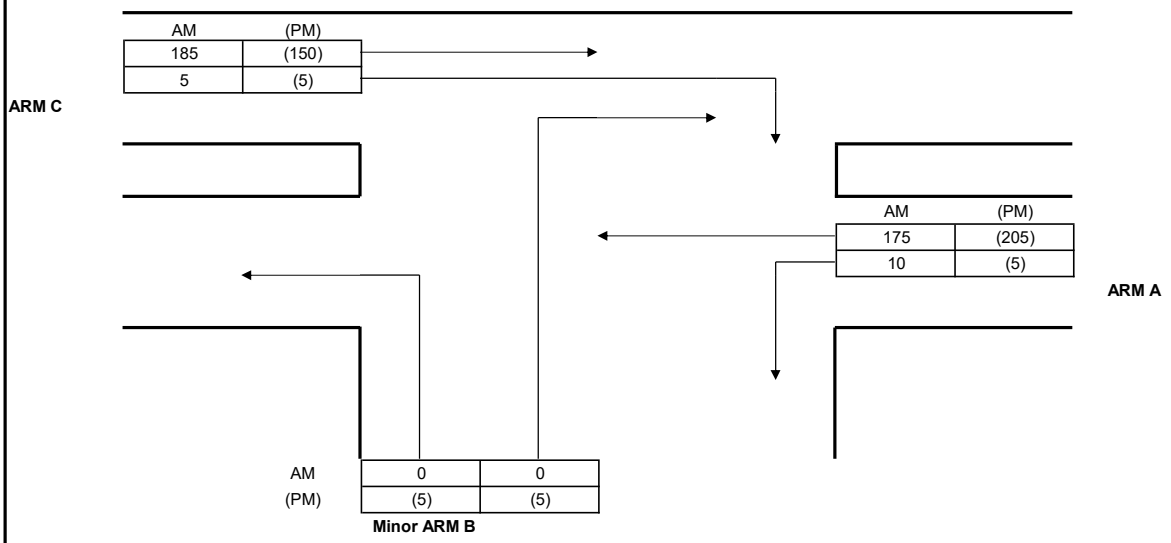
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1904	2006	0.49	0.32
B	0.98	7.92	3640.95	2400	1.00	0.54	1337	1571	0.35	0.22
C	1.01	6.82	3640.95	2065	1.00	0.50	1197	1429	0.56	0.50
D	1.02	7.87	3640.95	2385	1.00	0.54	1332	1546	0.38	0.28
E	0.98	7.19	3640.95	2180	1.00	0.51	1294	1505	0.32	0.21
F	0.98	8.13	3640.95	2464	1.00	0.55	1875	1913	0.43	0.64
G	1.00	5.91	3640.95	1790	1.00	0.46	1110	981	0.45	0.39
								Crtical Arm:	**C**	**F**
								RFC:	**0.56**	**0.64**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY

Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS

			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		185	150
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		175	205
	q(b-a)		0	5
	q(b-c)		0	5
	f		0.00	0.50
		Factor		
CAPACITIES	Q(b-a)	1	502	500
	Q(b-c)	1	689	681
	Q(c-b)	1	687	681
	Q(b-ac)	1	502	577
RFC's	b-a		0.000	0.010
	b-c		0.000	0.007
	c-b		0.007	0.007
	b-ac		0.000	0.017
Worst RFC			**0.007**	**0.017**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Reference Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

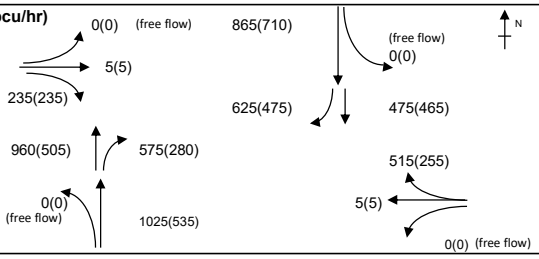
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin Highway	→	A	1	3.650		12.5		96%	96%	1775	1775	118	0.066	0.066	118	0.066	0.066
Slip Road (EB)	→	A	1	3.650		10				1845	1845	122	0.066		122	0.066	
San Tin Highway	↑	B	1,2	3.900		10				1865	1865	265	0.142		132	0.071	
Slip Road (WB)	↑	B	1,2	3.900		12.5		98%	96%	1795	1800	255	0.142		128	0.071	
Shek Wu Wai	↓	D	4	3.500						1965	1965	372	0.189		316	0.161	
Road (SB)	↓	D	4	3.500		15		72%	54%	1965	2000	372	0.189		322	0.161	0.161
	→	D	4	3.500		12.5				1880	1880	356	0.189	0.189	302	0.161	
Shek Wu Wai	↑	C	2,3	3.500						1965	1965	510	0.260		260	0.132	
Road (NB)	↑	C	2,3	3.500		15		16%	11%	2070	2080	537	0.259		276	0.133	0.133
	→	C	2,3	3.500		12.5				1880	1880	488	0.260	0.260	249	0.132	
Shek Wu Wai	↓	F	4	3.500						2105	2105	295	0.140		242	0.115	
Road (SB)	↓	F	4	3.500						2105	2105	295	0.140		242	0.115	
	↓	F	4	3.500						1965	1965	275	0.140		226	0.115	
Shek Wu Wai	↑	E	3	3.500						1965	1965	326	0.166		170	0.087	
Road (NB)	↑	E	3	3.500						2105	2105	350	0.166		183	0.087	
	↑	E	3	3.500						2105	2105	349	0.166		182	0.086	

Notes:

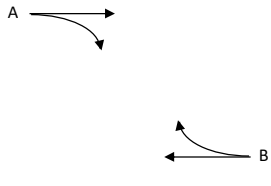
Flow: (pcu/hr)



Group	B,E,D	A,C,D	Group	B,E,D	A,C,D
y	0.498	0.515	y	0.319	0.360
L (sec)	16	13	L (sec)	16	13
C (sec)	120	120	C (sec)	120	120
y pract.	0.780	0.803	y pract.	0.780	0.803
R.C. (%)	57%	56%	R.C. (%)	144%	123%

Stage / Phase Diagrams

1.



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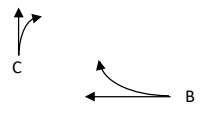

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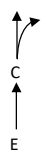

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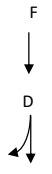

5.

I/G= 5		I/G= 6		I/G=		I/G= 5	
I/G= 5		I/G= 6		I/G=		I/G= 5	

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Date: JAN, 2025 **Junction:** (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

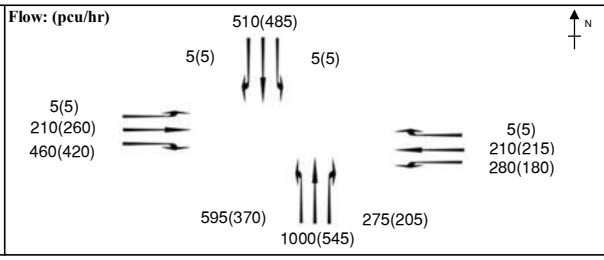
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11																	
EB		A	1	3.700	15			2%	2%	1980	1980	215	0.109		235	0.119	0.119
		A	1	3.650		12		100%	87%	1885	1915	230	0.122	0.122	227	0.119	
		A	1	3.650		12				1885	1885	230	0.122		223	0.118	
Shek Wu Wai Road																	
NB		B	2	3.650	15					1800	1800	427	0.237		257	0.143	
		B	2	3.350	15			35%	39%	2020	2010	479	0.237		287	0.143	
		B	2	3.350						2090	2090	496	0.237	0.237	299	0.143	0.143
		B	2	3.650		12		59%	74%	1975	1940	468	0.237		277	0.143	
Road D3																	
SB		D	4	3.000	15			4%	4%	1905	1905	123	0.065		117	0.061	
		D	4	3.000						2055	2055	132	0.064		126	0.061	
		D	4	3.000						2055	2055	133	0.065	0.065	126	0.061	
		D	4	3.000		12		4%	4%	2045	2045	132	0.065		126	0.062	0.062
Road L12																	
WB		C	3	4.000		12		2%	2%	2150	2150	215	0.100		214	0.100	
		C	3	4.000	18			100%	97%	1860	1865	280	0.151	0.151	186	0.100	0.100

Notes:

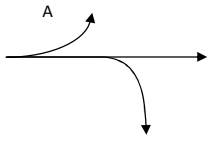
Flow: (pcu/hr)



Group		A,B,C,D	Group		A,B,C,D
y		0.575	y		0.423
L (sec)		17	L (sec)		17
C (sec)		120	C (sec)		120
y pract.		0.773	y pract.		0.773
R.C. (%)		34%	R.C. (%)		83%

Stage / Phase Diagrams

1.



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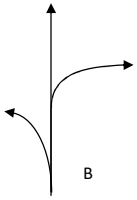

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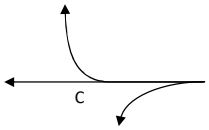

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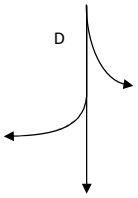


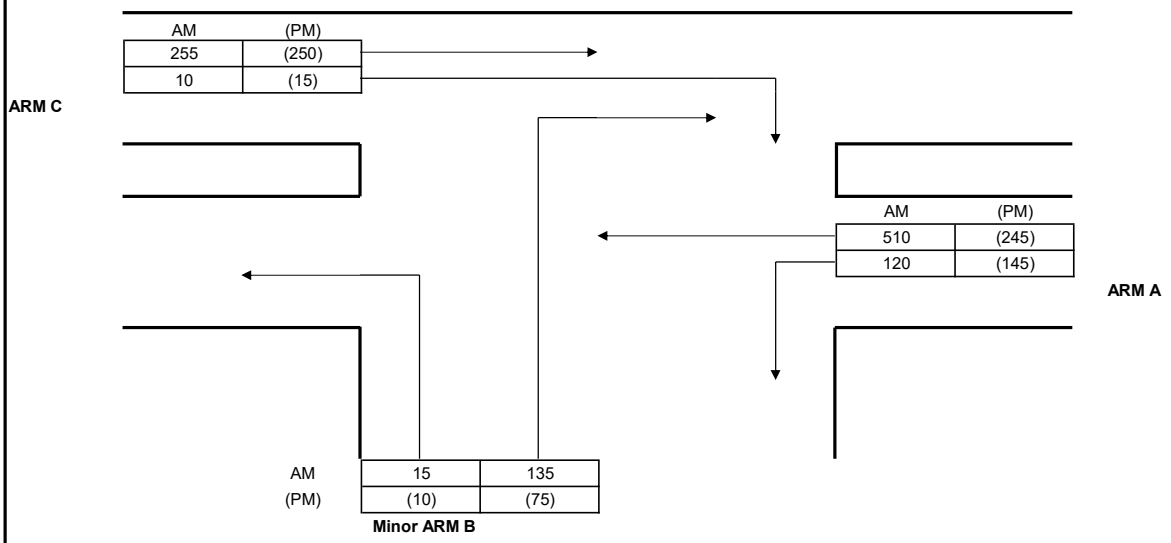
5.

I/G= 5		I/G= 5		I/G= 5		I/G= 6	I/G=
I/G= 5		I/G= 5		I/G= 5		I/G= 6	I/G=

Date: JAN, 2025 **Junction:** Shek Wu Wai Road / Road D3 / Road L B

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		255	250
	q(c-b)		10	15
	q(a-b)		120	145
	q(a-c)		510	245
	q(b-a)		135	75
	q(b-c)		15	10
	f		0.10	0.12
		Factor		
CAPACITIES	Q(b-a)	1	373	429
	Q(b-c)	1	539	598
	Q(c-b)	1	568	629
	Q(b-ac)	1	385	444
RFC's	b-a		0.362	0.175
	b-c		0.028	0.017
	c-b		0.018	0.024
	b-ac		0.390	0.191
Worst RFC			**0.390**	**0.191**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

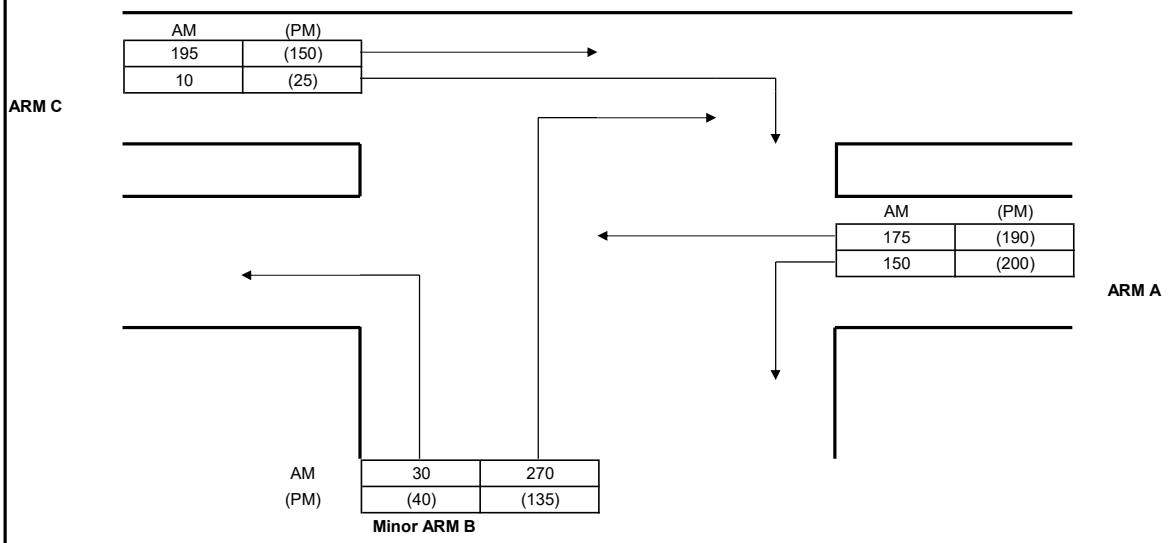
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		195	150
	q(c-b)		10	25
	q(a-b)		150	200
	q(a-c)		175	190
	q(b-a)		270	135
	q(b-c)		30	40
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	462	455
	Q(b-c)	1	646	637
	Q(c-b)	1	565	550
	Q(b-ac)	1	475	487
RFC's	b-a		0.584	0.297
	b-c		0.046	0.063
	c-b		0.018	0.045
	b-ac		0.632	0.359
Worst RFC			**0.632**	**0.359**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

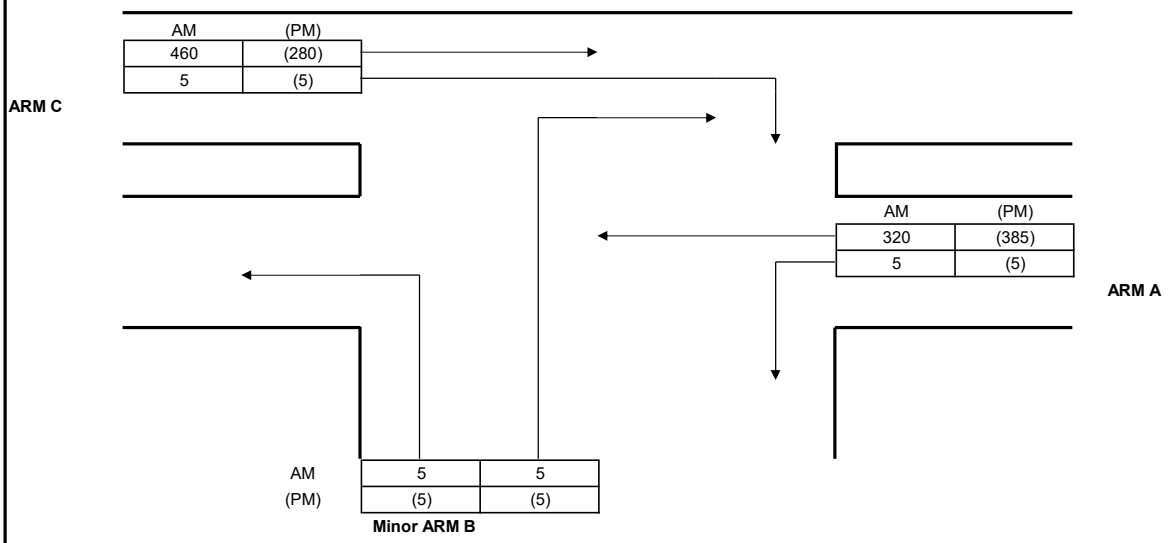
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		460	280
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		320	385
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	372	383
	Q(b-c)	1	577	561
	Q(c-b)	1	611	594
	Q(b-ac)	1	453	456
RFC's	b-a		0.013	0.013
	b-c		0.009	0.009
	c-b		0.008	0.008
	b-ac		0.022	0.022
Worst RFC			**0.022**	**0.022**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

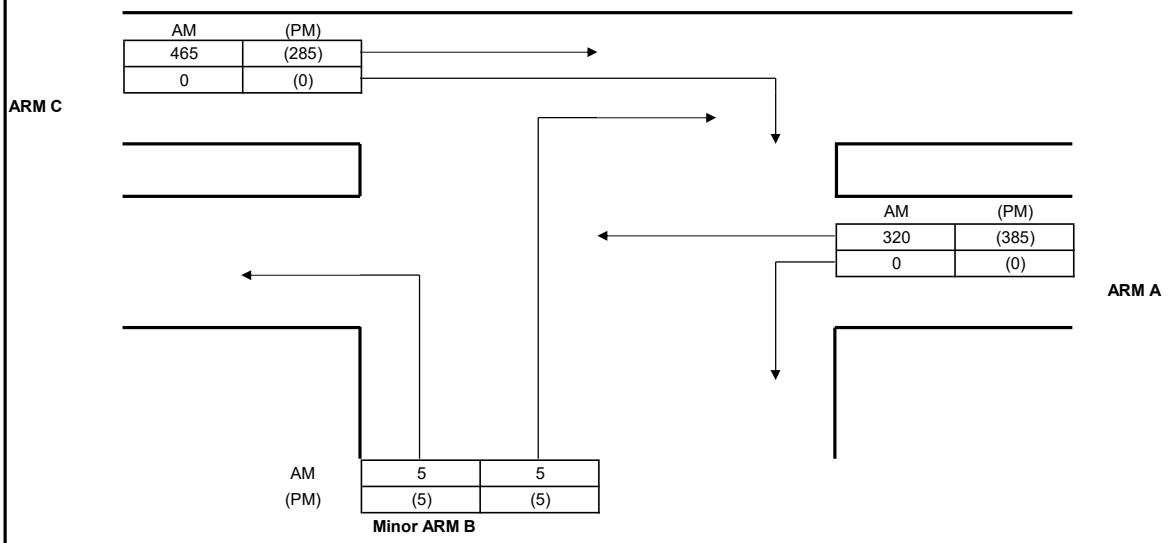
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		465	285
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		320	385
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	319	328
	Q(b-c)	1	495	481
	Q(c-b)	1	384	373
	Q(b-ac)	1	388	390
RFC's	b-a		0.016	0.015
	b-c		0.010	0.010
	c-b		0.000	0.000
	b-ac		0.026	0.026
Worst RFC			**0.026**	**0.026**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

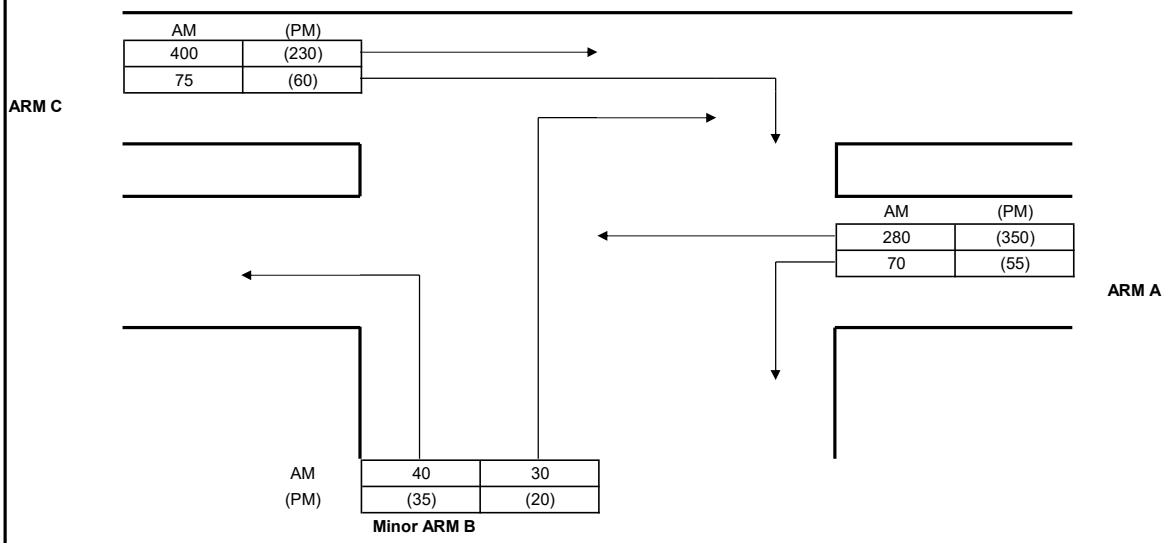
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		400	230
	q(c-b)		75	60
	q(a-b)		70	55
	q(a-c)		280	350
	q(b-a)		30	20
	q(b-c)		40	35
	f		0.57	0.64
		Factor		
CAPACITIES	Q(b-a)	1	381	396
	Q(b-c)	1	610	593
	Q(c-b)	1	599	585
	Q(b-ac)	1	485	503
RFC's	b-a		0.079	0.051
	b-c		0.066	0.059
	c-b		0.125	0.103
	b-ac		0.144	0.109
Worst RFC			**0.144**	**0.109**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

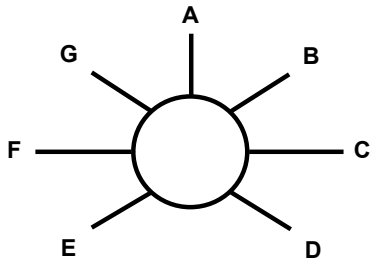
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	265	45	170	530	20	2095	1105	685
B	15	30	60	5	165	280	5	2675	560	525
C	160	65	10	110	530	20	170	2135	1065	1100
D	40	10	45	60	215	225	10	2665	605	535
E	65	130	535	105	5	50	5	1975	895	1295
F	300	175	20	165	110	35	130	1570	935	1300
G	35	110	165	45	100	160	15	2150	630	355

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	160	40	155	300	25	1725	765	1075
B	20	30	50	20	170	120	15	1995	425	495
C	200	55	20	115	550	5	160	1590	1105	830
D	25	25	45	60	155	200	10	2200	520	495
E	55	65	365	70	10	40	5	1515	610	1205
F	675	215	30	135	115	25	220	1330	1415	795
G	40	80	160	55	50	105	10	2300	500	445

CALCULATIONS

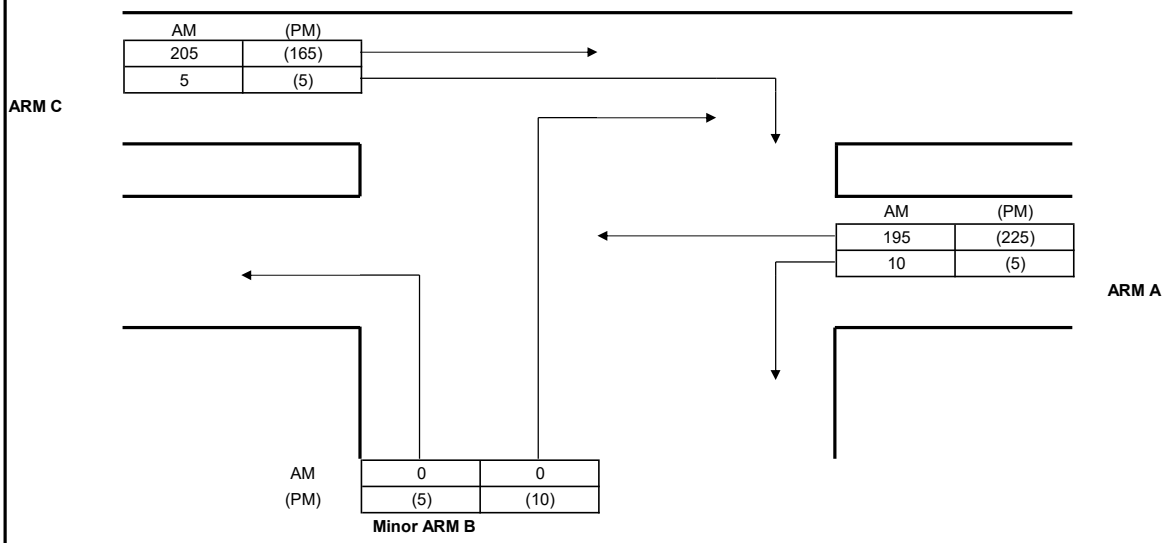
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1495	1711	0.74	0.45
B	0.98	7.92	3640.95	2400	1.00	0.54	931	1294	0.60	0.33
C	1.01	6.82	3640.95	2065	1.00	0.50	1012	1284	1.05	0.86
D	1.02	7.87	3640.95	2385	1.00	0.54	961	1216	0.63	0.43
E	0.98	7.19	3640.95	2180	1.00	0.51	1148	1380	0.78	0.44
F	0.98	8.13	3640.95	2464	1.00	0.55	1558	1687	0.60	0.84
G	1.00	5.91	3640.95	1790	1.00	0.46	808	739	0.78	0.68
								Crtical Arm:	**C**	**C**
								RFC:	**1.05**	**0.86**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		205	165
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		195	225
	q(b-a)		0	10
	q(b-c)		0	5
	f		0.00	0.33
		Factor		
CAPACITIES	Q(b-a)	1	494	493
	Q(b-c)	1	683	676
	Q(c-b)	1	682	676
	Q(b-ac)	1	494	542
RFC's	b-a		0.000	0.020
	b-c		0.000	0.007
	c-b		0.007	0.007
	b-ac		0.000	0.028
Worst RFC			**0.007**	**0.028**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

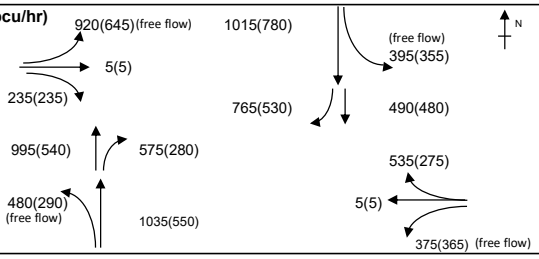
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin Highway		A	1	3.650		12.5		96%	96%	1775	1775	118	0.066	0.066	118	0.066	0.066
Slip Road (EB)		A	1	3.650		10				1845	1845	122	0.066		122	0.066	
San Tin Highway		B	1,2	3.900		10				1865	1865	275	0.147		143	0.077	
Slip Road (WB)		B	1,2	3.900		12.5		98%	96%	1795	1795	265	0.148		137	0.076	
Shek Wu Wai		D	4	3.500						1965	1965	426	0.217		340	0.173	
Road (SB)		D	4	3.500		15		85%	59%	1940	1985	421	0.217		344	0.173	
		D	4	3.500		12.5				1880	1880	408	0.217	0.217	326	0.173	0.173
Shek Wu Wai		C	2,3	3.500						1965	1965	521	0.265		271	0.138	
Road (NB)		C	2,3	3.500		15		14%	7%	2075	2090	551	0.266	0.266	289	0.138	
		C	2,3	3.500		12.5				1880	1880	498	0.265		260	0.138	0.138
Shek Wu Wai		F	4	3.500						2105	2105	346	0.164		266	0.126	
Road (SB)		F	4	3.500						2105	2105	346	0.164		266	0.126	
		F	4	3.500						1965	1965	323	0.164		248	0.126	
Shek Wu Wai		E	3	3.500						1965	1965	329	0.167		175	0.089	
Road (NB)		E	3	3.500						2105	2105	353	0.168		188	0.089	
		E	3	3.500						2105	2105	353	0.168		187	0.089	

Notes:

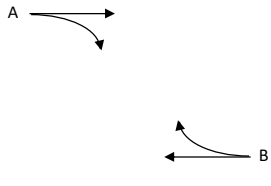
Flow: (pcu/hr)



Group	B,E,D	A,C,D	Group	B,E,D	A,C,D
y	0.532	0.549	y	0.339	0.378
L (sec)	16	13	L (sec)	16	13
C (sec)	120	120	C (sec)	120	120
y pract.	0.780	0.803	y pract.	0.780	0.803
R.C. (%)	47%	46%	R.C. (%)	130%	112%

Stage / Phase Diagrams

1.



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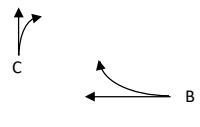

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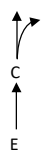

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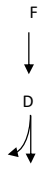


5.

I/G= 5		I/G= 6		I/G=		I/G= 5	
I/G= 5		I/G= 6		I/G=		I/G= 5	

I/G=	
I/G=	

Date: JAN, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

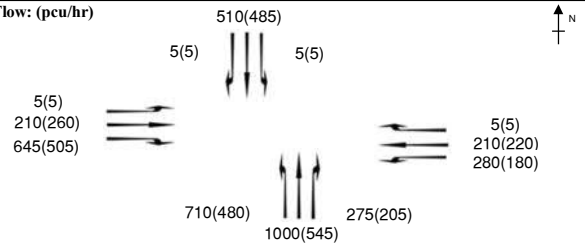
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11																	
EB		A	1	3.700	15			2%	2%	1980	1980	215	0.109		265	0.134	
		A	1	3.650		12		100%	100%	1885	1885	322	0.171		252	0.134	
		A	1	3.650		12				1885	1885	323	0.171	0.171	253	0.134	0.134
Shek Wu Wai Road																	
NB		B	2	3.650	15					1800	1800	454	0.252		283	0.157	
		B	2	3.350	15			51%	64%	1990	1965	502	0.252		310	0.158	0.158
		B	2	3.350						2090	2090	528	0.253	0.253	329	0.157	
		B	2	3.650		12		55%	67%	1985	1955	501	0.252		308	0.158	
Road D3																	
SB		D	4	3.000	15			4%	4%	1905	1905	123	0.065		117	0.061	
		D	4	3.000						2055	2055	132	0.064		126	0.061	
		D	4	3.000						2055	2055	133	0.065	0.065	126	0.061	
		D	4	3.000		12		4%	4%	2045	2045	132	0.065		126	0.062	0.062
Road L12																	
WB		C	3	4.000		12		2%	2%	2150	2150	215	0.100		217	0.101	0.101
		C	3	4.000	18			100%	96%	1860	1865	280	0.151	0.151	188	0.101	

Notes:

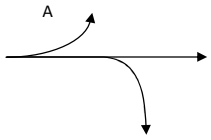
Flow: (pcu/hr)



Group		A,B,C,D	Group		A,B,C,D
y		0.639	y		0.455
L (sec)		17	L (sec)		17
C (sec)		120	C (sec)		120
y pract.		0.773	y pract.		0.773
R.C. (%)		21%	R.C. (%)		70%

Stage / Phase Diagrams

1.



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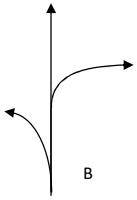

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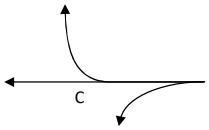

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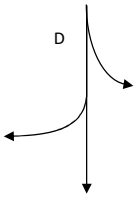


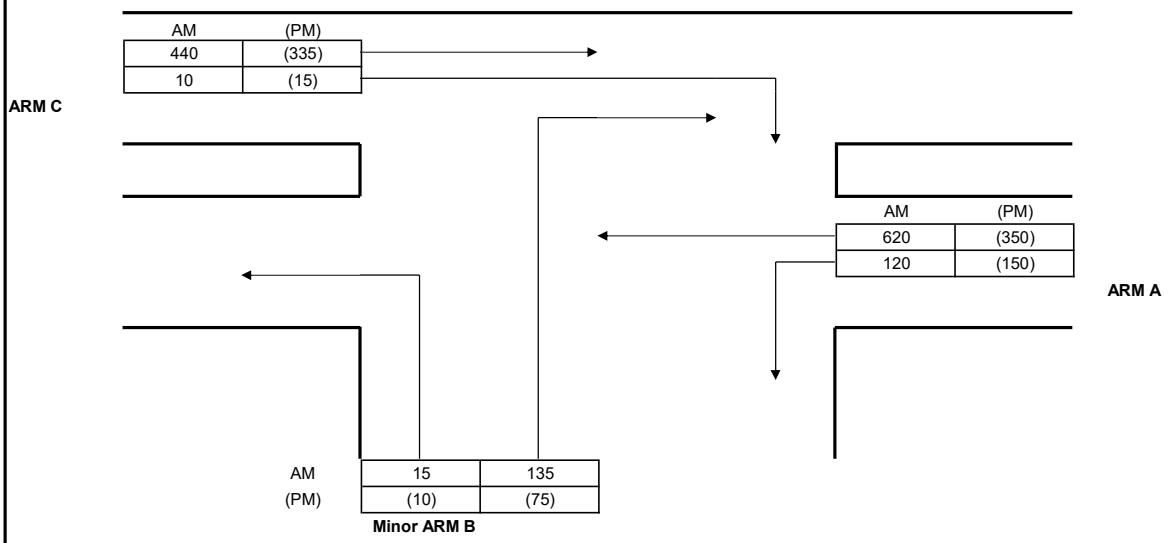
5.

I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=	
I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=	

Date: JAN, 2025 **Junction:** Shek Wu Wai Road / Road D3 / Road L B

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		440	335
	q(c-b)		10	15
	q(a-b)		120	150
	q(a-c)		620	350
	q(b-a)		135	75
	q(b-c)		15	10
	f		0.10	0.12
		Factor		
CAPACITIES	Q(b-a)	1	323	393
	Q(b-c)	1	513	573
	Q(c-b)	1	540	601
	Q(b-ac)	1	335	408
RFC's	b-a		0.418	0.191
	b-c		0.029	0.017
	c-b		0.019	0.025
	b-ac		0.448	0.208
Worst RFC			**0.448**	**0.208**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

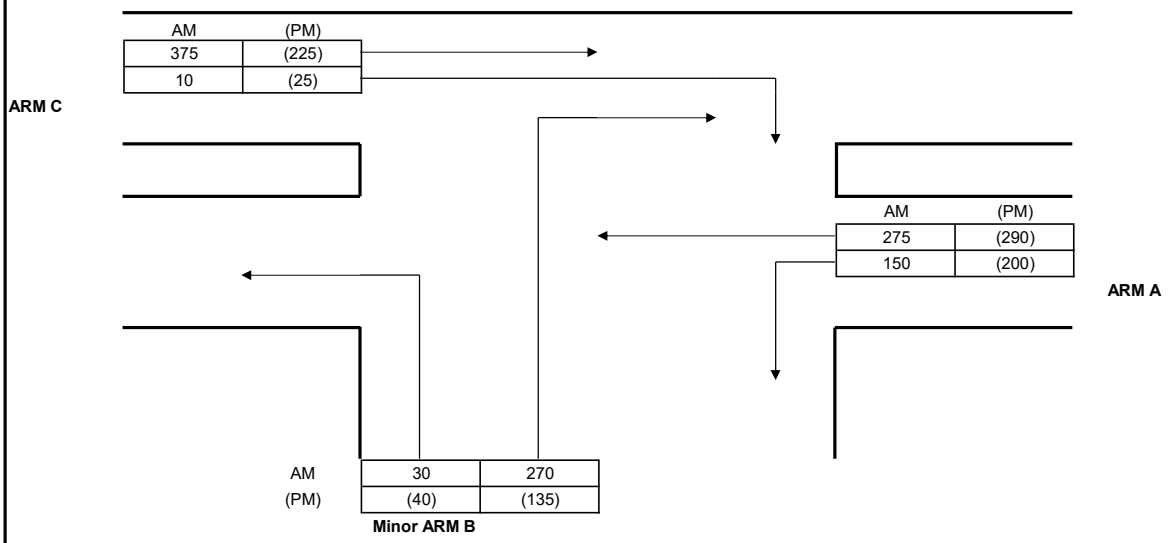
Capacity of combined streams
- in accordance with TPDM V2.4

T.P.D.M.V.2.4
Appendix 1

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		375	225
	q(c-b)		10	25
	q(a-b)		150	200
	q(a-c)		275	290
	q(b-a)		270	135
	q(b-c)		30	40
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	410	419
	Q(b-c)	1	620	610
	Q(c-b)	1	542	526
	Q(b-ac)	1	424	452
RFC's	b-a		0.659	0.322
	b-c		0.048	0.066
	c-b		0.018	0.048
	b-ac		0.708	0.387
Worst RFC			**0.708**	**0.387**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

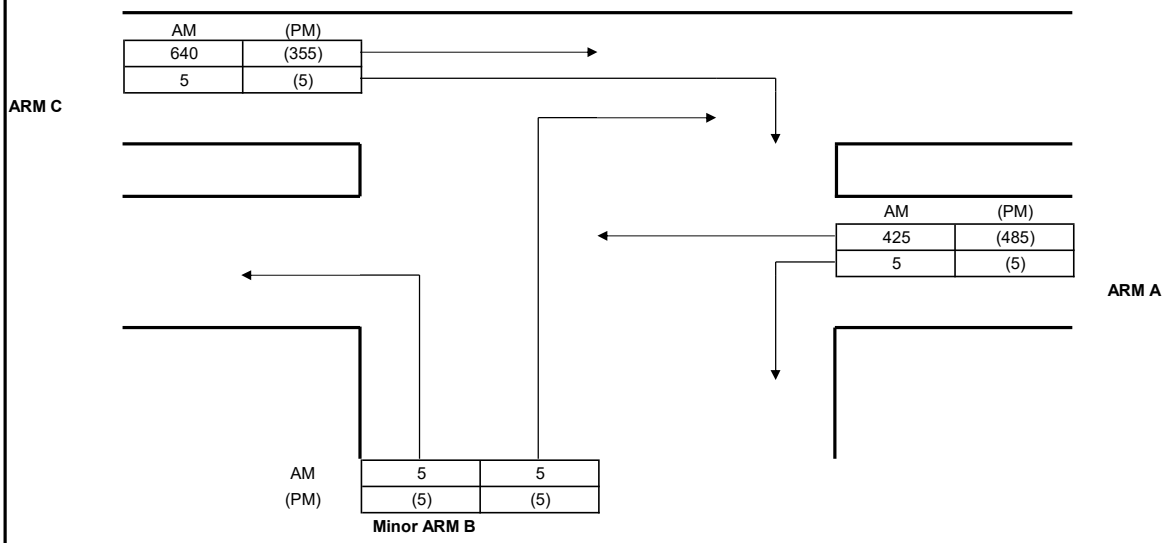
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		640	355
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		425	485
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	323	350
	Q(b-c)	1	552	537
	Q(c-b)	1	584	569
	Q(b-ac)	1	407	424
RFC's	b-a		0.015	0.014
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.025	0.024
Worst RFC			**0.025**	**0.024**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

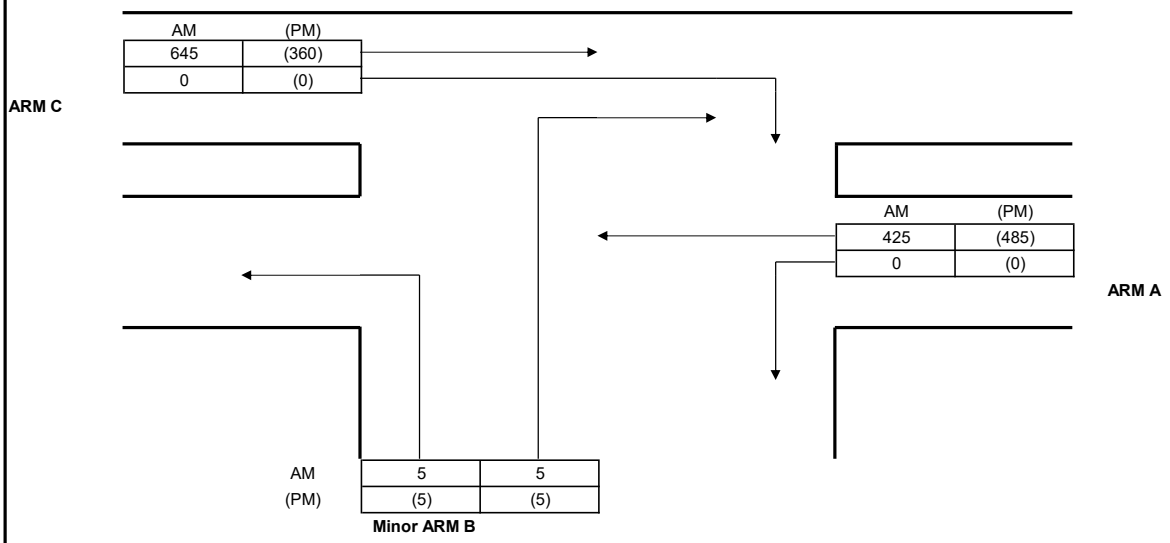
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		645	360
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		425	485
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	275	299
	Q(b-c)	1	472	459
	Q(c-b)	1	366	356
	Q(b-ac)	1	348	362
RFC's	b-a		0.018	0.017
	b-c		0.011	0.011
	c-b		0.000	0.000
	b-ac		0.029	0.028
Worst RFC			**0.029**	**0.028**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

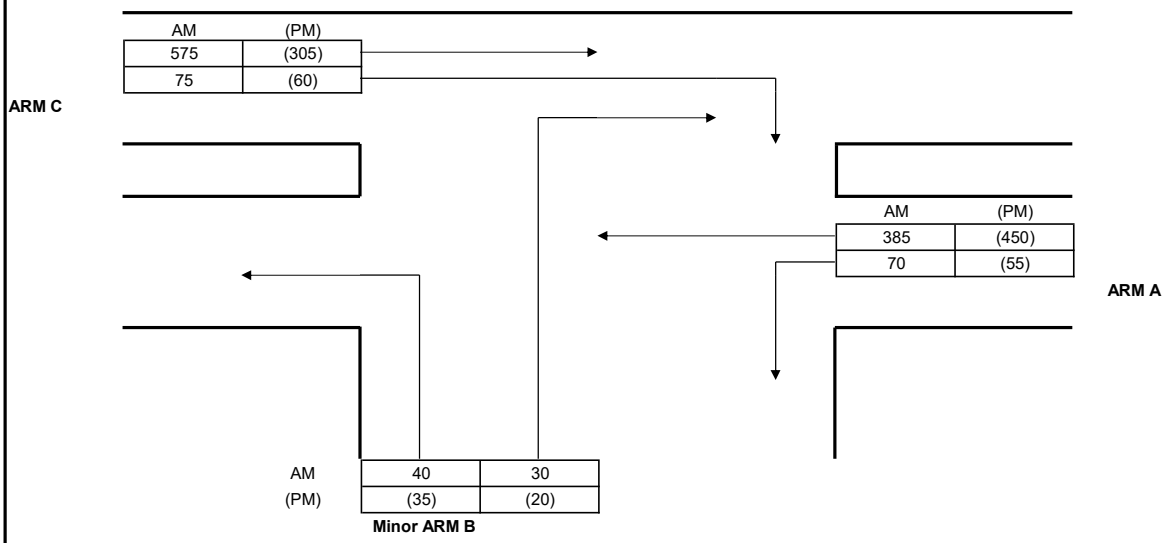
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		575	305
	q(c-b)		75	60
	q(a-b)		70	55
	q(a-c)		385	450
	q(b-a)		30	20
	q(b-c)		40	35
	f		0.57	0.64
		Factor		
CAPACITIES	Q(b-a)	1	330	361
	Q(b-c)	1	583	568
	Q(c-b)	1	572	559
	Q(b-ac)	1	439	470
RFC's	b-a		0.091	0.055
	b-c		0.069	0.062
	c-b		0.131	0.107
	b-ac		0.159	0.117
Worst RFC			**0.159**	**0.117**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

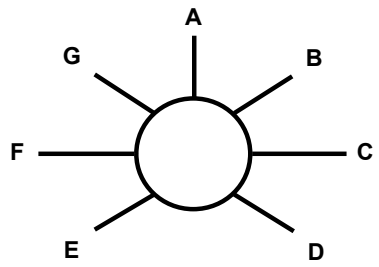
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	265	45	170	530	20	2200	1105	685
B	15	30	60	5	165	460	5	2675	740	630
C	160	65	10	110	530	20	170	2315	1065	1100
D	40	10	45	60	215	225	10	2845	605	535
E	65	130	535	105	5	50	5	2155	895	1295
F	300	280	20	165	110	35	130	1570	1040	1480
G	35	110	165	45	100	160	15	2255	630	355

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	160	40	155	300	25	1825	765	1075
B	20	30	50	20	170	195	15	1995	500	595
C	200	55	20	115	550	5	160	1665	1105	830
D	25	25	45	60	155	200	10	2275	520	495
E	55	65	365	70	10	40	5	1590	610	1205
F	675	315	30	135	115	25	220	1330	1515	870
G	40	80	160	55	50	105	10	2400	500	445

CALCULATIONS

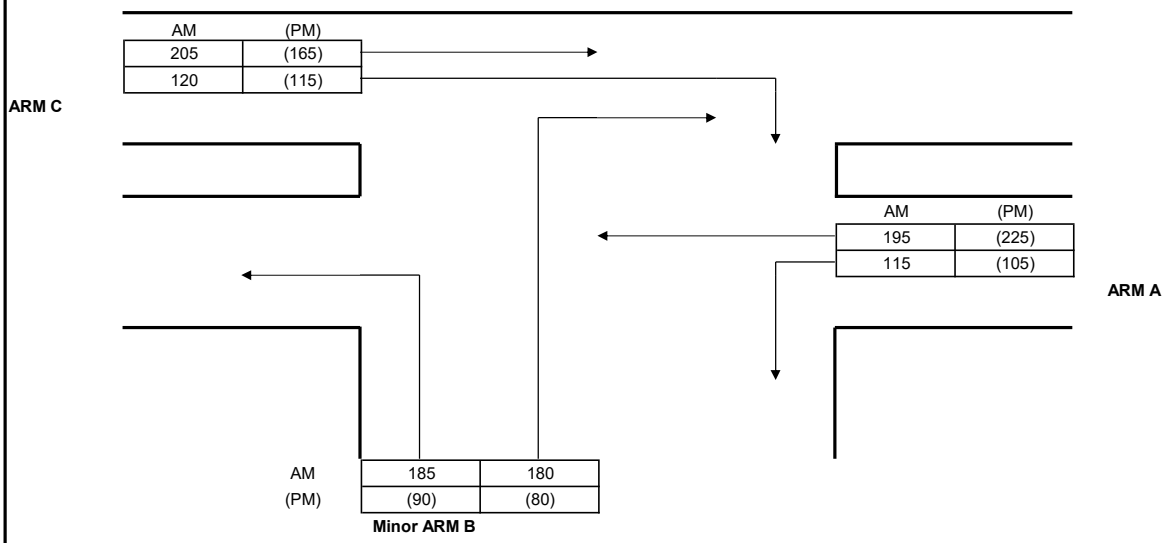
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1433	1652	0.77	0.46
B	0.98	7.92	3640.95	2400	1.00	0.54	931	1294	0.79	0.39
C	1.01	6.82	3640.95	2065	1.00	0.50	922	1247	1.16	0.89
D	1.02	7.87	3640.95	2385	1.00	0.54	862	1175	0.70	0.44
E	0.98	7.19	3640.95	2180	1.00	0.51	1057	1342	0.85	0.45
F	0.98	8.13	3640.95	2464	1.00	0.55	1558	1687	0.67	0.90
G	1.00	5.91	3640.95	1790	1.00	0.46	760	693	0.83	0.72
								Crtical Arm:	**C**	**F**
								RFC:	**1.16**	**0.90**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		205	165
	q(c-b)		120	115
	q(a-b)		115	105
	q(a-c)		195	225
	q(b-a)		180	80
	q(b-c)		185	90
	f		0.51	0.53
		Factor		
CAPACITIES	Q(b-a)	1	446	447
	Q(b-c)	1	673	666
	Q(c-b)	1	655	650
	Q(b-ac)	1	538	541
RFC's	b-a		0.404	0.179
	b-c		0.275	0.135
	c-b		0.183	0.177
	b-ac		0.678	0.314
Worst RFC			**0.678**	**0.314**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

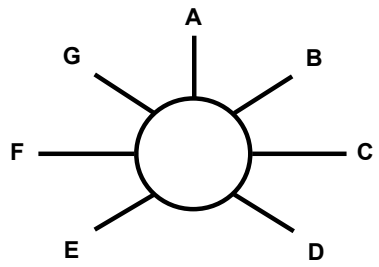
Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference Scenario (With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	10.00	30	23	142	30	0.24
D	6.75	8.50	10	20	142	25	0.28
E	6.75	8.50	5	20	142	35	0.56
F	6.50	9.00	15	25	142	40	0.27
G	5.50	8.00	25	22	142	30	0.16

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	265	45	170	530	20	2095	1105	685
B	15	30	60	5	165	280	5	2675	560	525
C	160	65	10	110	530	20	170	2135	1065	1100
D	40	10	45	60	215	225	10	2665	605	535
E	65	130	535	105	5	50	5	1975	895	1295
F	300	175	20	165	110	35	0	1570	805	1300
G	35	110	165	45	100	160	15	2150	630	225

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	160	40	155	300	25	1725	765	1075
B	20	30	50	20	170	120	15	1995	425	495
C	200	55	20	115	550	5	160	1590	1105	830
D	25	25	45	60	155	200	10	2200	520	495
E	55	65	365	70	10	40	5	1515	610	1205
F	675	215	30	135	115	25	0	1330	1195	795
G	40	80	160	55	50	105	10	2300	500	225

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1495	1711	0.74	0.45
B	0.98	7.92	3640.95	2400	1.00	0.54	931	1294	0.60	0.33
C	1.01	8.54	3640.95	2588	1.00	0.57	1382	1694	0.77	0.65
D	1.02	7.87	3640.95	2385	1.00	0.54	961	1216	0.63	0.43
E	0.98	7.58	3640.95	2295	1.00	0.53	1230	1469	0.73	0.42
F	0.98	8.13	3640.95	2464	1.00	0.55	1558	1687	0.52	0.71
G	1.00	7.39	3640.95	2240	1.00	0.52	1126	1048	0.56	0.48
								Crtical Arm:	**C**	**F**
								RFC:	**0.77**	**0.71**
									AM	**PM**

- In accordance with TPDM V2.4

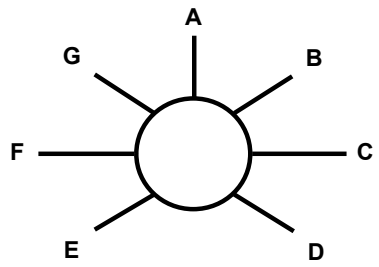
Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario
(With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design (Under Improvement)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	10.00	30	23	142	30	0.24
D	6.75	8.50	10	20	142	25	0.28
E	6.75	8.50	5	20	142	35	0.56
F	6.50	9.00	15	25	142	40	0.27
G	5.50	8.00	25	22	142	30	0.16

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	265	45	170	530	20	2200	1105	685
B	15	30	60	5	165	460	5	2675	740	630
C	160	65	10	110	530	20	170	2315	1065	1100
D	40	10	45	60	215	225	10	2845	605	535
E	65	130	535	105	5	50	5	2155	895	1295
F	300	280	20	165	110	35	0	1570	910	1480
G	35	110	165	45	100	160	15	2255	630	225

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	160	40	155	300	25	1825	765	1075
B	20	30	50	20	170	195	15	1995	500	595
C	200	55	20	115	550	5	160	1665	1105	830
D	25	25	45	60	155	200	10	2275	520	495
E	55	65	365	70	10	40	5	1590	610	1205
F	675	315	30	135	115	25	0	1330	1295	870
G	40	80	160	55	50	105	10	2400	500	225

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1433	1652	0.77	0.46
B	0.98	7.92	3640.95	2400	1.00	0.54	931	1294	0.79	0.39
C	1.01	8.54	3640.95	2588	1.00	0.57	1279	1651	0.83	0.67
D	1.02	7.87	3640.95	2385	1.00	0.54	862	1175	0.70	0.44
E	0.98	7.58	3640.95	2295	1.00	0.53	1137	1430	0.79	0.43
F	0.98	8.13	3640.95	2464	1.00	0.55	1558	1687	0.58	0.77
G	1.00	7.39	3640.95	2240	1.00	0.52	1071	995	0.59	0.50
								Crtical Arm:	**C**	**F**
								RFC:	**0.83**	**0.77**
									AM	**PM**

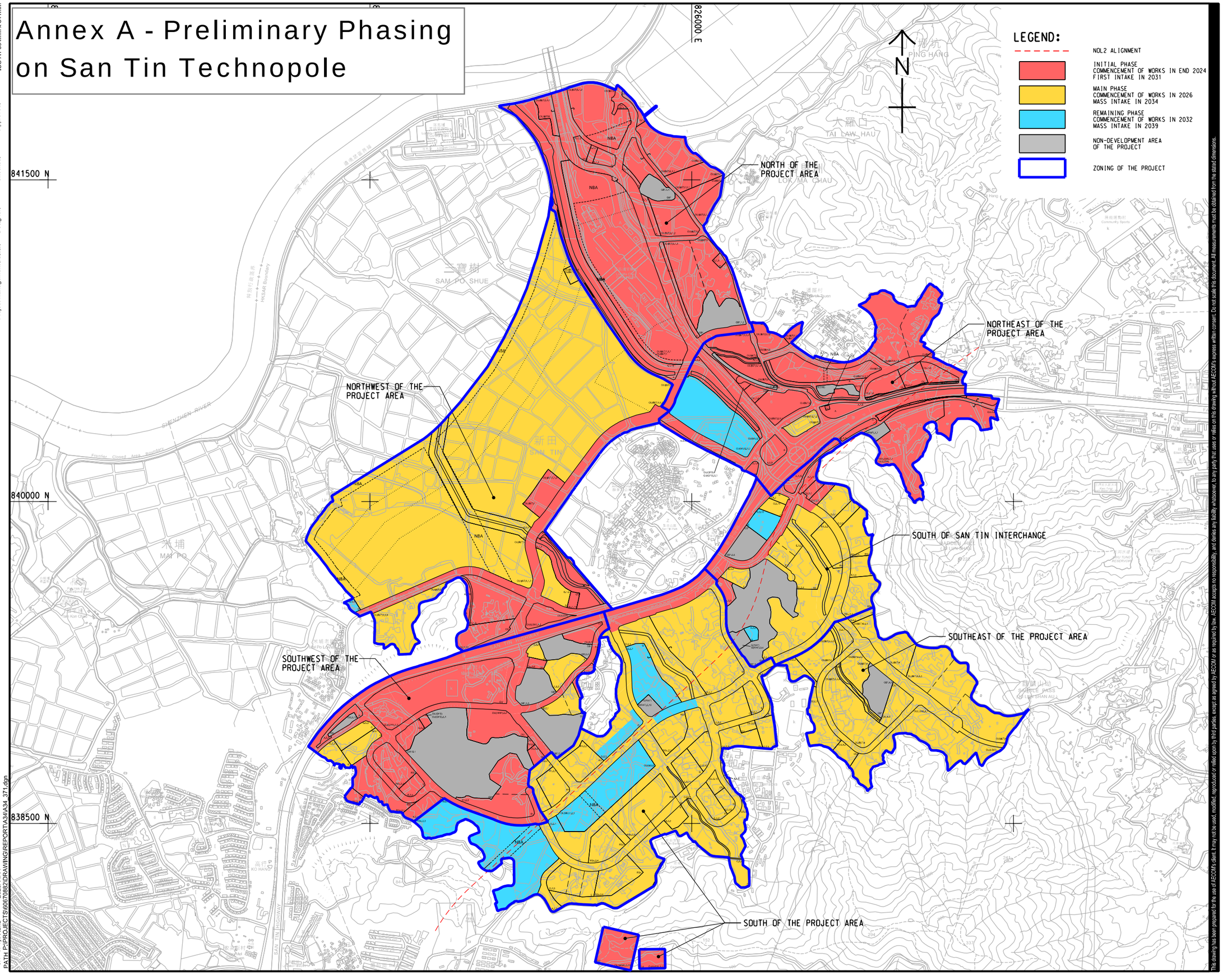
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

ANNEX B –

PRELIMINARY PHASING ON SAN TIN TECHNOPOLE

Annex A - Preliminary Phasing on San Tin Technopole



ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Plot File by: RenS
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_371.dgn
2023/11/14

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AECOM

PROJECT
項目

FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

規劃署
Planning Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
階段

SCALE 比例
A3 1 : 16000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60670882

AGREEMENT NO. 協議編號
CE 20/2021

SHEET TITLE
圖紙名稱

PRELIMINARY CONSTRUCTION AND POPULATION INTAKE SCHEDULE

SHEET NUMBER
圖紙編號

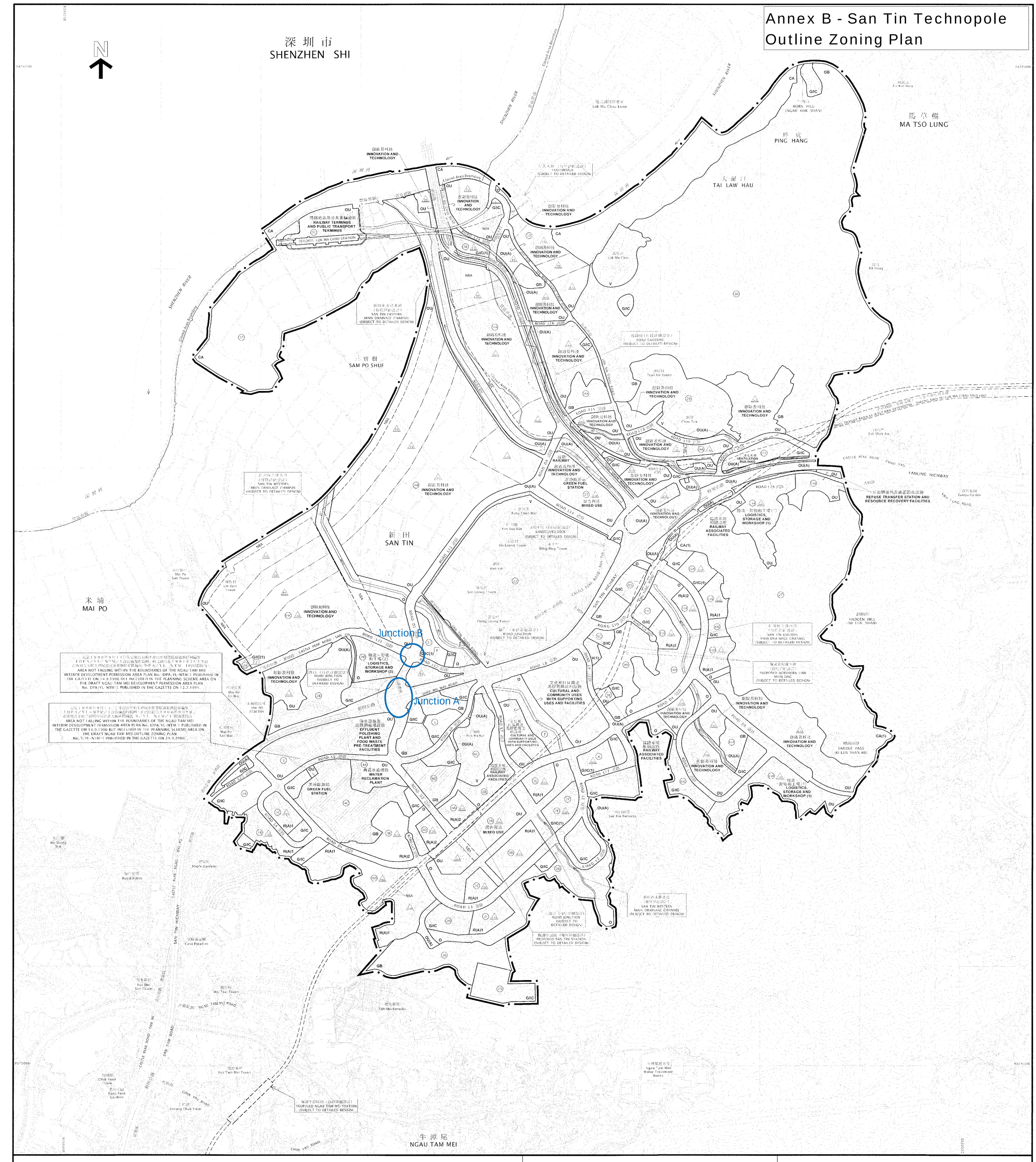
60670882/A34/APPENDIX 2.1

ANNEX C –

SAN TIN TECHNOPOLE –

OUTLINE ZONING PLAN

Annex B - San Tin Technopole Outline Zoning Plan



圖例 NOTATION

ZONES 地帶

RESIDENTIAL (GROUP A)	R(A)	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	V	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	G/IC	政府、機構或社區
OPEN SPACE	O	休憩用地
OTHER SPECIFIED USES	OU	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	OU(A)	其他指定用途（美化市容地帶）
GREEN BELT	GB	綠化地帶
CONSERVATION AREA	CA	自然保育區

COMMUNICATIONS 交通

RAILWAY AND STATION	鐵路及車站
RAILWAY AND STATION (UNDERGROUND)	鐵路及車站（地下）
RAILWAY AND STATION (ELEVATED)	鐵路及車站（高架）
MAJOR ROAD AND JUNCTION	主要道路及路口
ELEVATED ROAD	高架道路

MISCELLANEOUS 其他

BOUNDARY OF PLANNING SCHEME	規劃範圍界線
PLANNING AREA NUMBER	規劃區編號
BUILDING HEIGHT CONTROL ZONE BOUNDARY	建築物高度管制區界線
MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM)	最高建築物高度（在主水平基準上若干米）
MAXIMUM BUILDING HEIGHT (IN NUMBER OF STOREYS)	最高建築物高度（樓層數目）
NON-BUILDING AREA	非建築用地

土地用途及面積一覽表 SCHEDULE OF USES AND AREAS

USES	大約面積及百分率 APPROXIMATE AREA & % 公頃 HECTARES	% 百分率	用途
RESIDENTIAL (GROUP A)	44.78	4.46	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	78.46	7.82	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	56.52	5.63	政府、機構或社區
OPEN SPACE	55.88	5.57	休憩用地
OTHER SPECIFIED USES	284.63	28.35	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	28.61	2.85	其他指定用途（美化市容地帶）
GREEN BELT	207.29	20.65	綠化地帶
CONSERVATION AREA	139.36	13.88	自然保育區
MAJOR ROAD ETC.	108.45	10.79	主要道路等
TOTAL PLANNING SCHEME AREA	1004.00	100.00	規劃範圍總面積

夾附的《註釋》屬這份圖則的一部分，
THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2024年3月8日 按照城市規劃條例第5條展示的草圖
DRAFT PLAN EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 8 MARCH 2024

C K YIP 葉子季
SECRETARY 城市規劃委員會秘書
TOWN PLANNING BOARD

香港城市規劃委員會依據城市規劃條例擬備的新田科技城分區計劃大綱圖
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD
SAN TIN TECHNOPOLE - OUTLINE ZONING PLAN

SCALE 1:7500 比例尺

0 METRES 200 米 400 600 800 1,000 METRES

規劃署遵照城市規劃委員會指示擬備
PREPARED BY THE PLANNING DEPARTMENT UNDER THE DIRECTION OF THE TOWN PLANNING BOARD

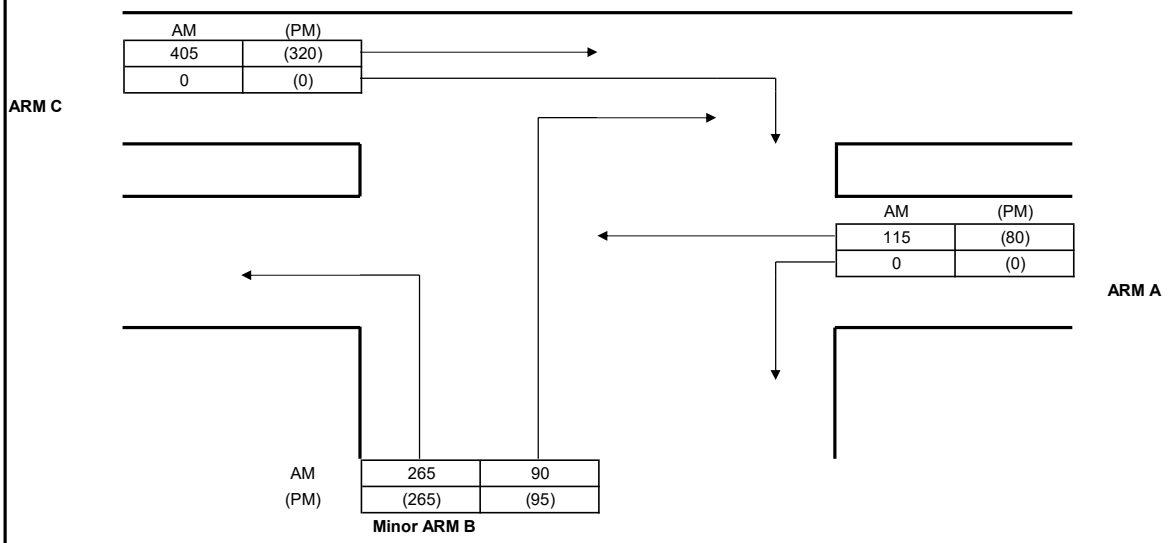
圖則編號 PLAN No. S/STT/1

ANNEX D –
DETAIL OF JUNCTION CALCULATION SHEETS (SENSITIVITY TEST)

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		405	320
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		115	80
	q(b-a)		90	95
	q(b-c)		265	265
	f		0.75	0.74
		Factor		
CAPACITIES	Q(b-a)	1	634	663
	Q(b-c)	1	933	946
	Q(c-b)	1	418	424
	Q(b-ac)	1	833	850
RFC's	b-a		0.142	0.143
	b-c		0.284	0.280
	c-b		0.000	0.000
	b-ac		0.426	0.424
Worst RFC			**0.426**	**0.424**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

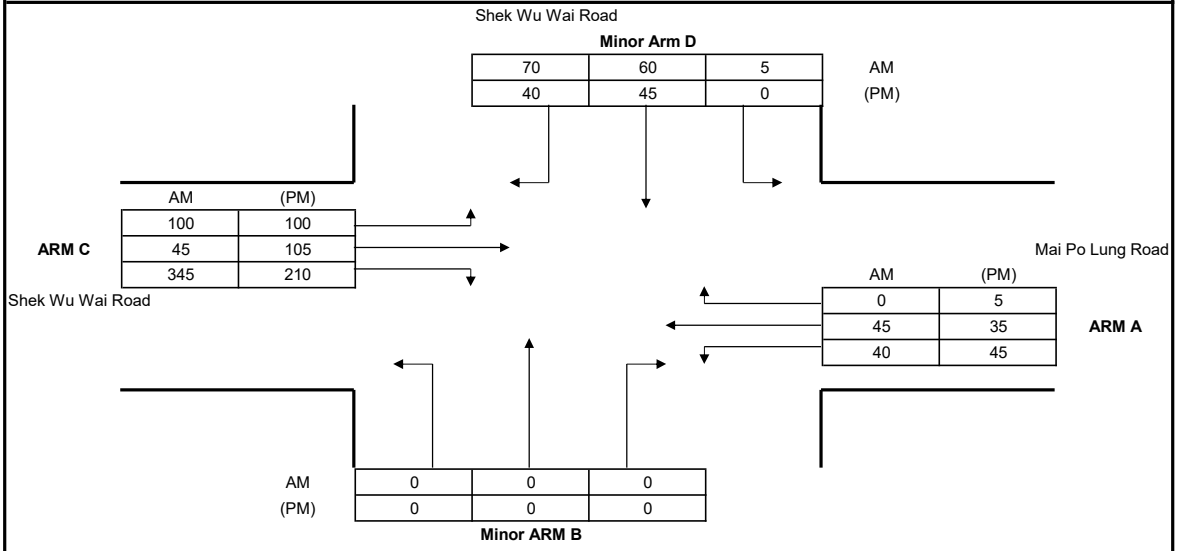
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

- WSW 12A\20241224 WSW_12A_Calculation_Sensitivity_STT\Junction Calculation\[J01_1_P_Shek_Wu_Wai_Road-San_Tin_Highway_Slip_Road.xlsm]2034R

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

		Arm B		Arm D	
ANALYSIS		AM PEAK	(PM) PEAK	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	105	q(a-c) 45	35
	q(c-b)	345	210	q(a-d) 0	5
	q(a-b)	40	45	q(c-d) 100	100
	q(a-c)	115	75	q(c-a) 45	105
	q(b-a)	0	0	q(d-c) 130	85
	q(b-c)	0	0	q(d-a) 5	0
	f	0.00	0.00	f 0.04	0.00
CAPACITIES	Q(b-a)	252	277	Q(d-c) 596	582
	Q(b-c)	419	424	Q(d-a) 772	757
	Q(c-b)	648	656	Q(a-d) 632	619
	Q(b-ac)	252	277	Q(d-ca) 601	582
	Q(c-a)	842	1224	Q(a-c) 1800	1785
RFC's	b-a	0.000	0.000	d-c 0.218	0.146
	b-c	0.000	0.000	d-a 0.006	0.000
	c-b	0.532	0.320	a-d 0.000	0.008
	b-ac	0.000	0.000	d-ca 0.224	0.146
	c-a	0.059	0.086	a-c 0.025	0.020

	AM	**(PM)**
Worst RFC	**0.532**	**0.320**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

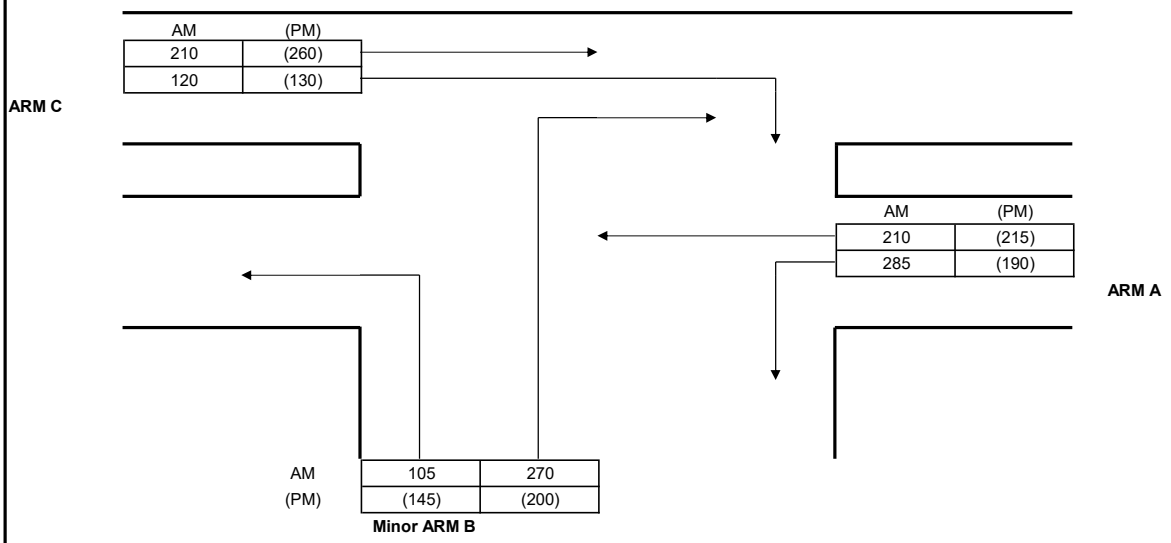
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

'roject\000 - WSW 12A\20241224 WSW_12A_Calculation_Sensitivity_STT\Junction Calculation\[J01_2_P-Shek_Wu_Wai_Road-Mai_Po_Lung_Road.xlsm]2034R

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.85
	Vl(b-a)	30		E	0.92
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		210	260
	q(c-b)		120	130
	q(a-b)		285	190
	q(a-c)		210	215
	q(b-a)		270	200
	q(b-c)		105	145
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	382	379
	Q(b-c)	1	604	612
	Q(c-b)	1	554	577
	Q(b-ac)	1	426	452
RFC's	b-a		0.707	0.528
	b-c		0.174	0.237
	c-b		0.217	0.225
	b-ac		0.880	0.763
Worst RFC			**0.880**	**0.763**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

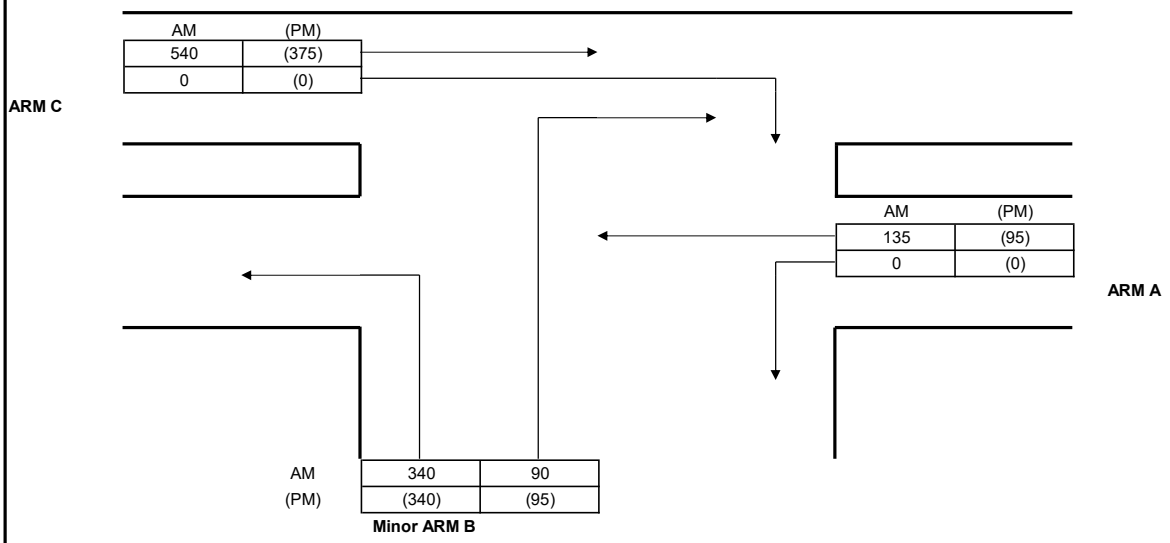
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		540	375
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		135	95
	q(b-a)		90	95
	q(b-c)		340	340
	f		0.79	0.78
		Factor		
CAPACITIES	Q(b-a)	1	599	647
	Q(b-c)	1	926	940
	Q(c-b)	1	415	421
	Q(b-ac)	1	831	856
RFC's	b-a		0.150	0.147
	b-c		0.367	0.362
	c-b		0.000	0.000
	b-ac		0.517	0.508
Worst RFC			**0.517**	**0.508**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

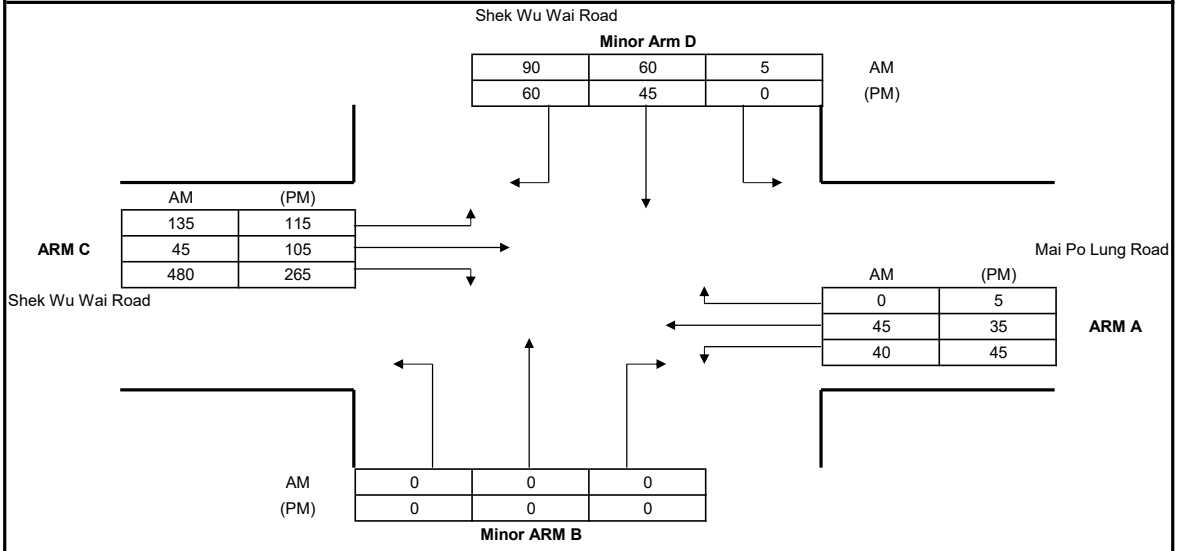
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	105	q(a-c)	45	35
	q(c-b)	480	265	q(a-d)	0	5
	q(a-b)	40	45	q(c-d)	135	115
	q(a-c)	135	95	q(c-a)	45	105
	q(b-a)	0	0	q(d-c)	150	105
	q(b-c)	0	0	q(d-a)	5	0
	f	0.00	0.00	f	0.03	0.00
CAPACITIES	Q(b-a)	226	265	Q(d-c)	593	581
	Q(b-c)	416	421	Q(d-a)	769	756
	Q(c-b)	644	652	Q(a-d)	625	616
	Q(b-ac)	226	265	Q(d-ca)	598	581
	Q(c-a)	458	1068	Q(a-c)	1800	1785
RFC's	b-a	0.000	0.000	d-c	0.253	0.181
	b-c	0.000	0.000	d-a	0.007	0.000
	c-b	0.745	0.406	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.259	0.181
	c-a	0.109	0.098	a-c	0.025	0.020

	AM	(PM)
Worst RFC	**0.745**	**0.406**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

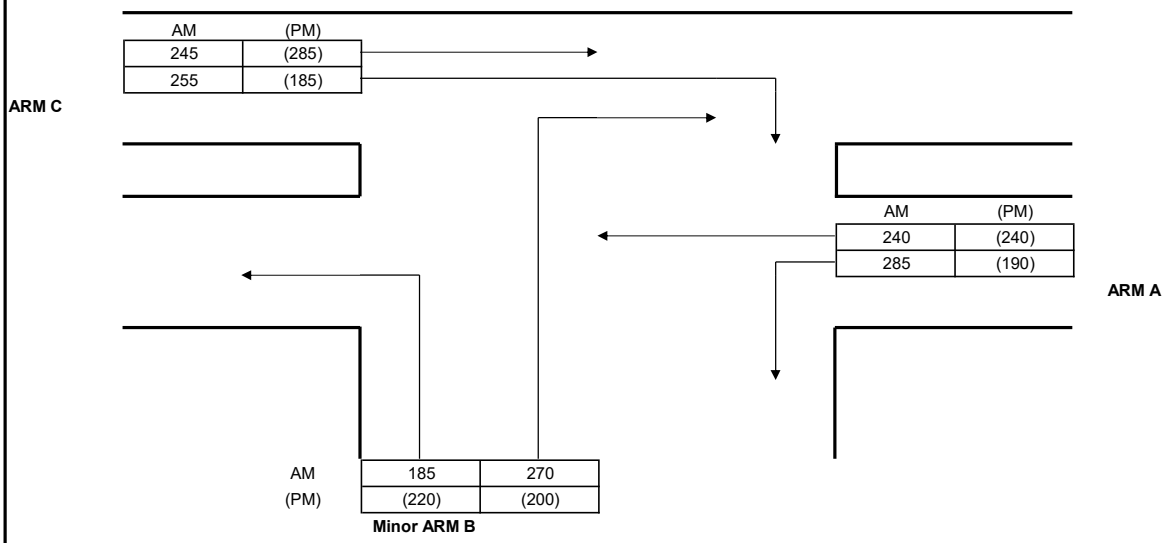
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

'roject\000 - WSW 12A\20241224 WSW_12A_Calculation_Sensitivity_STT\Junction Calculation\[J01_2_P-Shek_Wu_Wai_Road-Mai_Po_Lung_Road.xlsm]2034D

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.85
	Vl(b-a)	30		E	0.92
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		245	285
	q(c-b)		255	185
	q(a-b)		285	190
	q(a-c)		240	240
	q(b-a)		270	200
	q(b-c)		185	220
	f		0.41	0.52
		Factor		
CAPACITIES	Q(b-a)	1	323	350
	Q(b-c)	1	596	606
	Q(c-b)	1	546	570
	Q(b-ac)	1	397	449
RFC's	b-a		0.836	0.571
	b-c		0.310	0.363
	c-b		0.467	0.325
	b-ac		1.146	0.935
Worst RFC			**1.146**	**0.935**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1) (With Improvement)

Roundabout Capacity Calculation

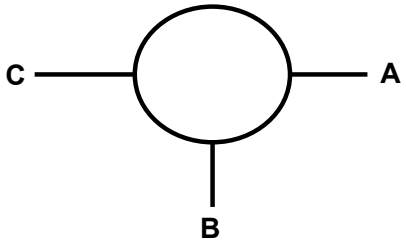
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement in Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	5	285	210	130	500
B	270	5	105	220	380
C	210	120	5	280	335

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	5	190	215	140	410
B	200	5	145	225	350
C	260	130	5	210	395

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1226	1221	0.41	0.34
B	1.10	4.41	0.02	1335	1.49	0.59	1331	1328	0.29	0.26
C	1.01	3.94	0.02	1194	1.49	0.56	1048	1088	0.32	0.36

Crtical Arm:	**A**	**C**
RFC:	**0.41**	**0.36**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

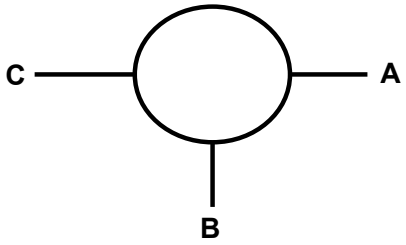
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Under Improvement Sensitivity in Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	5	285	240	265	530
B	270	5	185	250	460
C	245	255	5	280	505

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	5	190	240	195	435
B	200	5	220	250	425
C	285	185	5	210	475

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1149	1189	0.46	0.37
B	1.10	4.41	0.02	1335	1.49	0.59	1311	1311	0.35	0.32
C	1.01	3.94	0.02	1194	1.49	0.56	1048	1088	0.48	0.44

Crtical Arm:	**C**	**C**
RFC:	**0.48**	**0.44**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 2) (With Improvement)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

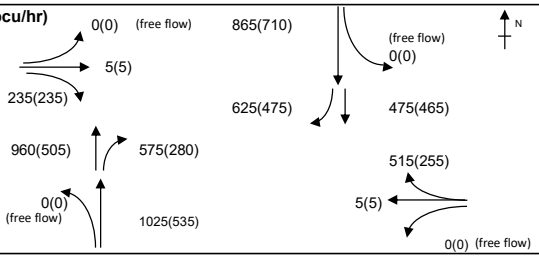
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference (Sensitivity Test 2) Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin Highway	→	A	1	3.650		12.5		96%	96%	1775	1775	118	0.066	0.066	118	0.066	0.066
Slip Road (EB)	→	A	1	3.650		10				1845	1845	122	0.066		122	0.066	
San Tin Highway	↑	B	1,2	3.900		10				1865	1865	265	0.142		132	0.071	
Slip Road (WB)	↑	B	1,2	3.900		12.5		98%	96%	1795	1800	255	0.142		128	0.071	
Shek Wu Wai	↓	D	4	3.500						1965	1965	372	0.189		316	0.161	
Road (SB)	↓	D	4	3.500		15		72%	54%	1965	2000	372	0.189		322	0.161	0.161
	→	D	4	3.500		12.5				1880	1880	356	0.189	0.189	302	0.161	
Shek Wu Wai	↑	C	2,3	3.500						1965	1965	510	0.260		260	0.132	
Road (NB)	↑	C	2,3	3.500		15		16%	11%	2070	2080	537	0.259		276	0.133	0.133
	→	C	2,3	3.500		12.5				1880	1880	488	0.260	0.260	249	0.132	
Shek Wu Wai	↓	F	4	3.500						2105	2105	295	0.140		242	0.115	
Road (SB)	↓	F	4	3.500						2105	2105	295	0.140		242	0.115	
	↓	F	4	3.500						1965	1965	275	0.140		226	0.115	
Shek Wu Wai	↑	E	3	3.500						1965	1965	326	0.166		170	0.087	
Road (NB)	↑	E	3	3.500						2105	2105	350	0.166		183	0.087	
	↑	E	3	3.500						2105	2105	349	0.166		182	0.086	

Notes:

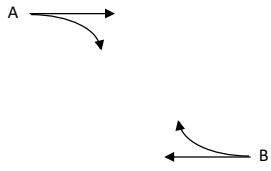
Flow: (pcu/hr)



Group	B,E,D	A,C,D	Group	B,E,D	A,C,D
y	0.498	0.515	y	0.319	0.360
L (sec)	16	13	L (sec)	16	13
C (sec)	120	120	C (sec)	120	120
y pract.	0.780	0.803	y pract.	0.780	0.803
R.C. (%)	57%	56%	R.C. (%)	144%	123%

Stage / Phase Diagrams

1.



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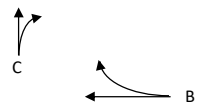

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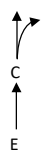

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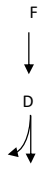


5.

I/G= 5		I/G= 6		I/G=		I/G= 5	
I/G= 5		I/G= 6		I/G=		I/G= 5	

I/G=	
I/G=	

Date: JAN, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

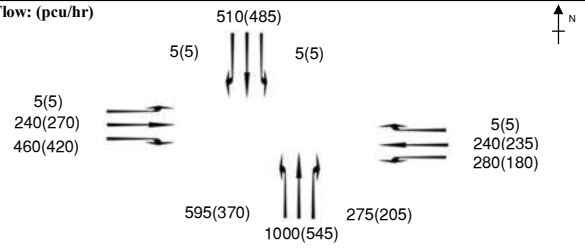
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference (Sensitivity Test 2) Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11																	
EB		A	1	3.700	15			2%	2%	1980	1980	243	0.123	0.123	238	0.120	
		A	1	3.650		12		99%	84%	1885	1920	231	0.123		231	0.120	0.120
		A	1	3.650		12				1885	1885	231	0.123		226	0.120	
Shek Wu Wai Road																	
NB		B	2	3.650	15					1800	1800	427	0.237		257	0.143	
		B	2	3.350	15			35%	39%	2020	2010	479	0.237		287	0.143	
		B	2	3.350						2090	2090	496	0.237	0.237	299	0.143	0.143
		B	2	3.650		12		59%	74%	1975	1940	468	0.237		277	0.143	
Road D3																	
SB		D	4	3.000	15			4%	4%	1905	1905	123	0.065		117	0.061	
		D	4	3.000						2055	2055	132	0.064		126	0.061	
		D	4	3.000						2055	2055	133	0.065	0.065	126	0.061	
		D	4	3.000		12		4%	4%	2045	2045	132	0.065		126	0.062	0.062
Road L12																	
WB		C	3	4.000		12		2%	2%	2150	2150	245	0.114		225	0.105	0.105
		C	3	4.000	18			100%	92%	1860	1870	280	0.151	0.151	195	0.104	

Notes:

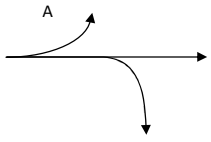
Flow: (pcu/hr)



Group		A,B,C,D	Group		A,B,C,D
y		0.575	y		0.430
L (sec)		17	L (sec)		17
C (sec)		120	C (sec)		120
y pract.		0.773	y pract.		0.773
R.C. (%)		34%	R.C. (%)		80%

Stage / Phase Diagrams

1.



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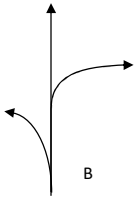

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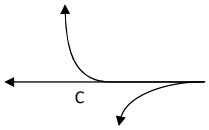

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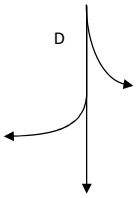


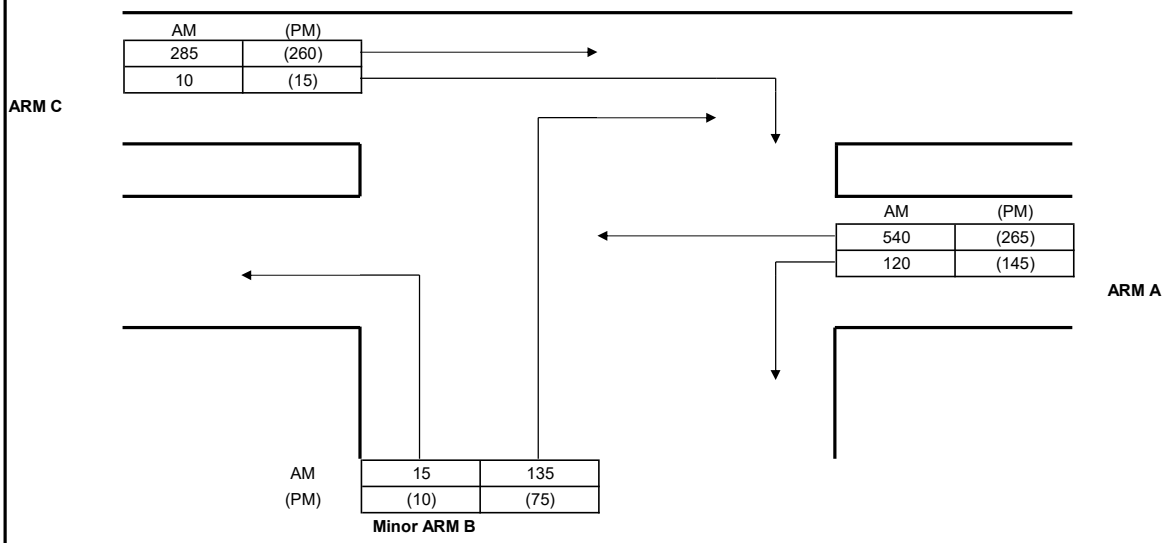
5.

I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=			
I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=			

Date: JAN, 2025 **Junction:** Shek Wu Wai Road / Road D3 / Road L B

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		285	260
	q(c-b)		10	15
	q(a-b)		120	145
	q(a-c)		540	265
	q(b-a)		135	75
	q(b-c)		15	10
	f		0.10	0.12
		Factor		
CAPACITIES	Q(b-a)	1	362	423
	Q(b-c)	1	532	593
	Q(c-b)	1	560	624
	Q(b-ac)	1	374	438
RFC's	b-a		0.373	0.177
	b-c		0.028	0.017
	c-b		0.018	0.024
	b-ac		0.401	0.194
Worst RFC			**0.401**	**0.194**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

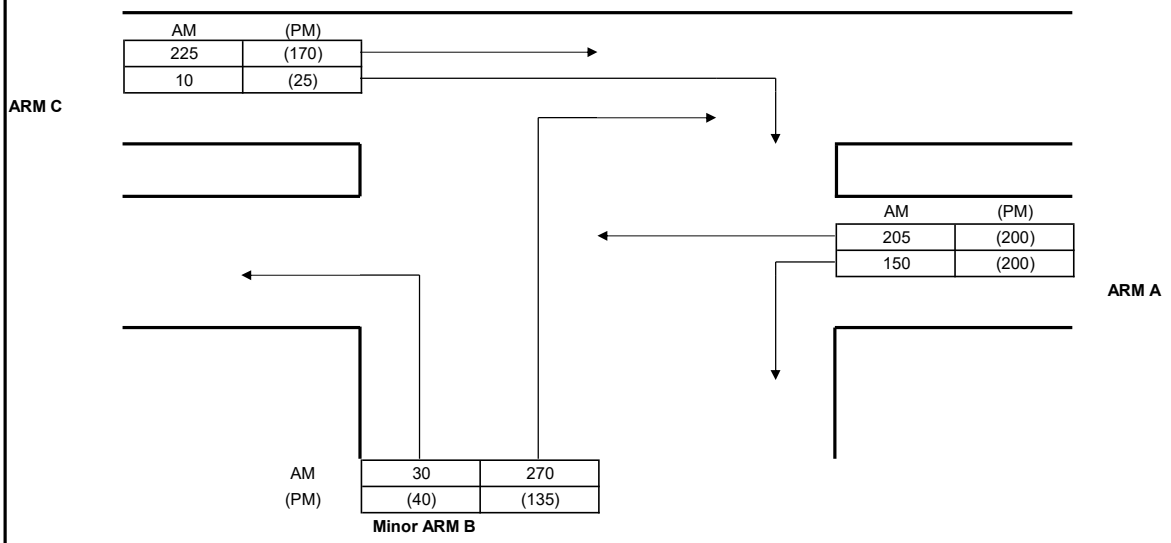
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		225	170
	q(c-b)		10	25
	q(a-b)		150	200
	q(a-c)		205	200
	q(b-a)		270	135
	q(b-c)		30	40
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	450	450
	Q(b-c)	1	638	634
	Q(c-b)	1	558	548
	Q(b-ac)	1	464	482
RFC's	b-a		0.600	0.300
	b-c		0.047	0.063
	c-b		0.018	0.046
	b-ac		0.647	0.363
Worst RFC			**0.647**	**0.363**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

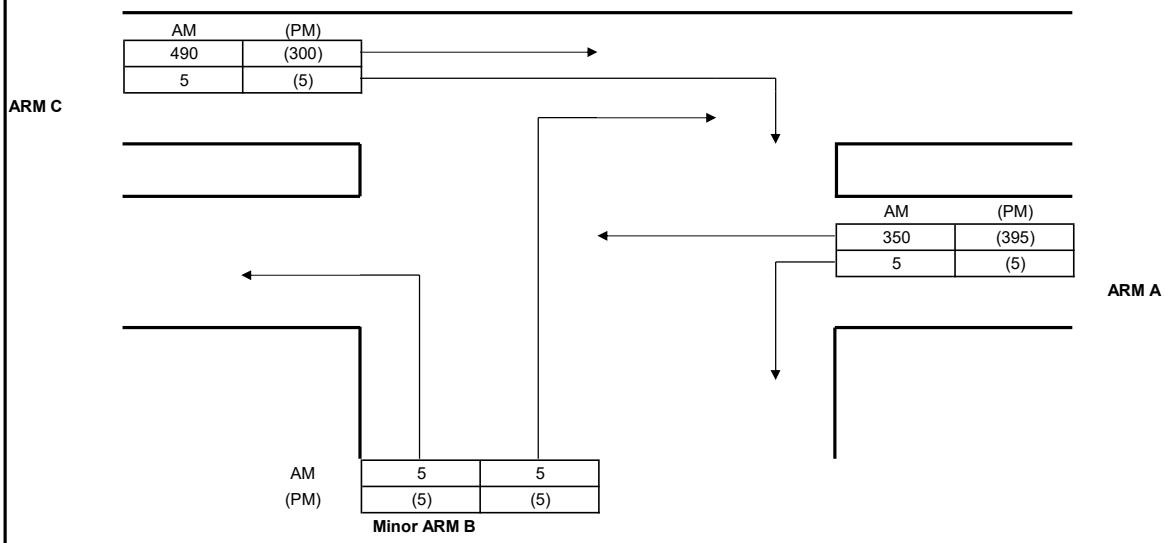
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		490	300
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		350	395
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	361	378
	Q(b-c)	1	570	559
	Q(c-b)	1	603	592
	Q(b-ac)	1	442	451
RFC's	b-a		0.014	0.013
	b-c		0.009	0.009
	c-b		0.008	0.008
	b-ac		0.023	0.022
Worst RFC			**0.023**	**0.022**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

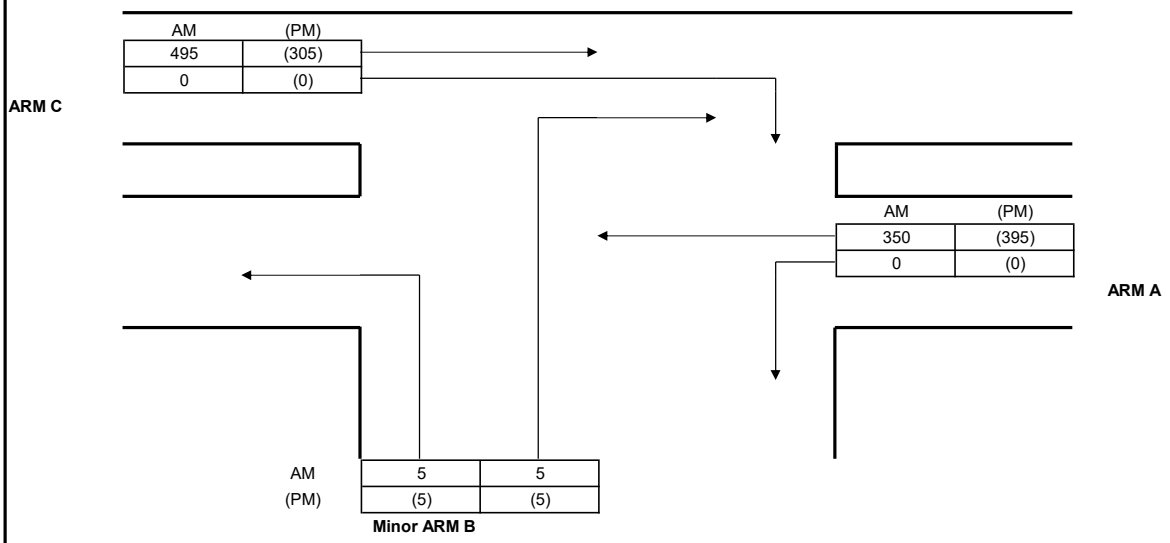
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	305
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		350	395
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	309	324
	Q(b-c)	1	488	479
	Q(c-b)	1	379	371
	Q(b-ac)	1	379	386
RFC's	b-a		0.016	0.015
	b-c		0.010	0.010
	c-b		0.000	0.000
	b-ac		0.026	0.026
Worst RFC			**0.026**	**0.026**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

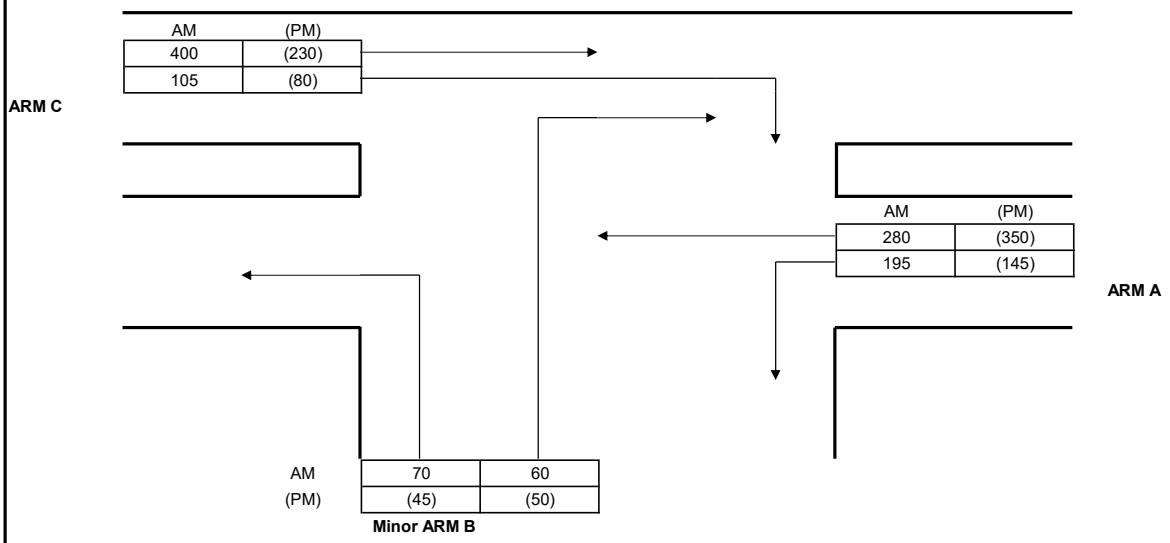
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		400	230
	q(c-b)		105	80
	q(a-b)		195	145
	q(a-c)		280	350
	q(b-a)		60	50
	q(b-c)		70	45
	f		0.54	0.47
		Factor		
CAPACITIES	Q(b-a)	1	359	381
	Q(b-c)	1	597	584
	Q(c-b)	1	567	562
	Q(b-ac)	1	457	456
RFC's	b-a		0.167	0.131
	b-c		0.117	0.077
	c-b		0.185	0.142
	b-ac		0.284	0.208
Worst RFC			**0.284**	**0.208**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

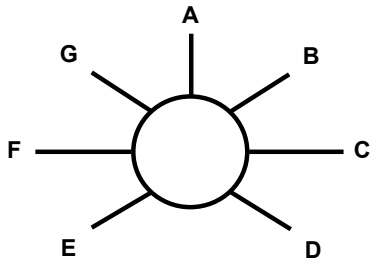
Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement in Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Fairview Park Boulevard
ARM B: Castle Peak Rd E
ARM C: NTCR E
ARM D: San Tam Rd E
ARM E: San Tam Rd W
ARM F: NTCR W
ARM G: Castle Peak Rd W



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	14.00	32	25	142	35	0.35
B	5.50	13.00	30	22	142	35	0.40
C	5.50	11.20	60	23	142	30	0.15
D	6.75	11.70	13	25	142	25	0.61
E	6.75	11.70	27	22	142	35	0.29
F	6.50	11.00	15	27	142	40	0.48
G	5.50	10.60	25	22	142	30	0.33

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	295	45	175	625	20	2615	1235	670
B	15	30	70	5	165	305	5	3210	595	640
C	160	90	10	0	530	20	280	2455	1090	1350
D	40	10	45	60	215	225	45	3120	640	425
E	65	130	535	105	5	135	5	2460	980	1300
F	285	265	20	165	110	35	0	1740	880	1700
G	35	110	375	45	100	355	15	2250	1035	370

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	170	40	155	320	25	2005	795	1045
B	20	30	55	20	170	140	15	2215	450	585
C	195	75	20	0	550	5	225	1735	1070	930
D	25	25	45	60	155	200	40	2425	550	380
E	55	65	365	70	10	75	5	1770	645	1205
F	650	285	30	135	115	25	0	1440	1240	975
G	40	80	245	55	50	210	10	2360	690	320

CALCULATIONS

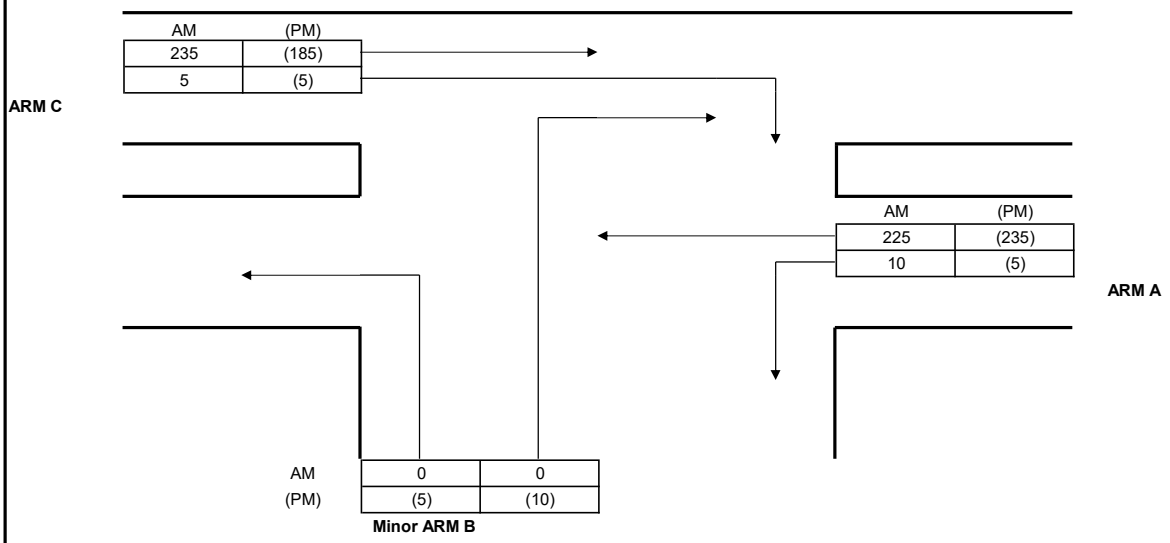
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	11.12	3640.95	3369	1.00	0.68	1586	1996	0.78	0.40
B	0.99	9.67	3640.95	2929	1.00	0.62	939	1544	0.63	0.29
C	1.01	9.87	3640.95	2991	1.00	0.62	1467	1919	0.74	0.56
D	1.03	8.98	3640.95	2721	1.00	0.59	913	1332	0.70	0.41
E	0.99	9.87	3640.95	2991	1.00	0.62	1435	1861	0.68	0.35
F	0.98	8.80	3640.95	2665	1.00	0.58	1620	1790	0.54	0.69
G	1.00	8.59	3640.95	2601	1.00	0.57	1323	1260	0.78	0.55
								Crtical Arm:	**A**	**F**
								RFC:	**0.78**	**0.69**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		235	185
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		225	235
	q(b-a)		0	10
	q(b-c)		0	5
	f		0.00	0.33
		Factor		
CAPACITIES	Q(b-a)	1	483	488
	Q(b-c)	1	676	674
	Q(c-b)	1	674	673
	Q(b-ac)	1	483	537
RFC's	b-a		0.000	0.020
	b-c		0.000	0.007
	c-b		0.007	0.007
	b-ac		0.000	0.028
Worst RFC			**0.007**	**0.028**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

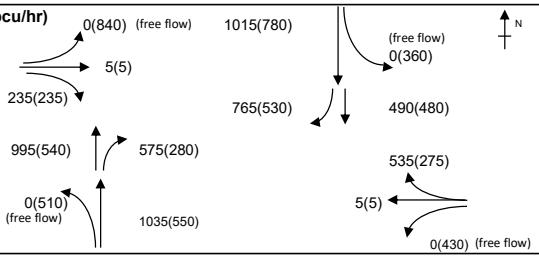
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design (Sensitivity Test 2) Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin Highway		A	1	3.650		12.5		96%	96%	1775	1775	118	0.066	0.066	118	0.066	0.066
Slip Road (EB)		A	1	3.650		10				1845	1845	122	0.066		122	0.066	
San Tin Highway		B	1,2	3.900		10				1865	1865	275	0.147		143	0.077	
Slip Road (WB)		B	1,2	3.900		12.5		98%	96%	1795	1795	265	0.148		137	0.076	
Shek Wu Wai		D	4	3.500						1965	1965	426	0.217		340	0.173	
Road (SB)		D	4	3.500		15		85%	59%	1940	1985	421	0.217		344	0.173	
		D	4	3.500		12.5				1880	1880	408	0.217	0.217	326	0.173	0.173
Shek Wu Wai		C	2,3	3.500						1965	1965	521	0.265		271	0.138	
Road (NB)		C	2,3	3.500		15		14%	7%	2075	2090	551	0.266	0.266	289	0.138	
		C	2,3	3.500		12.5				1880	1880	498	0.265		260	0.138	0.138
Shek Wu Wai		F	4	3.500						2105	2105	346	0.164		266	0.126	
Road (SB)		F	4	3.500						2105	2105	346	0.164		266	0.126	
		F	4	3.500						1965	1965	323	0.164		248	0.126	
Shek Wu Wai		E	3	3.500						1965	1965	329	0.167		175	0.089	
Road (NB)		E	3	3.500						2105	2105	353	0.168		188	0.089	
		E	3	3.500						2105	2105	353	0.168		187	0.089	

Notes:

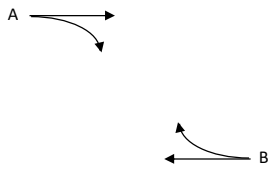
Flow: (pcu/hr)



Group	B,E,D	A,C,D	Group	B,E,D	A,C,D
y	0.532	0.549	y	0.339	0.378
L (sec)	16	13	L (sec)	16	13
C (sec)	120	120	C (sec)	120	120
y pract.	0.780	0.803	y pract.	0.780	0.803
R.C. (%)	47%	46%	R.C. (%)	130%	112%

Stage / Phase Diagrams

1.



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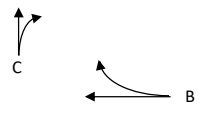

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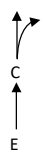


4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 5	
I/G= 5		I/G= 6		I/G=		I/G= 5	

I/G=	
I/G=	

Date: JAN, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

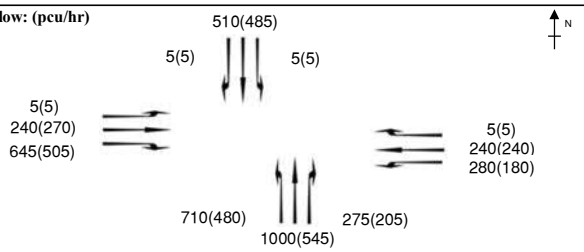
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design (Sensitivity Test 2) Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11																	
EB		A	1	3.700	15			2%	2%	1980	1980	245	0.124		268	0.135	
		A	1	3.650		12		100%	97%	1885	1890	322	0.171		257	0.136	0.136
		A	1	3.650		12				1885	1885	323	0.171	0.171	255	0.135	
Shek Wu Wai Road																	
NB		B	2	3.650	15					1800	1800	454	0.252		283	0.157	
		B	2	3.350	15			51%	64%	1990	1965	502	0.252		310	0.158	0.158
		B	2	3.350						2090	2090	528	0.253	0.253	329	0.157	
		B	2	3.650		12		55%	67%	1985	1955	501	0.252		308	0.158	
Road D3																	
SB		D	4	3.000	15			4%	4%	1905	1905	123	0.065		117	0.061	
		D	4	3.000						2055	2055	132	0.064		126	0.061	
		D	4	3.000						2055	2055	133	0.065	0.065	126	0.061	
		D	4	3.000		12		4%	4%	2045	2045	132	0.065		126	0.062	0.062
Road L12																	
WB		C	3	4.000		12		2%	2%	2150	2150	245	0.114		227	0.106	
		C	3	4.000	18			100%	91%	1860	1875	280	0.151	0.151	198	0.106	0.106

Notes:

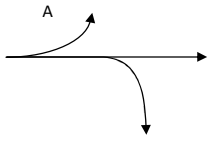
Flow: (pcu/hr)



Group		A,B,C,D	Group		A,B,C,D
y		0.639	y		0.461
L (sec)		17	L (sec)		17
C (sec)		120	C (sec)		120
y pract.		0.773	y pract.		0.773
R.C. (%)		21%	R.C. (%)		68%

Stage / Phase Diagrams

1.



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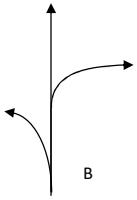

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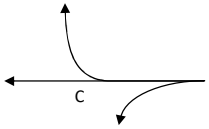

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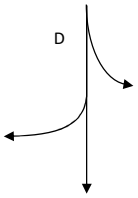


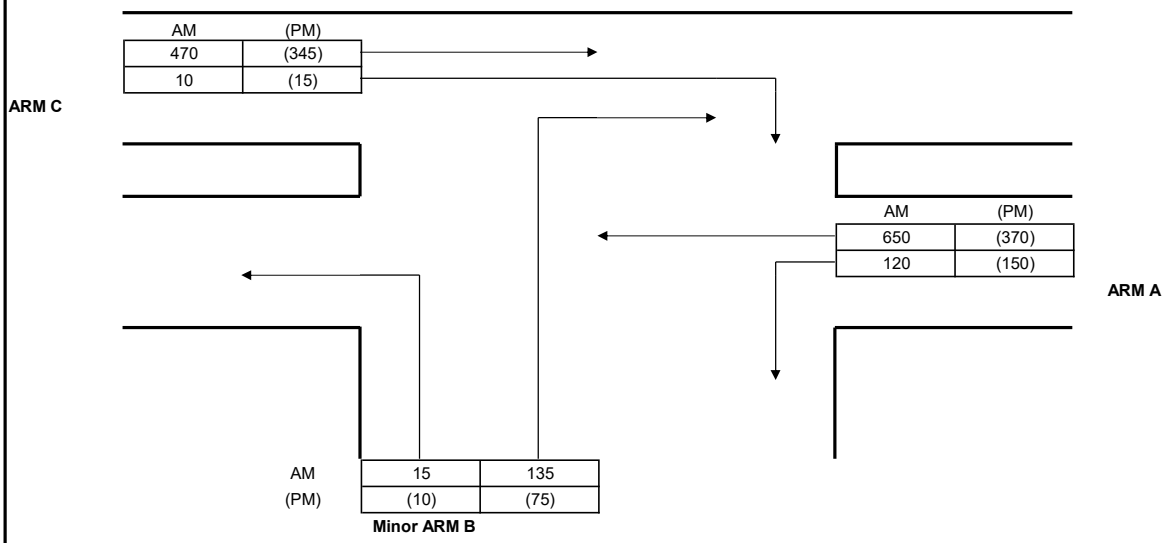
5.

I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=	
I/G= 5		I/G= 5		I/G= 5		I/G= 6		I/G=	

Date: JAN, 2025 **Junction:** Shek Wu Wai Road / Road D3 / Road L B

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		470	345
	q(c-b)		10	15
	q(a-b)		120	150
	q(a-c)		650	370
	q(b-a)		135	75
	q(b-c)		15	10
	f		0.10	0.12
		Factor		
CAPACITIES	Q(b-a)	1	312	387
	Q(b-c)	1	506	568
	Q(c-b)	1	532	596
	Q(b-ac)	1	324	402
RFC's	b-a		0.433	0.194
	b-c		0.030	0.018
	c-b		0.019	0.025
	b-ac		0.463	0.211
Worst RFC			**0.463**	**0.211**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

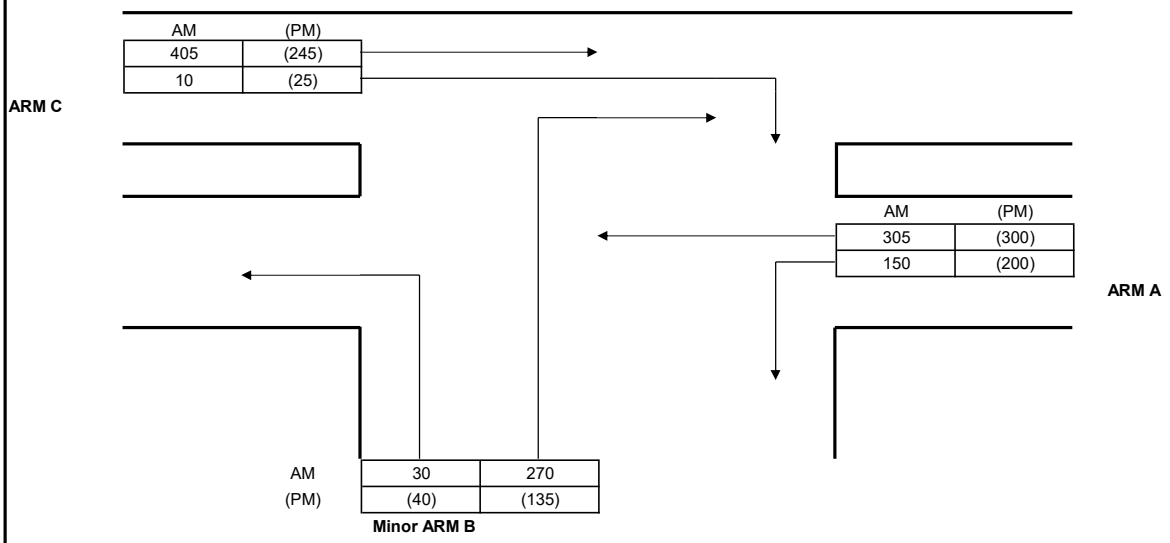
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		405	245
	q(c-b)		10	25
	q(a-b)		150	200
	q(a-c)		305	300
	q(b-a)		270	135
	q(b-c)		30	40
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	398	414
	Q(b-c)	1	612	608
	Q(c-b)	1	534	524
	Q(b-ac)	1	412	446
RFC's	b-a		0.678	0.326
	b-c		0.049	0.066
	c-b		0.019	0.048
	b-ac		0.728	0.392
Worst RFC			**0.728**	**0.392**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

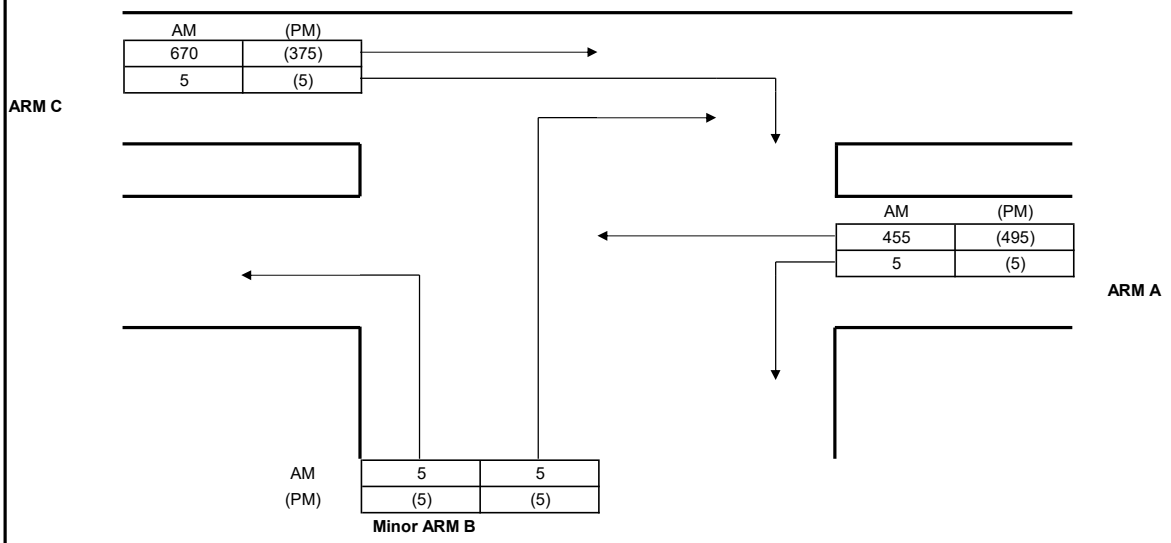
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		670	375
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		455	495
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	312	345
	Q(b-c)	1	544	535
	Q(c-b)	1	576	566
	Q(b-ac)	1	397	419
RFC's	b-a		0.016	0.014
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.025	0.024
Worst RFC			**0.025**	**0.024**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

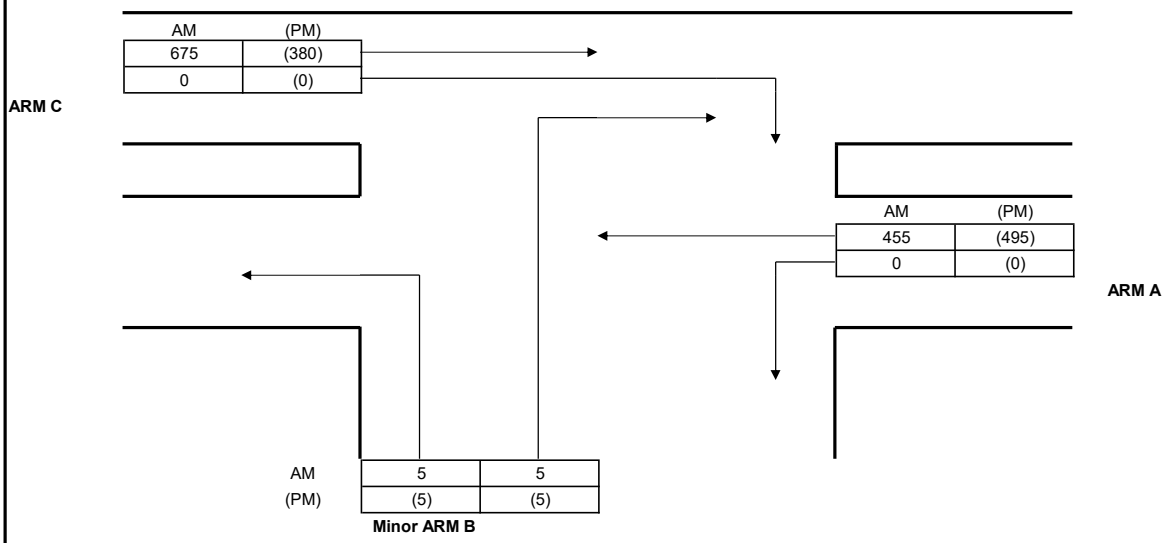
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		675	380
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		455	495
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	266	294
	Q(b-c)	1	466	457
	Q(c-b)	1	361	355
	Q(b-ac)	1	339	358
RFC's	b-a		0.019	0.017
	b-c		0.011	0.011
	c-b		0.000	0.000
	b-ac		0.029	0.028
Worst RFC			**0.029**	**0.028**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

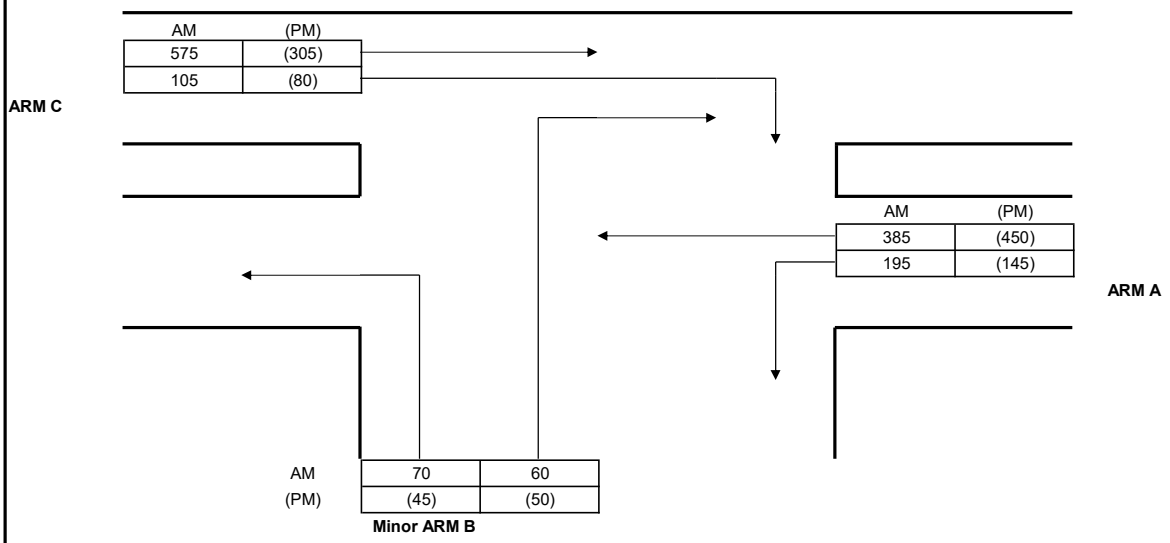
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		575	305
	q(c-b)		105	80
	q(a-b)		195	145
	q(a-c)		385	450
	q(b-a)		60	50
	q(b-c)		70	45
	f		0.54	0.47
		Factor		
CAPACITIES	Q(b-a)	1	308	346
	Q(b-c)	1	570	559
	Q(c-b)	1	540	536
	Q(b-ac)	1	410	422
RFC's	b-a		0.195	0.145
	b-c		0.123	0.081
	c-b		0.194	0.149
	b-ac		0.317	0.225
Worst RFC			**0.317**	**0.225**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

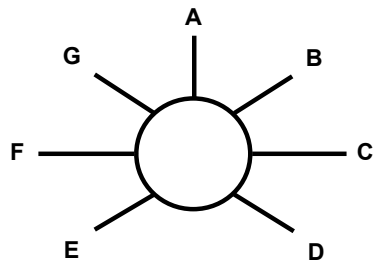
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design (Under Improvement in Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	14.00	32	25	142	35	0.35
B	5.50	13.00	30	22	142	35	0.40
C	5.50	11.20	60	23	142	30	0.15
D	6.75	11.70	13	25	142	25	0.61
E	6.75	11.70	27	22	142	35	0.29
F	6.50	11.00	15	27	142	40	0.48
G	5.50	10.60	25	22	142	30	0.33

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	70	5	295	45	175	625	20	2720	1235	670
B	15	30	70	5	165	485	5	3210	775	745
C	160	90	10	0	530	20	280	2635	1090	1350
D	40	10	45	60	215	225	45	3300	640	425
E	65	130	535	105	5	135	5	2640	980	1300
F	285	370	20	165	110	35	0	1740	985	1880
G	35	110	375	45	100	355	15	2355	1035	370

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	25	170	40	155	320	25	2105	795	1045
B	20	30	55	20	170	215	15	2215	525	685
C	195	75	20	0	550	5	225	1810	1070	930
D	25	25	45	60	155	200	40	2500	550	380
E	55	65	365	70	10	75	5	1845	645	1205
F	650	385	30	135	115	25	0	1440	1340	1050
G	40	80	245	55	50	210	10	2460	690	320

CALCULATIONS

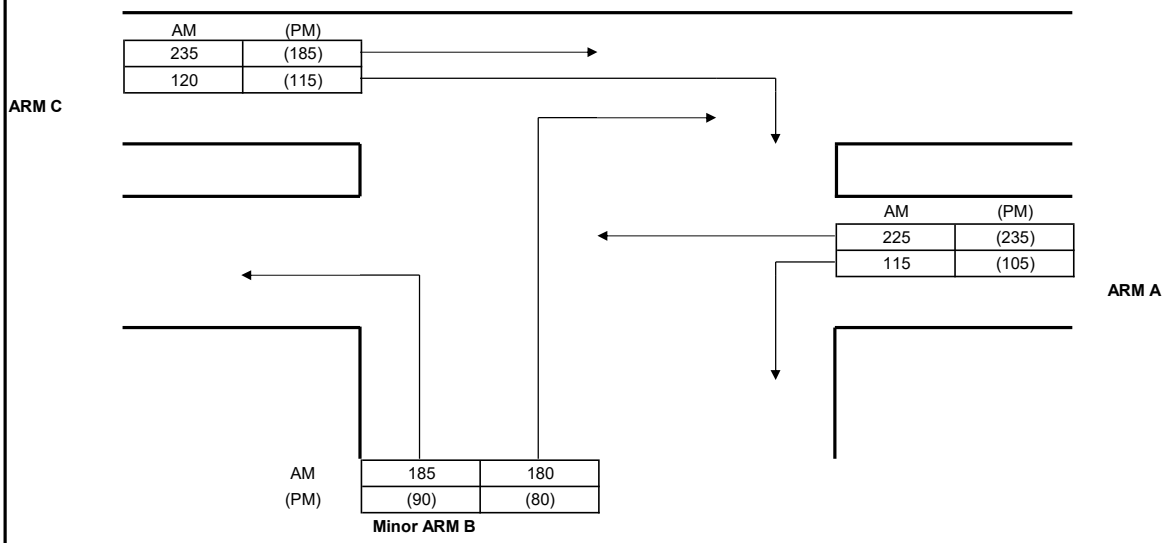
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	11.12	3640.95	3369	1.00	0.68	1516	1929	0.81	0.41
B	0.99	9.67	3640.95	2929	1.00	0.62	939	1544	0.83	0.34
C	1.01	9.87	3640.95	2991	1.00	0.62	1354	1872	0.81	0.57
D	1.03	8.98	3640.95	2721	1.00	0.59	805	1287	0.80	0.43
E	0.99	9.87	3640.95	2991	1.00	0.62	1324	1814	0.74	0.36
F	0.98	8.80	3640.95	2665	1.00	0.58	1620	1790	0.61	0.75
G	1.00	8.59	3640.95	2601	1.00	0.57	1263	1203	0.82	0.57
								Crtical Arm:	**B**	**F**
								RFC:	**0.83**	**0.75**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		235	185
	q(c-b)		120	115
	q(a-b)		115	105
	q(a-c)		225	235
	q(b-a)		180	80
	q(b-c)		185	90
	f		0.51	0.53
		Factor		
CAPACITIES	Q(b-a)	1	434	442
	Q(b-c)	1	665	664
	Q(c-b)	1	648	648
	Q(b-ac)	1	527	537
RFC's	b-a		0.415	0.181
	b-c		0.278	0.136
	c-b		0.185	0.177
	b-ac		0.693	0.317
Worst RFC			**0.693**	**0.317**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Appendix 10: Visual Impact Assessment

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment

16th January 2025

Prepared By:

SCENIC Landscape Studio Limited

Project Title	Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101
Report Title	**Visual Impact Assessment**

Revision	Date	Complied by:	Checked by:	Approved by:	Description
-	20240725	Anessa Wu	Winza Choi	Chris Foot	Draft to Client
A	20240809	Anessa Wu	Winza Choi	Chris Foot	Draft to Client
B	20250116	Various	Winza Choi	Chris Foot	Draft to Client

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7.0 Residual Impacts
8.0 Conclusion

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1.0 Introduction

1.1 SCENIC Landscape Studio Limited have been commissioned to undertake the Visual Impact Assessment (VIA) in support of a Section 12A application under the Town Planning Ordinance for a site located at Wo Shang Wai, Yuen Long. The application is submitted on behalf of the applicant, Profit Point Enterprises Limited who currently owns the site (hereafter referred to as "Application Site").

1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42.0 mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.3 The VIA has been prepared in accordance with Town Planning Board ("TPB") Guidelines No. 41 – Guidelines on Submission of Visual Impact Assessment for Planning Applications to the Town Planning Board ("TPB PG No. 41"). It assesses the source and magnitude of the proposed development on the existing visual character and amenity within the context of the site and its environs. The report concludes by making specific recommendations for alleviating any potential visual impact caused by the proposed development.

2.0 Existing Site Description

2.1 The Application Site including the Project Area and the proposed Wetland Restoration Area (WRA) is located on the southern fringe of the Deep Bay wetland, west of Mai Po San Tsuen and northwest of Castle Peak Road. Most of the Project Area is on land created from filling in the fishponds in the early 1990s, which has since undergone clearance as part of the development works in progress.

2.2 The site is roughly rectangular in shape on an east west axis and covers an area of approximately 207, 408 m^2 an has an existing elevation of around +4.8 to +4.9 mPD. It is bounded to the east, south and west by low-rise residential development at Royal Palms and Palm Springs. The northern boundary of the Project Area is contiguous with the boundary of the WCA, while the entire site lies within the WBA.

2.3 The future landscape and visual context is informed by the findings of Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Draft San Tin Technopole Outline Zoning Plan (S/STT/1) dated 8th March 2024.

3.0 Description of the Proposed Scheme

3.1 The Proposed Scheme comprises of low and medium-rise residential houses and blocks arranged on an east -west orientation. The proposed building heights (BH) include 3-storey semi-detached and detached houses with a BH of +20.30mPD; and a series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00mPD to +35.00mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00 mPD. The Proposed Scheme will also include three 1-2 story clubhouses located throughout the Application Site. The buildings are arranged with the 3 storey houses within the northern portion of the Application Site adjacent to the proposed WRA. Moving south the medium-rise blocks adopt a stepped height profile with the taller blocks located within the southern portion of the Application Site. The design of the medium-rise blocks also adopts stepped building height

profile on an east – west axis. The WRA is already completed with the objective of providing ecological mitigation and creating a buffer to the proposed Potential Area for Wetland and Fisheries Enhancement.

3.2 The proposed building disposition and orientation is designed to maximise the area of landscape for the enjoyment of the future residents while also providing a significant setback from the Application Site boundary to minimise the impacts on surrounding communities and their landscape setting; and preserving the ecological value of the area to the north of the Application Site.

4.0 Baseline Conditions

Visual Envelope

4.1 The extent of the Visual Envelope (VE), the zones of visual influence (ZVI) and the location of the Vantage Points (VPs) are presented as **Figures 4.5** to **4.6 – Visual Envelope and Visually Sensitive Receivers**. The VE, the area from which the proposed development will be seen, is shaped by a combination of the existing built development and the upland landform of central Hong Kong Island which serves to contain views to the east and the expanse of the Lamma Channel to the west.

4.2 Although the Assessment Area for the VIA is normally delineated according to the TPB PG No. 41, as being around three times the overall BH of the Proposed Development Scheme it is instructive to map the actual VE and ZVI to get a more accurate picture of the locations which will have a view of the proposals and how much of the Proposed Scheme can be seen.

4.3 To the north the VE for the Proposed Scheme extends to the Shenzhen River and the urban landscape beyond. At lower elevations the VE extends to features such as the Lok Ma Chau MTR Station and the Mai Po Nature Reserve and wetlands / fishpond areas. To the north east with the implementation of the proposed San Tin Technopole Development (Technopole) the VE will be contained by the development associated with the proposed Innovation and Technology areas

4.4 Views to the east extend along the San Tin Highway corridor with its associated low-rise village areas including San Tin, Tsing Lung Tsuen and Wing Ping Tsuen. Low level views are also contained by green features such as the small, wooded knolls including Man Tin Cheung Park. To the south of the San Tin Highway the proposed San Tin Technopole Development include a number of low and medium-rise uses including G/IC and cultural and community uses. The proposed Ngau Tam Mei New Development Area will also shape the Visual Envelope to the south east of the Application Site containing low levels views from the valley floor. At more elevated levels the VE will be contained by the proposed high-rise residential development at the base on Ki Lun Shan (Hadden Hill) (+222 mPD) and the proposed innovation and technology developments in the area of Luk Mei Tsuen and Pang Loon Tei. There will be small area on the western side of the summit of Ki Lun Shan with views towards the Application Site. The VE will also extend to the ridgeline and secondary summits to the north, east and south west of Kai Kung Leng (+572 mPD). The ridgeline is located within the Lam Tsuen Country Park.

4.5 Views from the south east will extend from the proposed high-residential development to the east of the San Tin Highway and the Maple Gardens development and to the south the spur emanating from the Ki Lun Shan ridgeline including a Trigonometrical Point (+337 mPD).

4.6 To the south the VE extends over the low flat expanse of the fishponds and low-rise residential and village landscapes to the west of the San Tin Highway to the San Tin River and the Nam Sang Wai area. There are a number of approved new developments in this area which will also serve to shape

the VE. These include the proposed Sha Po North Public Housing (S/YL-KTN/9) with a BH of +182.8 mPD. The low-rise developments include Fairview Park; and Palm Springs, Royal Palms and Wo Shang Wai in addition to Chuk Yuen Tsuen; Pok Wai Village, Pok Wai and Tai Sang Wai. Longer distance views extend from the high-rise developments at the northern periphery of Yuen Long and east from the eastern periphery of Tin Shui Wai.

4.7 Views to the west extend from the low lying, flat wetland areas of the Mai Po area including the Mai Po Nature Reserve and fishponds to the east of the Shan Pui River.

4.8 The area from which any part of the proposed development would be visible may be relatively extensive to the south and west however, it should be noted that for the purposes of this assessment, a nominal approximate 6.5 km VE extends from the Application Site as it is considered that the visual impact generated by the proposed development would be insignificant beyond this distance.

4.9 Within the VE there are a number of Zones of Visual Influence (ZVIs) which represent areas from which there are different degrees of visibility of the proposals. These are as follows:

- **Primary Zone of Visual Influence** – Area from which the majority of the development can be seen is largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.

- **Secondary Zone of Visual Influence** – Area with more limited visibility of the Proposed Scheme due to intervening obstacles including a combination of existing infrastructure, built development and vegetation. As such the visible part of the Proposed Scheme is largely limited to the central and upper portions of the residential blocks.

- **Tertiary Zone of Visual Influence** – For the most part views of the Proposed Scheme are obscured or screened by intervening visual obstacles including the landform, mature tree growth and built development. Views limited to partial and glimpsed views of the upper portion of some of the proposed residential towers.

4.10 The importance of identifying the ZVIs is that this provides a clearer picture of the actual visibility of the Proposed Scheme and demonstrates that given the nature of the existing landscape there are few locations where the whole development would be visible and for the most part views are limited to the upper sections and roofs of the proposed buildings. The extent of the VE and the ZVIs are presented as **Figures 4.5** to **4.6 – Visual Envelope and Visually Sensitive Receivers**.

Visual Elements

4.11 **Figures 4.1 to 4.4** show the visual elements which shape the visual outlook and amenity of the area. These include attractors such as the upland setting of hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan and to the south and east the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay. The uplands form the backdrop to may of the views from the north, west and south of the Application Site while the wetlands and fishponds provide for open skies and longer distance views.

4.12 Visually detracting elements include the major infrastructural development such as the San Tin Highway and the associated engineering works including highways structures; and the piecemeal commercial and light industrial developments which line the highway corridor.

4.13 An important consideration in determining the potential visual impacts is the degree of visibility and has been described above this is largely determined by visual obstacles immediately adjacent to the Application Site boundary. For instance, low level views from many locations are obscured by a combination of the existing development, small knolls and mature tree growth which clothes the landscape.

4.14 Where there are views from the identified vantage points frequently these views are partial being obscured by intervening visual obstacles including existing and proposed development.

4.15 The photographs demonstrate that the landscape is both visually enclosed particularly at lower elevations within the wetland and fishpond areas to the south and west and the valley floors to the east.

4.16 The landscape will be characterised by a more urbanised developmental context with the implementation of the proposed San Tin Technopole Development, Ngau Tam Mei New Development Area; and the approved planning applications for the residential development to the south of the Application Site and it is considered that new developments of the scale of the Proposed Scheme can be accommodated within this landscape without causing significant additional visual impacts.

4.17 The ability of this new landscape to accommodate development and obscure views is an important consideration in assessing the potential impacts of the Proposed Scheme and its effect (if any) on the local landscape and visual context.

Other Planned and Committed Developments

San Tin Technopole Development

4.18 The planning of the San Tin Technopole Development will strike a balance between development and nature conservation. The development area comprises mainly the I&T Park and the San Tin Town Centre for providing diverse employment opportunities and various types of housing, as well as commercial uses, open space and community and infrastructural facilities. Major planning themes of the Technopole include:

- Developing a World Class I&T Hub - Together with the HSITP at the Lok Ma Chau Loop, the Technopole will supply about 300 ha of information and technology (I&T) uses;
- Ecological Conservation – The proposals include the establishment of the Sam Po Shue Wetland Conservation Park (SPS WCP). The park is located along the core section of the flight path for migratory birds, in close proximity to the Mai Po Nature Reserve and other wetlands and has large areas of productive fishponds. Within the proposed area, 328 ha will be used for the implementation of ecological and fisheries enhancement measures for the development at STLMC area of the Technopole, while the remaining 10 ha is tentatively reserved for eco-education, eco-recreation and eco-tourism facilities. The proposals will enhance the ecological function and capacity of 288 ha of wetlands and fisheries resources of 40 ha of fishponds with active conservation management and modernised aquaculture to compensate for the loss of wetland habitats and fisheries resources arising from the development of the Technopole.
- Balanced, Vibrant and Liveable Community – The area will provide about 50,000 to 54,000 new flats of different housing to help address the housing shortage in the territory. The proposals also include provisions of land for government, institution and community (GIC) facilities and open space have adopted the ratio of 3.5m^2 per person.

4.19 The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Outline Zoning Plan (S/STT/1) dated 8th March 2024.

Ngau Tam Mei New Development Area

4.20 The development proposal for Ngau Tam Mei New Development Area (NTM) covering an area of approximately 127 ha includes about 46 ha of the land is proposed for developing the UniTown (including the land required by the third medical school). This area offers space for activities related to research and development (R&D) and includes the training of doctors. In addition approximately 9-ha is provided for an integrated hospital. Apart from providing comprehensive healthcare services for the existing and new population in the Northern Metropolis the integrated hospital will be developed into a three-in-one teaching, training and research facility, providing training for medical and healthcare professionals, and conducting clinical trials and scientific research to facilitate the advancement of patient care. The layout of the proposed NTM development used in this assessment is based on the zoning indicated in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024.

Proposed Residential Developments

4.21 The future landscape and visual setting for the proposed Scheme will also include a number of planned and committed developments including the following;

- Yau Pok Road Light Public Housing (A/YL-MP/341) BH +10.65 mPD (3 storeys);
- Approved private housing development (Y/YL-NSW/7) BH +53.95 mPD (15 storeys);
- Sha Po North Public Housing (S/YL-KTN/9) BH +182.8 mPD;
- Approved private housing development (A/YL-KTN/663) BH +62.2 mPD (17 storeys);
- Approved private housing development (A/YL-KTN//604) BH +45.95 - 66.35 mPD (12-18 storeys including 1 basement);
- Approved Tung Shing Lei public and private housing development (LSPS/002) BH ~~(~~+99.9 mPD (24 storeys) and BH ~~(~~+99.3 mPD (26 storeys) respectively;
- Approved private housing development (A/YL-NSW/274) BH +75 mPD (8-21 storeys including 2 basements);
- Approved open storage (A/YL-NSW/276 ~~3~~) BH ~~(~~+46mPD (1-2 storeys);
- Approved private housing development (A/YL-NSW/242) BH +85.5mPD (4-26 storeys including 1-2 basements);
- Approved comprehensive development (A/YL-NSW/241) BH +23.5 mpD) (4 storey including 1 basement);
- Approved private housing development (A/YL-MP/287) BH +6.6 mpD (2 storeys);
- Approved private housing development (A/YL-MP/247) BH +15.35 mPD (3 storeys);
- Approved private housing development (A/YL-NTM/310) BH +15.7 mPD (3 storeys); and
- Approved private housing development (A/YL-MP/205) BH +16.4 mPD (3 storeys).

Vantage Points

4.22 The Vantage Points (VPs) are identified as views from key strategic and popular local vantage points, as well as viewing locations from the village areas adjacent to the Application Site. For the purposes of this assessment and in accordance with current approaches the VPs are based on publicly accessible and popular locations. Priority is given during the selection to public viewpoints, open spaces and key pedestrian routes.

4.23 Based on the targeting of publicly accessible locations the representative VPs are listed below with a brief description of the existing view and their locations presented as **Figures 7.1** to **7.2** – Location of Photomontage Vantage Points.

- **Vantage Point 01**: View looking south west from Lok Ma Chau MTR Station (VP 01);
- **Vantage Point 02**: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02);
- **Vantage Point 03:** View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03);
- **Vantage Point 04:** View looking north west from Kai Kung Leng (VP 04);
- **Vantage Point 05**: View looking north from the spur of the Kai Kung Ridgeline (VP 05);
- **Vantage Point 06**: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06);
- **Vantage Point 07**: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07);
- **Vantage Point 08**: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08);
- **Vantage Point 09**: View looking south east from Tam Kon Chau Road (VP 09);
- **Vantage Point 10**: View looking south east from WWF Mai Po Nature Reserve Visitor Centre (VP 10);
- **Vantage Point 11**: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (VP 11);
- **Vantage Point 12**: View looking west from the Tsz Tong of Mai Po Tsuen (VP 12);
- **Vantage Point 13**: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP 13); and
- **Vantage Point 14**: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP 14).

4.24 Many of these locations are over a relatively short distance from the Application Site owing to the screening effect of the existing development, landform and mature vegetation.

5.0 Visual Impact Assessment

Sources of Visual Impact

5.1 The primary sources of visual impact will be due to the scale within essentially a flat low-lying landscape although the proposals will be seen in the context of the proposed San Tin Technopole Development; Ngau Tam Mei New Development Area and a number of other high and medium-rise residential developments planned for the area to the south of the Application Site.

5.2 The key issues to be addressed by the visual impact assessment will include:

- The potential impact of the Proposed Scheme on the visual amenity available to the immediately adjacent village and low-rise residential developments; low-lying fishpond and wetland areas to the west and south of the Application Site and more elevated views from the upland areas to the north east and east.
- Development of an architectural design and the associated mitigation measures to minimise potential visual impacts as far as possible.
- Visual integration of the built form of the Proposed Scheme particularly in views from the west and south of the site although the proposals will be seen against a backdrop of existing hillsides.

- Development of a responsive architectural design and the associated mitigation measures to minimise potential visual impacts as far as possible which responds to both the existing context and the future planning context.

5.3 The predicted visual impact for each of the VPs is described in section 7.0 together with the proposed mitigation measures in accordance with PG-No. 41.

6.0 Visual Mitigation Measures

6.1 The proposed mitigation measures for the project are described below and shown on **Figure 3.1 to 3.4 – Proposed Scheme: Urban Design Considerations**.

6.2 The landscape and visual mitigation measures include two key levels of approach, the primary and secondary mitigation. The primary mitigation measures are based on the design, disposition, orientation and overall form of the Proposed Scheme whilst the secondary mitigation measures look to how the proposals can be treated to mitigate any potential impacts. It is the primary mitigation measures which shape the form of the architectural scheme and have the biggest effect on the mitigation of the potential visual impacts. The proposed mitigation measures include the following:

Primary Mitigation Measures

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise residential blocks stepping up on a north to south axis and from east to west. These medium rise blocks range in height from around +28.00 mPD to +42.00 mPD in the south east corner of the Application Site. The proposed building heights (BH) include 3-storey semi-detached and detached houses with a BH of +20.30mPD; and series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00mPD to +35.00mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00mPD).
- Disposition and orientation of the proposed blocks designed to minimise the potential impact on the visual amenity of the wetlands and fish pond areas to the north and west.
- The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.
- Introduction of three visual corridors (approximately 68.6m, 18.9 and 18.3 m wide) on a north-south axis through the development and an approximately 13.7 m wide building separation which serve to break up the combined development frontage and avoid a potential wall effect.
- Introduction of articulated building facades to further break-up the visual mass of the individual blocks through the manipulation of architectural form; and the creation of areas of light and shade.
- Location of car parking in the basement to maximise the area available for landscaping.

Secondary Mitigation Measures

- Other measures might include the use of colour and finishes for the architectural façade for the structures to minimise the prominence of the scheme. This includes the use of earth tones and colour blocking working with the massing and articulation of the structures.
- Landscaping including the introduction of new tree planting within the Application Site to break up the horizontal visual emphasis of the Proposed Scheme in low level views.
- Incorporation of a landscape buffer where space allows along the periphery of the Application Site to integrate or ground the development within the existing green areas which surround it

and establish a human scale for the key landscape spaces at the G/F.

- Utilisation of a combination of heavy standard trees creating a more mature landscape with an immediate effect.
- Introduction of comprehensive urban design parameters as part of the detailed design stage of the project to establish the future character of the development from an architectural and landscape perspective. This includes the use of high quality hard and soft landscape measures including water features, sculpture, site furniture, lighting and seating.

6.3 It should be noted that the final architectural design and the appearance of the buildings will be refined during the detailed design stage of the project.

7.0 Residual Impacts

7.1 The residual visual impact is defined as the impact remaining after all practical methods of mitigation have been implemented. A series of computer-generated images or photomontages from the vantage points indicated on **Figures 7.1** to **7.2** are presented as **Figures 7.3** to **7.16**. The locations have been selected to demonstrate the range of viewing angles and viewing distances in relation to identified VPs, demonstrate the schemes 'fit' into the existing and future sub-urban context; and also demonstrate the degree of visibility from surrounding locations.

7.2 The photomontages show the existing situation and the Proposed Scheme before and following the implementation of the proposed mitigation measures. Where the proposals are not visible, or views partially obscured a red dashed line is used to indicate their approximate location.

7.3 The text below provides a brief description of each of the views selected for the photomontages and provides an appraisal of visual changes (visual composition, visual obstruction, the effect on public viewers and the effect on visual resources) in accordance with TPB PG-No. 41.

7.4 **Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (VP 01)** (**Figure 7.3** refers). This vantage point, represents the view available vehicle travellers, at an elevation of +10 mPD and located at a distance of approximately 2765 m. This location offers panoramic views over the existing fishponds to the south and east of the station and the Lok Ma Chau Wetland compensation area and extends towards the low-rise village, light industrial, open storage and commercial development and low wooded knolls of the San Tin area. This eventually gives way to the uplands Ki Lun Shan and Kai Kung Leng which form the green backdrop to views. Views of the Application Site are largely obscured at a low level by a combination of the existing landform and mature tree growth on the fish pond bunds and the areas to the east. There are also distant views of the high-rise development on the eastern periphery of Yuen Long.

7.5 *Sensitivity of Public Viewers:* Low
The view from this vantage point, available to transient vehicle travellers on the MTR, is characterised by a combination of the manmade landscapes of fishponds and wetlands in the foreground, low-rise village areas and woodland / belts of trees in the middle ground; and the naturalistic mountain landscape as the backdrop. The view will undergo a change in character with the development of the San Tin Technopole Development with the introduction of high and medium-residential and I&T developments in the middle ground. The Technopole demonstrates that that owing to a combination of the viewing distance and the open ness of the views relatively major developments can be accommodated without a significant degradation in its inherent character and quality of the landscape and visual amenity. Despite the nature of the existing view the transient nature of the visually sensitive receivers results in allow sensitivity of public viewers. The degree of visibility towards the Application Site is partial and there are alternative views to the north, east and south.

7.6 *Visual Composition*: Compatible
The Proposed Scheme would form a relatively small component in this view owing to a combination of its scale relative to the adjacent Technopole, the screening effect of intervening vegetation at low-levels and the scale of the landscape which surrounds the Application Site. The photomontages show the measures incorporated into the architectural design for the proposed to minimize its visual mass and avoid any wall effects in terms of the combined development frontage. These include the separation of the medium-rise components with the creation of a visual corridor and the stepped height of the blocks both in terms of the proposed building heights (BH) and the effect of perspective owing to the building disposition. The use of low-rise buildings along the northern periphery of the proposed scheme also serves to break up the visual mass of the development introducing a more faceted appearance and creating a more subtle transition with the surrounding landscape.

7.7 *Visual Obstruction*: Small
The degree of visual obstruction arising from the implementation of the Proposed Scheme is considered to be small owing to a combination of the viewing distance and the relative scale of the proposals. In addition, the Proposed Scheme will be viewed against a backdrop of committed developments such as the approved scheme for the Sha Po North Public Housing (S/YL-KTN/9) with a BH of +182.8 mPD, the high and medium-rise development of Yuen Long and the uplands of the Tai Lam Country Park.

7.8 *Effect on Public Viewers*: Slight
This view of the Proposed Scheme is available to vehicle travellers at the MTR Lok Ma Chau Station with the potential VSRs confined to the MTR station, cross border facilities, semi-open-air platform and views from the windows of the MTR carriages travelling at a relatively high speed. As such the effect on public viewers from this vantage point would also be slight.

7.9 *Effect on Visual Resources*: Small
The quality of the existing visual resources apparent in this view is considered to be high owing to the fishpond and wetland context with low-rise village type development within a framework of woodland and the mountain backdrop. However, given the viewing distance and the relative scale of the Proposed Scheme relative to the adjacent Technopole proposals, existing and committed developments which will form part of the lower elevation backdrop to the view the effect on visual resources would also be small. As is apparent in the photomontage the ridgeline formed by the uplands of the Tai Lam Country Park would also be maintained.

7.10 *Overall visual Impact*: Slightly adverse
Given the viewing distance and the relatively small scale of the proposals relative to the that of the adjacent Technopole proposals and the nature of the view available to VSRs the overall visual impact is considered to be slightly adverse. Based on the view available from this vantage point despite the maximum proposed BH of +76.1 mPD would not lead to a significant visual impact.

7.11 **Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP02)** (**Figure 7.4** refers). This vantage point, at an elevation of +10 mPD and located at a distance of approximately 1680 m to the north east of the Application Site, is available to pedestrians and vehicle travellers on the west bound carriageway. Views from this location looking south west extend along the San Tin Highway corridor bounded to the north and south by mature tree growth which serves to obscure views beyond. Views of the Application Site are largely obscured by a combination of the intervening existing landform and trees.

7.12 *Sensitivity of Public Viewers: Low*
This vantage point is available to transitory vehicle travellers and pedestrians crossing the footbridge to the north east of the Application Site. Views are largely enclosed by a combination of

the existing landform and mature tree growth. Given a combination of the developed nature of the existing view with the large infrastructure associated with the highway and the transitory nature of views the sensitivity is likely to be low. The degree of visibility towards the Application Site is glimpsed / partial of the eastern edge of the site and there are alternative views to the north east from the foot bridge.

7.13 *Visual Composition*: Not readily apparent and compatible
The visual composition of the Proposed Scheme will not be readily apparent in views from this location owing to a combination of the viewing distance, its scale relative to the adjacent Technopole and the screening effect of the proposed roadside development. Views of the proposals would be limited to partial and glimpsed views of blocks C2.1 to C2.5 and some of the low-rise developments to the north of the Application Site. The visible portions of the Proposed Scheme are not sufficient to provide an indication of the overall visual composition although its scale and the disposition of the blocks are compatible with the Technopole proposals.

7.14 *Visual Obstruction*: Small blockage but not significant
The Proposed Scheme would result in a relatively small additional blockage of the existing view of the wooded verge of the San Tin Highway at distance of some 1680m with views of the proposals being partially obscured by the Technopole proposals and the proposals will not obscure views of any landscape features beyond the Application Site only the sky view above the development.

7.15 *Effect on Public Viewers*: Slight to negligible
The existing view is largely contained within the San Tin Highway corridor by the existing mature tree growth either side of the highway and given the viewing distance a small part of the Proposed Scheme would be visible. The implementation of the Technopole proposals would lead to a change in the existing view to a more urbanised character and the proposed would serve to partially obscure views of the Application Site. As such views of Proposed Scheme would be limited to the residential blocks and houses on the eastern periphery of the Application Site and the effect on transitory public viewers would be slight to negligible.

7.16 *Effect on Visual Resources*: Small
Although the road corridor is visually enclosed the quality of the existing visual resources apparent in this view is considered to be fair owing to the mature vegetation which frames the view. The visible section of the Proposed Scheme will lead to a small loss of the vegetation to the east of the Application Site and the sky view above it. The most significant impact upon this view will be the implementation of the Technopole proposals. Given the lower BH the effect of the Approved S.12a Scheme would be negligible. As such the impact on visual resources arising from the Proposed Scheme is not considered to be significant.

7.17 *Overall visual Impact*: Slightly adverse
The existing landscape is characterised by a combination of highway infrastructures and the mature roadside tree planting. The tree planting will be replaced as part of the implementation of the Technopole proposals transforming the view to a more urbanised character. Views of the Proposed Scheme would be limited to some of the medium-rise blocks and low-rise houses in the eastern portion of the Application Site. Given the viewing distance, the scale of the visible part of the Proposed Scheme and the screening effect of the intervening Technopole proposals the overall visual impact arising from the implementation of the Proposed Scheme would slightly adverse. The overall impact resulting from the Approved S.12a Scheme would be negligible due the lower BH.

7.18 **Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)** (**Figure 7.5** to refers). This vantage point, represent the views recreational users of the existing trial ascending from Ki Lung Shan Au towards the summit from the northern side of Kai Kung Leng at an elevation of +200 mPD and located at a distance of approximately 3555 m form the Application Site. The existing view extends along the Ngau Tam Mei valley towards the San Tin

Highway and the low-rise residential developments of Fairview Park, Palm Springs and Royal Palms towards the fishpond and wetland areas of Mai Po and the Deep Bay Shenzhen River estuary with the skyline of Shenzhen forming the backdrop. Prior to the implementation of the Technopole proposals there will be relatively open oblique aerial views of the Application Site.

7.19 *Sensitivity of Public Viewers:* Medium
This vantage point is available to recreational users of the trail leading to the summit of Kai Kung Leng and offers a relatively panoramic open views of the landscape to the north west framed to the north and south by the upland landform. With the implementation of the Technopole proposals the landscape will be transformed to a more urban character and the visibility toward the Application Site will be obscured by proposed high-rise residential development at the south eastern periphery of the Technopole proposals. Alternative views extend towards the east.

7.20 *Visual Composition*: Not apparent
Views of the Application Site will be obscured by the intervening high-rise development of the Technopole proposals and so the visual composition of the proposed scheme will not be apparent.

7.21 *Visual Obstruction*: No Blockage
Given the screening effect of the intervening Technopole proposals the Proposed Scheme would not cause any visual obstruction.

7.22 *Effect on Public Viewers*: No Effect
As the Proposed Scheme will not be visible to trail walkers at this vantage point there will be no effect on public viewers.

7.23 *Effect on Visual Resources*: No Effect
The Proposed Scheme will have no effect on the visual resources apparent in this view owing the scale of the proposed intervening development.

7.24 *Overall Visual Impact*: Negligible
Given the scale and screening effect of the intervening Technopole proposals the proposed scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.25 **Vantage Point 04: View looking north west from Kai Kung Leng (VP 04)** (**Figure 7.6** refers). This vantage point is located at the summit of Kai Kung Leng at an elevation of +585 mPD and approximately 3935 m from the Application Site. The view from this location extends to the north, south and west extending from Kwu Tong, to Lok Ma Cha, San Tin, Fairview Park, Palm Springs and Royal Palm to Yuen Long and Tin Shui Wai to Lau Fau Shan and Tsim Bei Tsui. The vista extends over the Mai Po wetlands to the Deep Bay with the skyline of Shenzhen forming the backdrop.

7.26 *Sensitivity of Public Viewers:* Medium
The view for transient trail walkers is characterised by the open expanse of the low-lying village and agricultural landscape punctuated by islands of low-rise residential developments and traversed by infrastructure such as the San Tin Highway. With the implementation of the Technopole proposals and committed developments such as the approved schemes for planning applications A/YL-MP/287, A/YL-MP/341, A/YL-MP/205, A/YL-MP/247, A/YL-NTM/432 (with a BH not exceeding 21mPD); and the approved scheme for planning application S/YL-KTN/9 (BH not exceeding +185mPD); and the approved scheme for planning application A/YL-NSW/242 with a BH not exceeding +85.5mPD). As such the landscape and visual amenity of the area will be transformed to a more urban character particularly in the middle ground. Despite the developed nature of the landscape public viewers in this location are considered to have medium level of sensitivity. The degree of visibility towards the Application Site is open and there are alternative views to the north and south west.

7.27 *Visual Composition*: Apparent and compatible
The visual composition of the Proposed Scheme would be partially apparent from this location particularly in terms of the scale, disposition and orientation of the proposed medium-rise residential blocks, the adoption of a stepped building height profile and the creation of visual corridor using the location of the low-rise houses. In terms of the schemes fit within the wider landscape the proposals form an extension of the Technopole high-rise built form creating an intermediate visual medium-rise structure between the proposed high-rise and the low-lying nature of the surrounding existing more rural landscape of fishponds and wetland areas. As such the visual composition is apparent and compatible with the future developmental context.

7.28 *Visual Obstruction*: Small
Owing to the viewing distance, the relative scale of the Proposed Scheme and the elevated viewing position the proposal would be seen against the northern and western parts of the Application Site and the immediately adjacent fish ponds. Given these factors the proposals would lead to a small area of blockage of views.

7.29 *Effect on Public Viewers*: Slight
Given the scale of the proposals relative to their landscape setting, the extent of the existing residential development in the immediate area, the scale of the Technopole proposals and the distribution of committed developments to the south of the Application Site the appearance of the Proposed Scheme will be in tune with its future context and so the effect on public viewers will be slight.

7.30 *Effect on Visual Resources*: Small
There will be a small impact on the visual resources visible from this location with the Proposed Scheme replacing the views of the belt of woodland along the northern periphery of the Application Site and part of the fishponds contiguous with the site boundary.

7.31 *Overall Visual Impact*: Slightly adverse
Given the elevation of this vantage point, the viewing distance and the relative scale of the Proposed Scheme; and the proximity to existing and future developments the appearance of the Proposed Scheme will be in tune with the future developed character of the area. The proposals will form a small component of the overall view available from this location and so the overall visual impact will be slightly adverse. It may be argued that the Proposed Scheme forms an extension of the Technopole proposals and provides a more subtle medium-rise transition between the proposed high-rise development and the surround low-lying landscape.

7.32 **Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 04)** (**Figure 7.7** refers). This vantage point is located on the trail following the ridgeline on the spur to the west of Kai Kung Leng at an elevation of around +375 mPD and a distance of approximately 2830 m. The view from this location extends to the north over the Ngau Tam Mei valley to secondary ridgeline to the San Tin - Lok Ma Chau development cluster and to the north west the extensive low- rise developments of Fairview Park, Palm Springs, Royal Palms and the Vineyard; and village developments such as Yau Mei San Tsuen and the San Tin Highway corridor. Beyond this the view extends to the fish pond and wetland areas of Mai Po to the Shenzhen River, Deep Bay and the skyline of Shenzhen.

7.33 *Sensitivity of Public Viewers:* Medium
The existing view for trail walkers at this location is characterised by the combination of low-rise residential, light industrial and commercial development set within a semi-rural landscape enclosed and bounded by upland areas and small wooded knolls. The landscape is well wooded, and this vegetation serves to integrate the existing development into the landscape context. Views extend to the fishpond areas and wetlands of Mai Po, to Shenzhen and the Deep Bay area. The future landscape context will be more developed in nature with the Technopole proposals and a number

of committed residential developments to the south of the Application Site. Despite this transition to a more urbanised character the public viewers in this location are considered to have medium level of sensitivity. The degree of visibility towards the Application Site is open and there are alternative views to the north and west.

7.34 *Visual Composition*: Apparent and compatible
The visual composition of the Proposed Scheme would be apparent from this location particularly in terms of the scale, disposition and orientation of the proposed medium-rise residential blocks, the adoption of a stepped building height profile and the creation of visual corridor using the location of the low-rise houses. When viewed from this location the Proposed Scheme would form an extension of the Technopole high-rise built form creating an intermediate visual medium-rise structure between the proposed high-rise and the low-lying nature of the surrounding existing more rural landscape of fishponds and wetland areas. As such the visual composition is apparent and compatible with the future developmental context.

7.35 *Visual Obstruction*: Small
The level of visual obstruction is likely to be small owing to a combination of the viewing distance, the relative scale of the Proposed Scheme and the elevated viewing position. The proposals would be seen against the northern and western parts of the Application Site and the immediately adjacent fish ponds. Given these factors the proposals would lead to a small area of blockage of views.

7.36 *Effect on Public Viewers*: Slight
Based on the scale of the proposals relative to their future landscape setting, the extent of the existing residential development in the immediate area including the Technopole proposals and the distribution of committed developments to the south of the Application Site the appearance of the Proposed Scheme will be in tune with its context and so the effect on public viewers will be slight.

7.37 *Effect on Visual Resources*: Small
There will be a small impact on the visual resources visible from this location with the Proposed Scheme replacing the views of the belt of woodland along the northern periphery of the Application Site and first row of fishponds to the north.

7.38 *Overall Visual Impact*: Slightly adverse
Given a combination of the elevation of this vantage point, the viewing distance and the scale of the Proposed Scheme relative to the adjacent existing and future developments the appearance of the Proposed Scheme will be in tune with the future developed character of the area. The proposals will form a small component of the overall view and so the overall visual impact will be slightly adverse. The Proposed Scheme appears to form an extension of the Technopole proposals and provides a transition between the proposed high-rise development and the surround low-lying landscape.

7.39 **Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)** (**Figure 7.8** refers). This vantage point, at an elevation of +10 mPD and an approximate distance of 2595m, represents the view available to pedestrians crossing the footbridge and vehicle travellers on the north bound carriageway for the San Tin Highway. The view extends north east along the corridor formed by the San Tin Highway bounded by mature tree growth with occasional glimpsed views of the landscape beyond. There will be glimpsed views of the Technopole proposals to the north east if the foot bridge filtered by the existing trees.

7.40 Sensitivity of Public Viewers: Low
This vantage point is available to transitory vehicle travellers and pedestrians crossing the footbridge to the south of the Application Site. Views are largely enclosed by mature tree growth. Given a combination of the developed nature of the existing view with the large infrastructure associated with the highway and the transitory nature of views the sensitivity is likely to be low. The existing roadside trees obscure views of the Application Site. Alternative views extend towards the south.

7.41 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening mature tree growth and so the visual composition of the proposed scheme will not be apparent.

7.42 Visual Obstruction: No Blockage
Given the screening effect of the intervening mature trees the Proposed Scheme would not cause any visual obstruction.

7.43 Effect on Public Viewers: No Effect
As the Proposed Scheme will not be visible to pedestrians or vehicle travellers at this vantage point there will be no effect on public viewers.

7.44 Effect on Visual Resources: No Effect
The Proposed Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.45 Overall Visual Impact: Negligible
Given the scale and screening effect of the intervening roadside trees the Proposed Scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.46 **Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)** (**Figure 7.9** refers). This vantage point at an elevation of +3.2 mPD and some 2450 m from the Application Site is located to the north of Yau Pok Road. The existing view looking north east extends across two fish ponds in the foreground to the mature tree growth on the pond bund in the middle ground. Beyond this there are glimpsed views on the landscape beyond including the top of a small, wooded knoll beside the San Tin Highway, the summit of Ki Lun Shan and the ridgeline of Kai Kung Shan.

7.47 *Sensitivity of Public Viewers:* Medium
The view for transient walkers is characterised by the enclosed nature of the fish pond landscape at lower elevations owing to the mature tree growth of the pond bunds. With the implementation of the Technopole proposals there will be glimpsed views of the central and upper floors of the high-rise residential developments and the I&T developments at the periphery. Despite the introduction of development into this landscape it is considered that public viewers in this location will have a medium level of sensitivity. The degree of visibility towards the Application Site is glimpsed and there are alternative views to the west although these too are enclosed by vegetation on the pond bunds.

7.48 *Visual Composition*: Not apparent
Views of the Proposed Scheme will be limited to the upper floors of a small number of the medium-rise residential blocks on the southern corner of the Application Site. There will also be some glimpsed views of the residential blocks to the south west of the Application Site through the canopies of the existing trees. Given this limited visibility of the Proposed Scheme its visual composition will not be apparent although the visible portions of the proposals will be compatible with the taller visible sections of the Technopole proposals.

7.49 *Visual Obstruction*: Small
Owing to the restricted visibility of the Proposed Scheme the degree of visual obstruction will be limited to an area of clearing in the trees and some glimpsed views through the tree canopies and so the level of visual obstruction will be small.

7.50 *Effect on Public Viewers*: Slight
Given the nature of the existing view and the limited visibility of the Proposed Scheme; and the transient nature of the VSRs the effect on public viewers will be small.

7.51 *Effect on Visual Resources*: Small
The loss of visual resources will be small owing to the limited visibility of the Proposed Scheme and will be restricted to a small area of the sky view and glimpsed views of the upper floors of a small number of high-rise developments in Shenzhen.

7.52 *Overall Visual Impact*: Slightly adverse
The overall visual impact will be slightly adverse owing to the limited visibility towards the Proposed Scheme, with views being limited to the upper floors of a small number of the medium-rise residential blocks on the southern corner of the Application Site and glimpsed views of the residential blocks to the south west of the Application Site through the canopies of the existing trees. For the most part these limited views of the proposals will be available to a relatively few pedestrians.

7.53 **Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)** (**Figure 7.10** refers). This vantage point at an elevation of +3.9 mPD and some 756 m to the west of the Application Site is located on a small access road on the bund between fishponds to the south of the Mai Po Nature Reserve. The existing view is characterised by a fish pond bounded by mature tree growth with glimpsed views of the small, wooded knoll adjacent to the San Tin Highway and more distant views of the uplands of the Tai Lam Country Park and the ridgeline of Kai Kung Leng (+585 mPD) and Kai Kung Leng (+375 mPD); and beyond this to the south east the summit of Lin Fa Shan (+550 mPD). These uplands form the backdrop to views of the low-lying landscape of the San Tin and Mai Po areas. The landscape is punctuated by the buildings of small holdings associated with the fish ponds.

7.54 *Sensitivity of Public Viewers:* Medium
This landscape is used by a combination of the agricultural people, visitors and staff at the Mi Po Nature Reserve and hikers. Although relatively few in number these transient VSRs are able to enjoy a unique landscape and so the sensitivity of public viewers is considered to be medium. The degree of visibility towards the Application Site views is partial being obscured in some locations by the mature tree growth on the intervening pond bunds. There are alternative views to the south.

7.55 *Visual Composition*: Apparent and compatible
Views of the Proposed Scheme will be limited to the central and upper floors of the medium-rise residential blocks and glimpsed views of the low-rise houses at the north western edge of the Application Site. Low-level views of the proposed scheme are obscured by mature tree growth on the intervening bound bunds. The visible portion of the Proposed Scheme shows the terraced effect from north to south with the lower buildings being adjacent to the wetland compensation area. It also shows the stepped height profile utilised for the residential blocks on an east – west axis. The orientation and disposition of the blocks also creates an articulated development form with areas of light and shade serving to break up the visual mass of the Proposed Scheme. With the exception of block C1-4 the BH for the Proposed Scheme will also allow the preservation of the ridgeline in views from this location. The Proposed Scheme will be seen in the context of the taller buildings of the Technopole proposals and these establish a precedent for taller buildings in the landscape. The smaller residential blocks of the Proposed Scheme at around +72.XX mPD form an intermediate

step in between the high-rise development (+200 mPD) of the Technopole area to the lying landscape to the south and west. The easter cluster of residential blocks of the Proposed Scheme will also be viewed against a backdrop of the high-rise development to the east. The composition of the Proposed Scheme will be apparent and compatible with its future landscape setting.

7.56 *Visual Obstruction*: Small
As the views of the Proposed Scheme will be limited to upper floors of the medium-rise residential blocks and given that the eastern potion will be seen against the high-rise development of the Technopole proposals the extent of visual obstruction is considered to be small.

7.57 *Effect on Public Viewers*: Slight
For the relatively few transient VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole the effect on public viewers will be slight.

7.58 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the loss of part of the view of the mountain backdrop although it should be noted that part of this backdrop will be lost owing to the Technopole proposals, the proposed Ngau Tau Mei New Development Area and another section due to the committed residential development at the approved planning application LSPS/002, A/YL-NSW/274 with a BH not exceeding +99.9 mPD located to the south of the Application Site. Where the Proposed Scheme will be located in front of other committed high and medium-rise developments this represents a foreshortening of an already compromised view and so is not considered to be also of visual resources. The BH of the Proposed Scheme would allow views ridgeline of the upland backdrop to be kept largely intact. As such it is considered that the effect on visual resources will be medium.

7.59 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few transient VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole and presence of other committed developments the overall visual impact is considered to be slightly adverse. However the impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole and Ngau Tau Mei New Development Area proposals.

7.60 **Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)** (**Figure 7.11** refers). This vantage point at an elevation of +3.2 mPD and some 550 m to the north of the Application Site is located on Tam Kon Chau Road. The existing view is characterised by a fish pond bounded by mature tree growth with glimpsed views of the small, wooded knoll adjacent to the San Tin Highway and more distant views of the uplands of the Lam Tsuen Country Park including Kai Kung Leng (+585 mPD) Kai Kung Leng (+375 mPD); and more distant views of Lin Fa Shan (+550 mPD). These uplands form the backdrop to views of the low-lying landscape of the San Tin and Mai Po areas. The landscape is punctuated by the buildings of small holdings associated with the fish ponds.

7.61 *Sensitivity of Public Viewers:* Medium
This landscape is used by a combination of the agricultural people and pedestrians and vehicle travellers on Tam Kon Chau Road. Although relatively few in number these transient VSRs are able to enjoy a picturesque rural landscape with a mountain backdrop and so the sensitivity of public viewers is considered to be medium. The degree of visibility towards the Application Site views is open being partially obscured at low levels by the intervening mature tree growth on the intervening pond bunds. There are alternative views to the north.

7.62 *Visual Composition*: Apparent and compatible
Views of the Proposed Scheme will be relatively open with some lower level views being obscured

by the mature tree growth on the pond bounds to the north of the Application Site. In these locations visual access is limited to the central and upper floors of the medium-rise residential blocks and glimpsed views of the low-rise houses at the north western edge of the Application Site. The visible portion of the Proposed Scheme shows the terraced or stepped height effect from north to south with the lower buildings being adjacent to the wetland compensation area. It also shows the stepped height profile utilised for the residential blocks on an east – west axis with the large visual corridor (approximately 102m wide) at the eastern end the Application Site being apparent. In this view the Proposed Scheme forms an intermediate medium-rise step between the Technopole proposals and the lowing lying flat landscape to the south west. This view also demonstrates the architectural design which has sought to break-up the visual mass of the combined development frontage and adopts a developmental texture which is in tune with the scale of the existing landscape and visual context. The Proposed Scheme will be seen in the context of the taller buildings of the Technopole and the Ngau Tau Mei New Development Area proposals and these establish a precedent for taller buildings in the landscape. The composition of the Proposed Scheme will be apparent and compatible with its future landscape setting.

7.63 *Visual Obstruction*: Medium
As the views of the Proposed Scheme will be largely limited to the central and upper floors of the medium-rise residential blocks and whilst the Proposed Scheme represents an intervention into a low-lying landscape it will be seen in the context of the high-rise Technopole and the Ngau Tau Mei New Development Area proposals. Given a combination of the viewing distance and the relative scale of the proposed scheme the extent of visual obstruction is considered to be medium.

7.64 *Effect on Public Viewers*: Moderate
Despite the relatively few transient VSRs, the viewing distance and the partial screening provided by mature vegetation the scale of the proposals will result in moderate effect on public viewers however it should be noted that the character of the local area will be transformed from a semi-rural landscape to one which is more urbanised. Viewed in this context the proposals are not incompatible with their future landscape and visual context.

7.65 *Effect on Visual Resources*: Medium
Although the architectural design has sought to maintain views of the backdrop formed by the uplands to the east and south east through the location of significant visual corridor and the orientation and disposition of the proposed medium-rise blocks there would be loss of sky view above the Application Site and this will result in a medium level of effect on the available visual resources.

7.66 *Overall Visual Impact*: Moderately adverse
With consideration of the relatively few transient VSRs, the viewing distance, the screening provided by mature vegetation and mitigation measures including the disposition of the medium-rise blocks to avoid the upland backdrop and the measures to avoid a potential wall effect the overall visual impact will be moderately adverse. The impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole and the Ngau Tau Mei New Development Area proposals.

7.67 **Vantage Point 10: View looking south east from WWF Mai Po Nature Reserve Visitor Centre (VP 10)** (**Figure 7.12** refers). This vantage point at an elevation of +5.82 mPD and some 720 m to the north west of the Application Site represents the view available from the landscape at the rear of the Visitor Centre. The existing view is characterised by a combination of the new landscaping at the edge of the Visitor Centre site in the foreground, glimpsed views of the fishponds beyond and backdrop of the upland landscape of Kai Kung Leng (+585 and +375 mPD).

7.68 *Sensitivity of Public Viewers:* Medium
This view is available to visitors and staff in the landscape at the rear of the Visitor Centre. Although relatively few in number these VSRs have view of the amenity planting surrounding the facility and framed partial and glimpsed views of the landscape to the south east. The view is partially interrupted by a solid metal at the edge of the adjacent fish pond. The degree of visibility towards the Application Site views is glimpsed with only the eastern portion being visible. Views of the remainder of the Application Site are obscured by the intervening vegetation. There are alternative views to the north east.

7.69 *Visual Composition*: Not apparent
Views of the Proposed Scheme will be limited to the eastern portion with four to five residential blocks and the roofs of the adjacent low-rise houses being visible. Given this limited visibility of the Proposed Scheme its visual composition will not be apparent although the visible portions of the proposals will be compatible with the taller visible sections of the Technopole proposals and the approved developments to the south east of the Application Site.

7.70 *Visual Obstruction*: Small
Owing to the restricted visibility of the Proposed Scheme the degree of visual obstruction will be limited to an area of clearing in the trees lining the intervening fishpond bunds and so the level of visual obstruction will be small.

7.71 *Effect on Public Viewers*: Slight
For the relatively few VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole the effect on public viewers will be slight.

7.72 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the loss of part of the view of the mountain backdrop famed either side by mature tree growth although it should be noted that part of this backdrop will be lost owing to the Technopole proposals Where the Proposed Scheme will be located in front of other committed high and medium-rise developments this represents a foreshortening of an already compromised view and so is not considered to be also of visual resources. The BH of the Proposed Scheme would allow views ridgeline of the upland backdrop to be kept largely intact. As such it is considered that the effect on visual resources will be small.

7.73 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole and presence of other committed developments the overall visual impact is considered to be slightly adverse. However, the impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole proposals.

7.74 **Vantage Point 11**: **View looking south west from the proposed Sam Po Shue Wetland Conservation Park (VP 11)** (**Figure 7.13** refers). This vantage point, at an elevation of +4.0 mPD and an approximate distance of 650 m, represents the view that will be available to the visitors to the future Sam Po Shue Wetland Conservation Park. The view and visual access to the Proposed Scheme will also be subject to the proposed landscape treatment of the intervening park area. Based on the existing situation including the mature tree growth along the periphery of the village in the foreground it is unlikely that the proposals will be visible from this location. The view extends south west and will include glimpsed views of the landscape beyond including the Technopole and NTM proposals.

7.75 Sensitivity of Public Viewers: Medium
This vantage point will be available to visitors to the future Sam Po Shue Wetland Conservation Park although views of the Proposed Scheme are likely to be obscured by mature tree growth at the edge of the village in the middle ground. Given a combination of the developed nature of the future view and the transitory nature of viewers the sensitivity is likely to be medium.

7.76 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening mature tree growth and so the visual composition of the proposed scheme will not be apparent.

7.77 Visual Obstruction: No Blockage
Given the screening effect of the intervening mature trees the Proposed Scheme would not cause any visual obstruction.

7.78 Effect on Public Viewers: No Effect
As the Proposed Scheme will not be visible to visitors to the future Sam Po Shue Wetland Conservation Park there will be no effect on public viewers.

7.79 Effect on Visual Resources: No Effect
The Proposed Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.80 Overall Visual Impact: Negligible
Given the scale and screening effect of the intervening mature trees the Proposed Scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.81 **Vantage Point 12**: **View looking west from the Tsz Tong of Mai Po Tsuen (VP 12)** (**Figure 7.14** refers). This vantage point, at an elevation of +3.5 mPD and an approximate distance of 398 m, represents the view that will be available to the village residents in the courtyard outside the Tsz Tong in the centre of Mai Po Tsuen. As demonstrated by the photograph of the existing situation the existing village houses at the edge of the courtyard obscure views to the south west and their roofs form the visual horizon.

7.82 Sensitivity of Public Viewers: Medium
This vantage point will be available to village residents in the courtyard outside the Tsz Tong in the centre of the village. The view is characterised by the existing village houses which obscure views of the landscape beyond. Given the nature of the existing view the sensitivity of viewers is likely to be medium.

7.83 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening village development and so the visual composition of the proposed scheme will not be apparent.

7.84 Visual Obstruction: No Blockage
Given the screening effect of the intervening village houses the Proposed Scheme would not cause any visual obstruction.

7.85 Effect on Public Viewers: No Effect
As the Proposed Scheme will not be visible to village residents in the courtyard outside the Tsz Tong there will be no effect on public viewers.

7.86 Effect on Visual Resources: No Effect
The Proposed Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.87 Overall Visual Impact: No Impact
Given the scale and screening effect of the intervening village houses the Proposed Scheme would not result in visual impacts in views from this location.

7.88 **Vantage Point 13**: **View looking north west from cycle track along the eastern boundary of "Open Space" zone** (**VP 13**) (**Figure 7.15** refers). This vantage point at an elevation of +6.7 mPD and some 330 m to the south east of the Application Site represents the view available for cyclists and pedestrians on the cycle track along the eastern boundary of the future Open Space. The existing view is characterised by a combination of an open storage area and vehicular parking in the foreground with glimpses of the existing low-rise houses (Royal Palm) largely obscured by mature tree growth in the middle ground. Beyond this there are views of some of the taller office towers in Shenzhen including the Shenzhen International Chamber of Commerce and the Ping'an International Financial Center.

7.89 *Sensitivity of Public Viewers:* Medium
This view is available to cyclists and pedestrians in a more elevated position than the future Open Space and will be characterized in the future by the landscape of the open space including it is assumed additional amenity tree and shrub planting. This combined with the mature tree growth at the edge of the Royal Palm development will form a vegetated fore and middle ground. The degree of visibility towards the Application Site views will be partial with views limited to the upper portion of the visible residential blocks. Views of the remainder of the Application Site are obscured by the intervening vegetation. There are alternative views to the south west east.

7.90 *Visual Composition*: Apparent and compatible
Views of the Proposed Scheme will be limited to the upper floors of the 6-8 and 6-10 storey medium-rise residential blocks at the eastern end of the Application Site. Low-level views of the proposed scheme are obscured by mature tree growth at the edge of the Royal Palm development and potentially any tree planting within the future Open Space. The visible portion of the Proposed Scheme appears to be stepped owing to the orientation and disposition of the proposed residential blocks. The visible section to the south west appears to be an extension of the visible part of the Royal Palm development whilst the four blocks to the north east appear to step down from east to west. These two clusters of visible development are separated by an apparent visual corridor created with views of the lower profile developments in between being obscured by intervening vegetation. The orientation and disposition of the blocks also creates an articulated development form with areas of light and shade serving to break up the visual mass of the Proposed Scheme. The composition of the Proposed Scheme will be apparent and compatible with its future landscape setting.

7.91 *Visual Obstruction*: Small
As the views of the Proposed Scheme will be limited to upper floors of the two small sections of the medium-rise residential blocks the extent of visual obstruction is considered to be small.

7.92 *Effect on Public Viewers*: Slight
For the relatively few transient VSRs, the screening provided by mature vegetation at the edge of the Royal Palm development and the relatively small scale of the visible part of the Proposed Scheme the effect on transient public viewers will be slight.

7.93 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the limited visibility of the Proposed Scheme and the loss of a small part of the sky view above the eastern end of the

Application Site. There would be no impact on any other visual resources apparent in the view form this location.

7.94 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few transient VSRs, the screening provided by mature vegetation at the edge of the Royal Palm development and potentially within the future Open Space and the relatively small scale of the visible part of the Proposed Scheme the overall visual impact is considered to be slightly adverse.

7.95 **Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen** (**VP 14**) (**Figure 7.16** refers). This vantage point, at an elevation of +5.0 mPD and an approximate distance of 750 m, represents the view that will be available to the visitors looking north into the future Sam Po Shue Wetland Conservation Park. It is assumed that the design for the proposed Park will seek to preserve existing trees particularly at the interface with existing village development, and so the view will remain largely unchanged. Based on the existing situation including the mature tree growth in the foreground it is likely that there will be a very limited glimpsed view of the Application Site from this location. The view extends north and will include glimpsed views of the Technopole proposals.

7.96 Sensitivity of Public Viewers: Medium
This vantage point will be available to visitors to the future Sam Po Shue Wetland Conservation Park although views of the Proposed Scheme are likely to be largely obscured by the mature tree growth in the foreground. Given the nature of the future view and the transitory nature of viewers the sensitivity is likely to be medium.

7.97 Visual Composition: Not apparent
Views of the Application Site will be largely obscured by the intervening mature tree growth with just the upper portion of two to three blocks at the eastern end of the Application Site being visible through the gap in the trees. As such although there will appear to be some stepping of the building height owing to the orientation and disposition of the blocks the visual composition will not be readily apparent.

7.98 Visual Obstruction: Small
Given the screening of large part of the Proposed Scheme by the existing mature growth the degree of visual obstruction will be small.

7.99 Effect on Public Viewers: Slight
Views of the Proposed Scheme will be limited to the upper portions of two to three blocks at the eastern end of the Application Site and so the effect on public views will be slight.

7.100 Effect on Visual Resources: Small
The Proposed Scheme will obscure views over small area of the sky view above the eastern end of the Application Site however this forma small component of the overall view the effect on visual resources will be small.

7.101 Overall Visual Impact: Slightly adverse
As the visible portion of the Proposed Scheme forms a small component of the overall view from this location and the likely preservation of the existing intervening trees at the interface with the surrounding villages the overall visual impact is considered to be slightly adverse.

8.0 Conclusion

8.1 In general, the existing landscape and visual amenity is characterised by a combination of the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay and the backdrop of the hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan. There are also some relatively large-scale existing developments within the area including low-rise developments such as Fairview Park; and Palm Springs, Royal Palms and Wo Shang Wai in addition to Chuk Yuen Tsuen; Pok Wai Village, Pok Wai and Tai Sang Wai. Longer distance views extend from the high-rise developments at the northern periphery of Yuen Long and east from the eastern periphery of Tin Shui Wai. The area is also traversed by the significant infrastructure of the San Tin Highway and the piecemeal commercial and light industrial developments which line the highway corridor. The skyline of Shenzhen to the north and west also forms a significant feature in the landscape and the backdrop to views from the south and east. It should also be noted that this is a landscape which will be subject to significant change in the future moving from a semi-rural character to one which is more urbanised with developments such as the San Tin Technopole Development, Ngau Tam Mei New Development Area and a number of smaller approved residential developments to the south of the Application Site. These developments serve to shape the future visual context of the local area.

8.2 A detailed review of the Application Site and its immediate context has revealed that the visual envelope and the primary zone of visual influence from where the whole development is visible is largely contained in close proximity to the Application Site within the area of fishponds and their belts of trees immediately to the north of the Application Site. The second and tertiary zones of visual influence are largely located on areas of low-lying fishponds and wetlands to the north west, west and south west of the Application Site and the upland areas of the Lam Tsuen Country Park to the east and south east. Views range from more open views of the Application Site from the upland areas to the east to views which are largely partial and glimpsed from the low-lying areas to the west.

8.3 The Proposed Scheme for the Application Site adopts a proposed relaxation in the BH with the maximum height of the medium rise blocks of +42.00 mPD. The proposed building heights (BH) include 3-storey semi-detached and detached houses with a BH of +20.30mPD; and series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00 mPD to +35.00 mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00 mPD). The proposals adopt a stepped building height profile from north to south and along the east – west axis. The disposition and orientation of the proposed blocks is designed to minimise the potential impact on the visual amenity of the Wetland Restoration Area, the future SPS Wetland Conservation Park; and the fish pond areas to the north and west. The overall development form also includes three visual corridors (approximately 68.6m, 18.9 and 18.3 m wide) on a north-south axis through the development and an approximately 13.7 m wide building separation also on a north-south axis which serve to break up the combined development frontage and avoid a potential wall effect. This layering of the development, the scale of the individual blocks and stepped building height serve to reduce its apparent scale and reduce its overall visual mass.

8.4 The selection of vantage points has been comprehensive covering all the potential viewing angles from publicly accessible locations. As is clearly demonstrated by the photomontages there are few locations from where the Proposed Scheme can be seen in its entirety. In many of the locations views of the proposals are obscured to some degree by a combination of the intervening landform, mature vegetation and built structures; and in some locations by the Technopole and Ngau Tam Mei New Development Area proposals. In the few locations where there will be views of the proposals these are largely partial with the central and upper portions of the Proposed Scheme being visible above the intervening mature vegetation of the pond bunds to the north, west and south west of the Application Site.

8.5 When viewed from the selected vantage points the Proposed Scheme together with the other approved developments within the local area including the Technopole and Ngau Tam Mei New Development Area proposals fit relatively comfortably within its future context. The Technopole proposals adjacent to the Proposed Scheme with a maximum BH of around +76.1 mPD include residential buildings with a BH of up to +200 mPD. Whereas the Ngau Tam Mei New Development Area will potentially have buildings ranging from +90 mPD to +170 mPD. This 'comfortable fit' is in part due to the scale of the proposals and the architectural enhancement measures designed into the Proposed Scheme. It would be unrealistic to think that there would be no adverse impacts however this must also be considered in terms of the nature and extent of existing and future views. The predicted visual impacts for the vantage points mainly range from slightly adverse to moderately adverse. The latter are located immediately adjacent to the Application Site and enjoy more open views of the Proposed Scheme. For the most part views are partially obscured resulting is limited visibility of the Proposed Scheme.

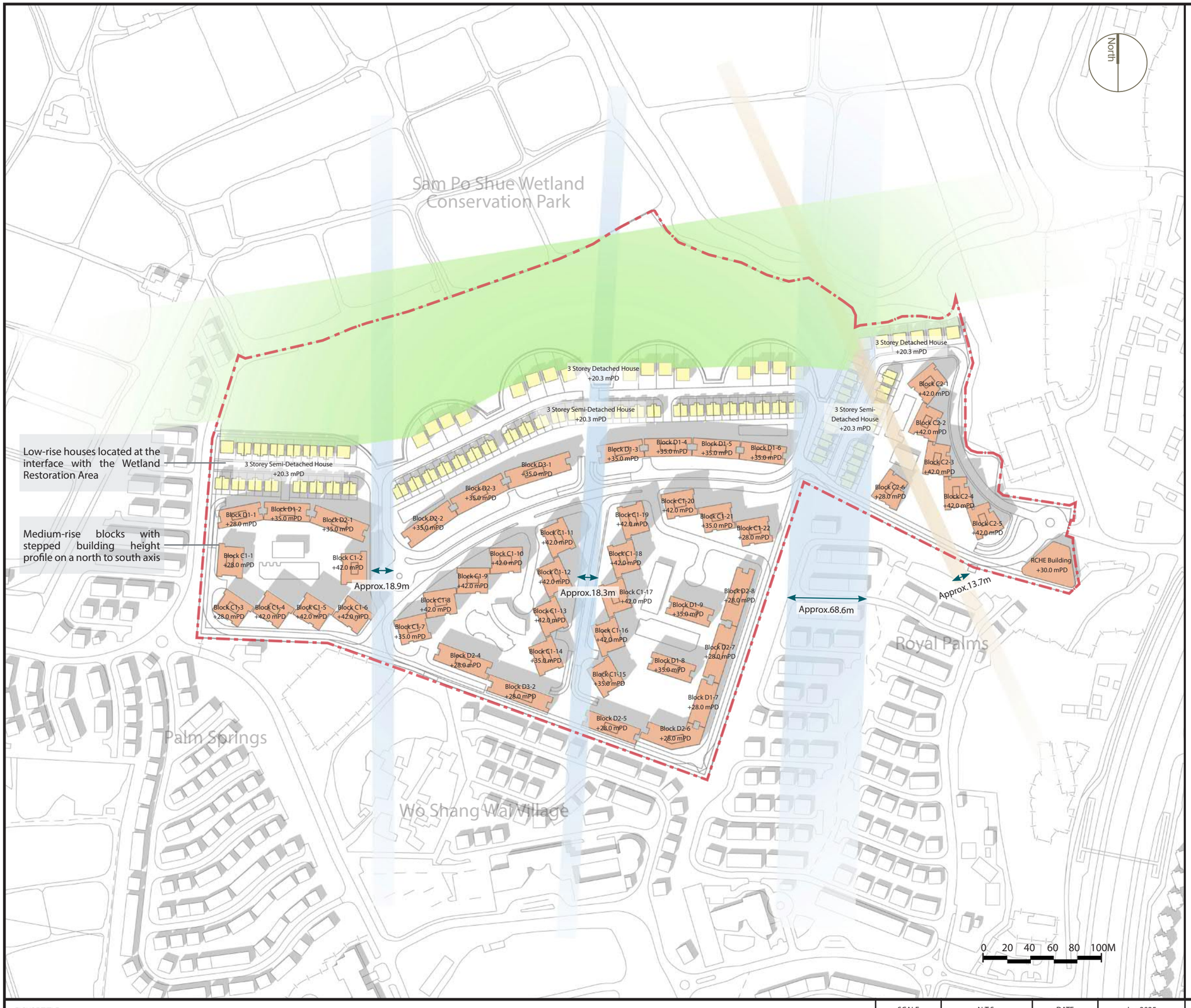
Table 8.1 Summary of Visual Impact Assessment Ratings

Vantage Point (VP)	Sensitivity of Public Viewers	Visual Composition	Visual Obstruction	Effect on Public Viewers	Effect on Visual Resources	Overall Visual Impact
VP 01: View looking south west from Lok Ma Chau MTR Station	Low	Compatible	Small	Slight	Small	Slightly Adverse
VP 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen)	Low	Not readily apparent and compatible	Small blockage but not significant	Slight to negligible	Small	Slightly Adverse
VP 03: View looking north west from the hiking trail to the summit of Kai Kung Leng	Medium	Not apparent	No Blockage	No Effect	No Effect	Negligible
VP 04: View looking north west from Kai Kung Leng	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 05: View looking north from the spur of the Kai Kung Ridgeline	Medium	Compatible	Small	Slight	Small	Slightly adverse
VP 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village)	Low	Not apparent	No Blockage	No Effect	No Effect	Negligible
VP 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai	Medium	Not apparent	Small	Slight	Small	Slightly Adverse
VP 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 09: View looking south east from Tam Kon Chau Road	Medium	Compatible	Medium	Moderate	Medium	Moderately Adverse
VP 10: View looking south east from WWF Mai Po Nature Reserve Visitor Centre	Medium	Not apparent	Small	Slight	Small	Slightly Adverse

Vantage Point (VP)	Sensitivity of Public Viewers	Visual Composition	Visual Obstruction	Effect on Public Viewers	Effect on Visual Resources	Overall Visual Impact
VP 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park	Medium	Not apparent	No Blockage	No Effect	No Effect	Negligible
VP 12: View looking west from the Tsz Tong of Mai Po Tsuen	Medium	Not apparent	No Blockage	No Effect	No Effect	Negligible
VP 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen	Medium	Not apparent	Small	Slight	Small	Slightly Adverse

8.6 Despite the relative scale of the Proposed Scheme the factors described above together with the adoption of a responsive architectural design the implementation of the proposals would not significantly detract from the existing landscape and visual amenity of the local area. Although the Proposed Scheme will be part of a dramatic change in the existing sub-urban character of the existing landscape the future visual context is represented by a much more developed character and so the proposals are considered to be visually compatible with this future context.

Visual Impact Assessment Figures



LEGEND

- Application Site Boundary
- Proposed Blocks/ Houses
- Proposed Low-Rise Houses (detached and semi-detached)
- Proposed Medium-Rise Blocks
- Proposed Building Setbacks
- Proposed Visual Corridors (Between Proposed Blocks)
- Building Seperation (Between Proposed Blocks)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 3.1	REV	-

SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
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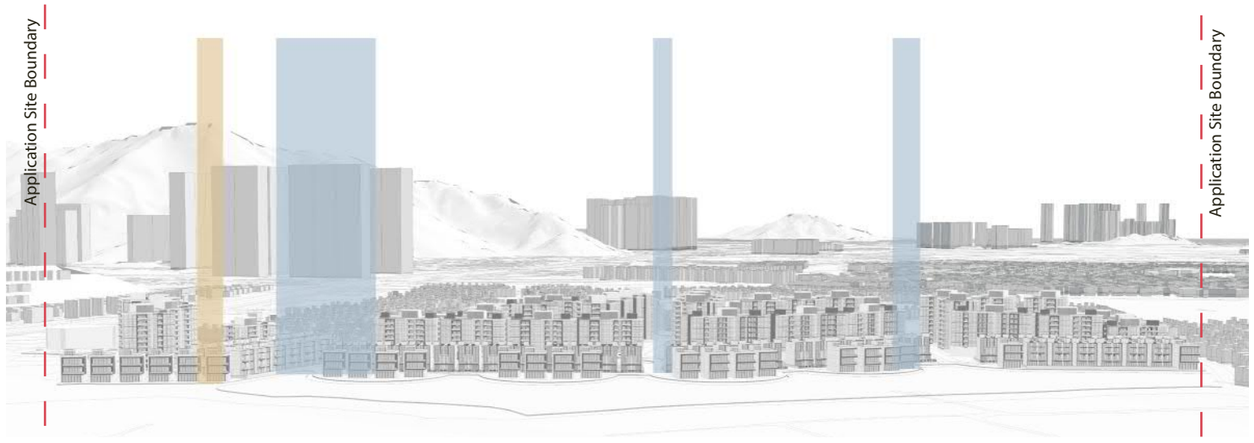
View from the Wetland Conservation Park of the Proposed Scheme

Visual Permeability

The design for the Proposed Scheme has enhanced visual permeability when viewed from the north and south through the incorporation of three visual corridors.

This is achieved through disposition of the proposed medium-rise residential blocks and the location of the low-rise houses to create a significant north –south visual corridors through the Application Site with a minimum widths of approximately of 68.6m, 18.9 and 18.3m. The Proposed Scheme also adopts a significant setback of the medium-rise blocks from the northern Application Site boundary.



View from the Wetland Conservation Park of the Proposed Scheme

Building Seperation (bewteen Proposed blocks)

Permeability within Application Site

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Urban Design Considerations: Visual Permeability

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 3.2	REV	-

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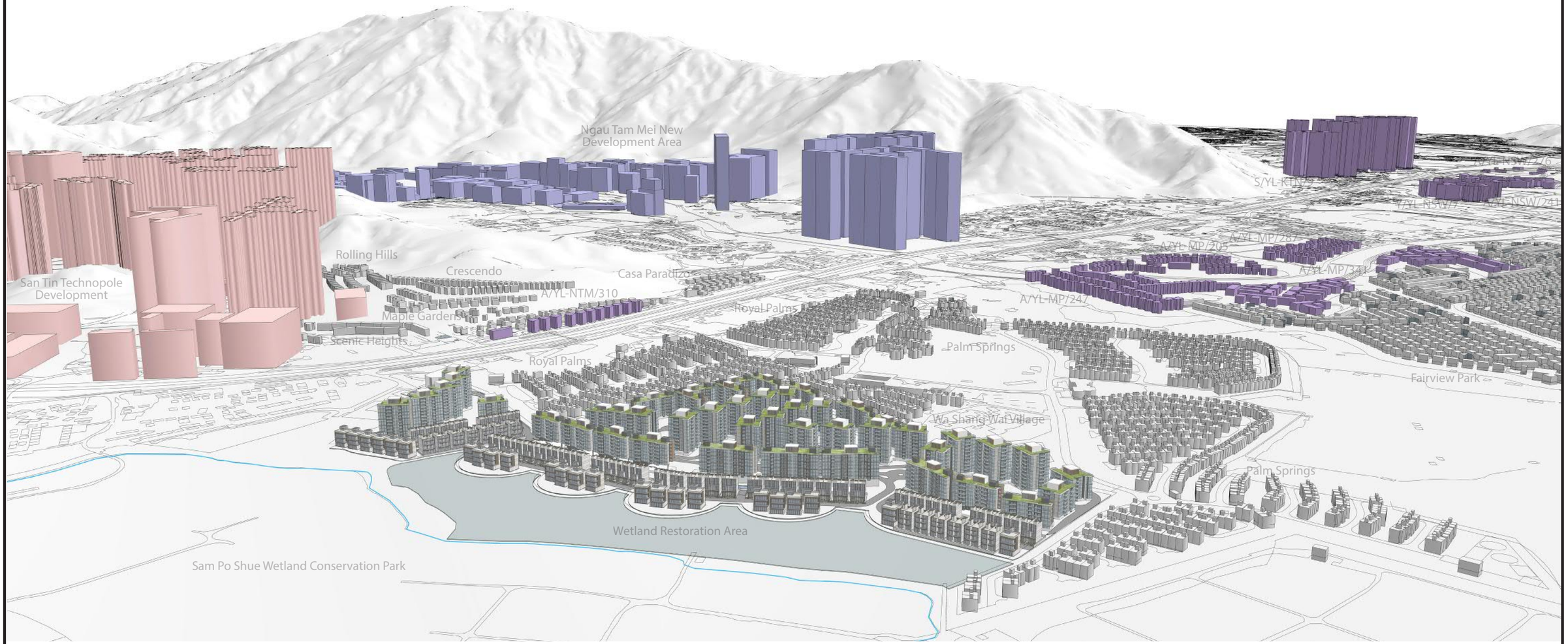

Existing Developments

Ngau Tam Mei New Development Area

San Tin Technopole Development

Approved Development

SPS Wetland Conservation Park

Urban design considerations

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise residential blocks stepping up on a north to south axis and from east to west and vice versa. These medium rise blocks range in height form around +28.00 mPD to +42.00 mPD in the south east corner of the Application Site. Disposition and orientation of the proposed blocks designed to minimise the potential impact on the visual amenity of the wetlands and fishpond areas to the north and west.
- The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.
- Introduction of three visual corridors on a north south axis through the development which serves to break up the combined development frontage and avoid a potential wall effect.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 3.3	REV	-

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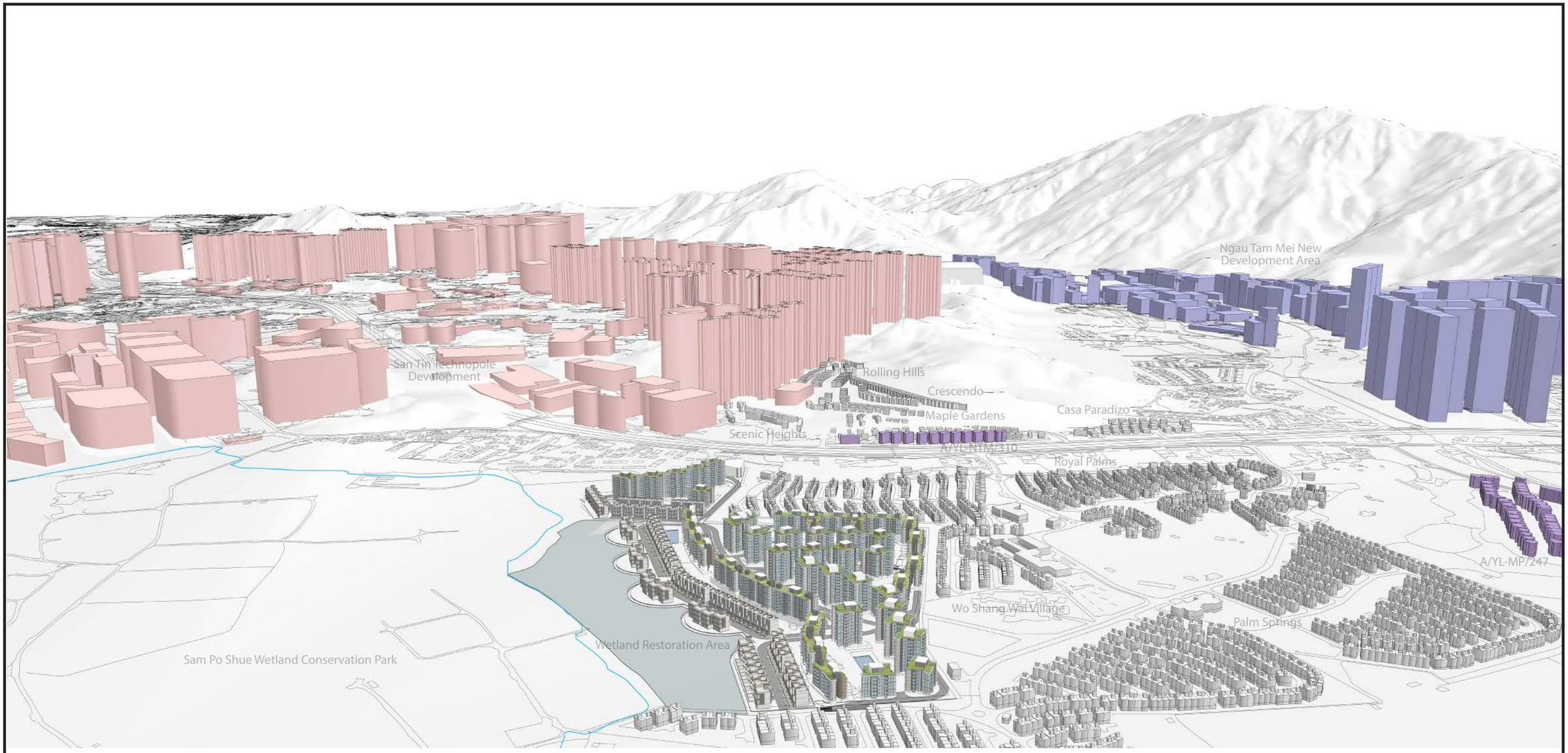

Existing Developments

Ngau Tam Mei New Development Area

San Tin Technopole Development

Approved Development

SPS Wetland Conservation Park

Urban design considerations

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise Introduction of responsive building heights ranging The image shows the stepped height profile incorporated into the Proposed Scheme and the disposition and orientation of the proposed medium-rise residential blocks which with the visual corridors view also shows the scale of the Proposed Scheme relative to the scale of the technopole proposals.

- The building height profile is arranged to have 6-storey blocks at the southern boundary edges, facing surrounding private residential houses. This proposed intensity of 6-storeys is considered compatible in scale with the surrounding private residential developments, aligns with the existing OU(CDWRA) zoning height, and has insignificant visual impact at the pedestrian public vantages in the surrounding neighborhood. The highest building heights of maximum 10-storey blocks are concentrated at the central area of the Site, where it would have the least ecological impact to the wetlands in the north, and the least visual impact to the southern neighborhood, while optimizing the development potential of the site.

- The lowest building heights are the 3-storey houses at the northern portion of the site, facing the existing wetlands (including the Wetland Restoration Area and the Wetland Conservation Park). The 3-storey heights are considered compatible and with the least impact to the ecology of the wetlands.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 3.4	REV	-

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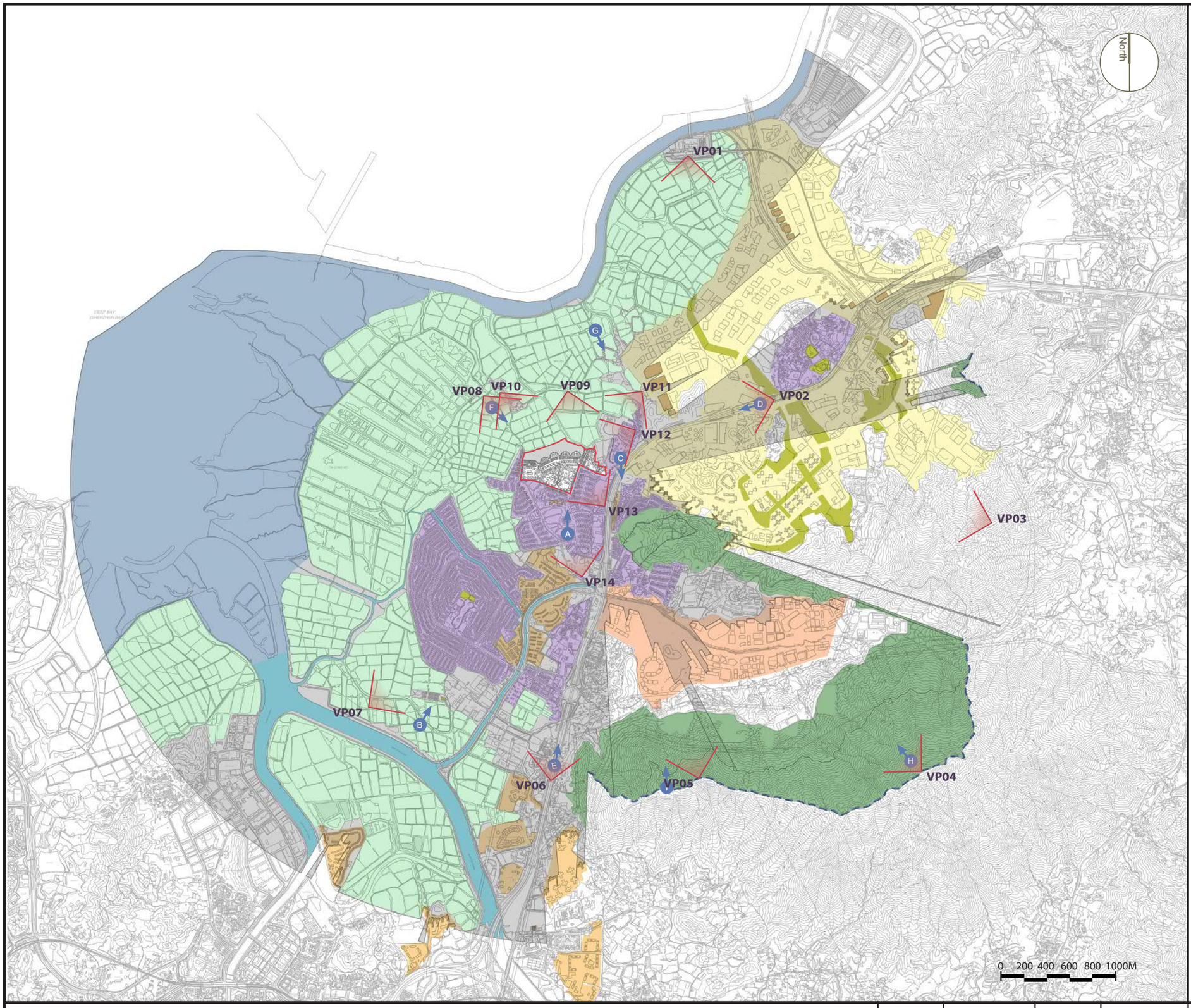

LEGEND

- Approximate location of Rezoning Site
- Proposed Scheme (Max building height +76.1 mPD)
- Boundary of Application Site
- Fields of View towards the Proposed Development
- VP — Key Public Vantage Points
- A — Location of photographs of Visual Elements
- +9.3mPD — Height in mPD
- Visual Envelope
- Mountain Backdrop and Small Knolls
- Ridgeline
- Wetland and Fishpond Landscape
- Estuary and Bay Landscape
- River Courses
- Proposed San Tin Technopole Development
- Proposed Ngau Tam Mei New Development Area
- Approved Developments
- Existing Low-rise Village Type Development
- Publicly Accessible Open Space / Amenity Areas
- Key Buildings (Shaping Visual Envelope)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.1	REV	-

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A View looking north towards the Application Site showing the juxtaposition of the existing extensive residential development with the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay; and the visual prominence of the Shenzhen Skyline of high and medium-rise development



B View looking north towards the Application Site showing the visual backdrop formed by the upland setting of hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.2	REV	-

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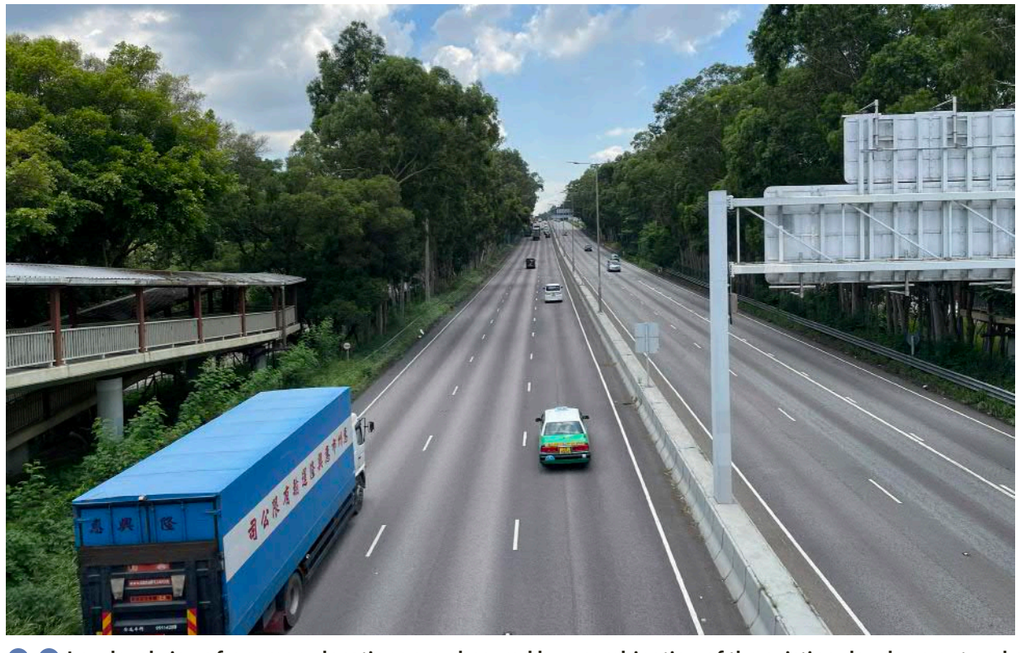
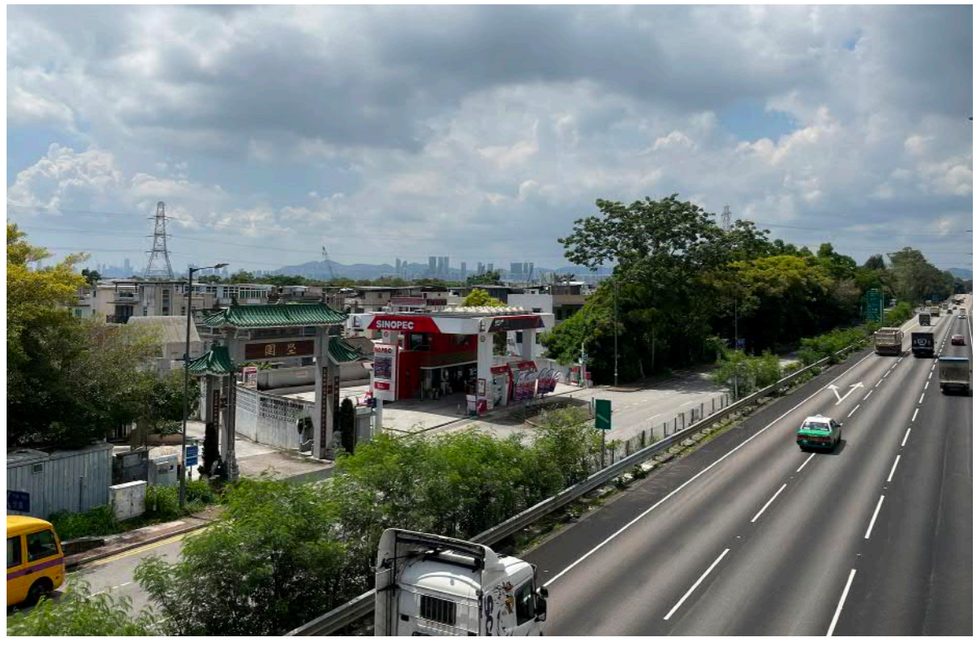
C Visually detracting elements include the major infrastructural development such as the San Tin Highway and the associated engineering works including highways structures; and the piecemeal commercial and light industrial developments which line the highway corridor





D E Low level views from many locations are obscured by a combination of the existing development and mature tree growth

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

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FIGURE NO.	Figure 4.3	REV	-

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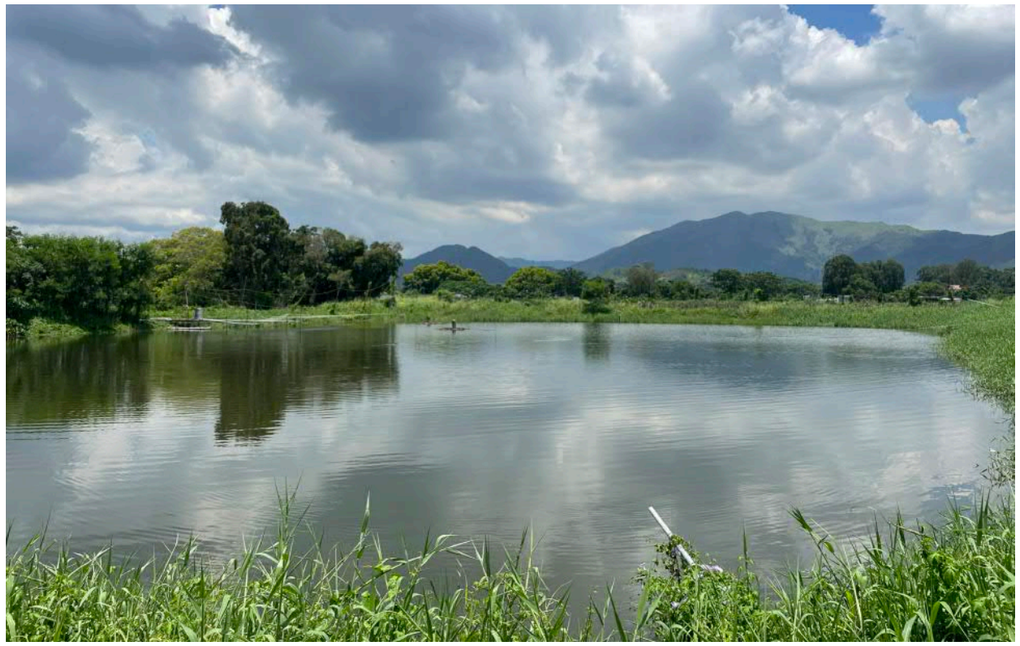
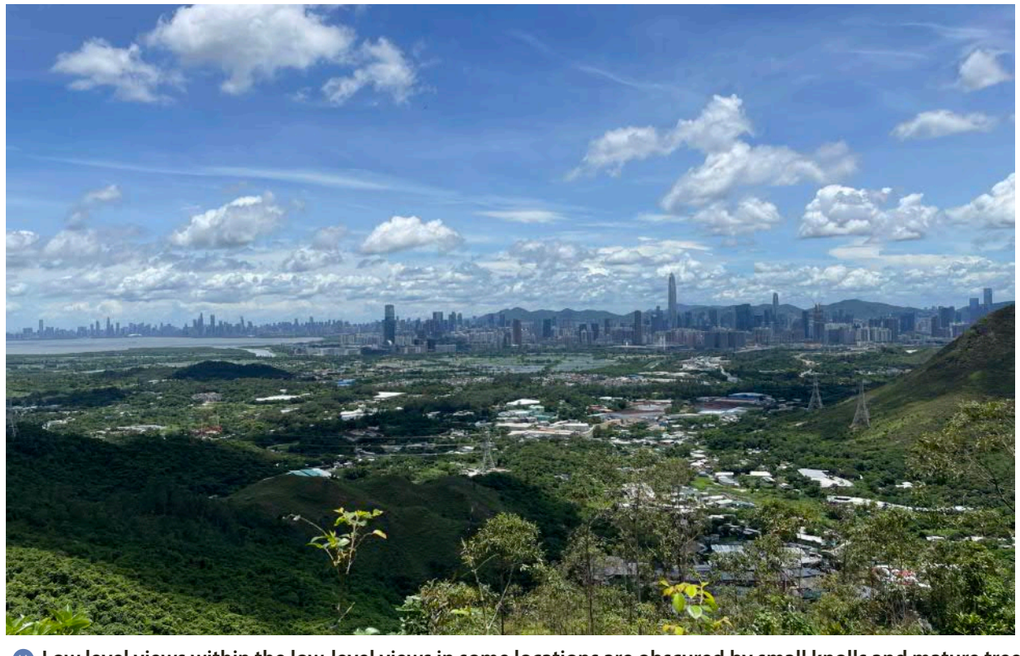
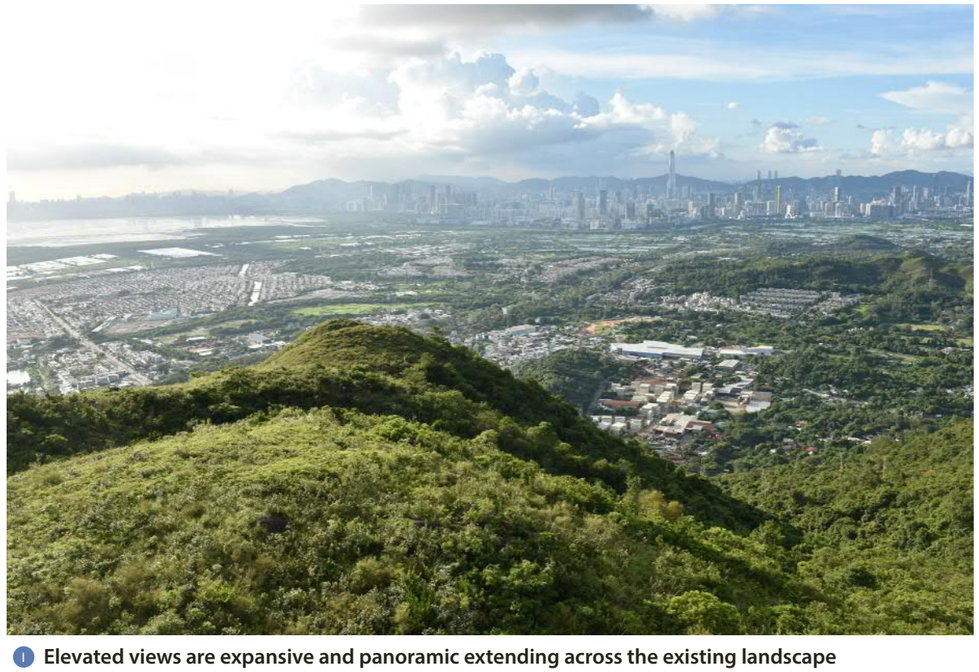


F G Low level views within the fishpond areas also obscured by mature tree growth on pond bunds





H Low level views within the low-level views in some locations are obscured by small knolls and mature tree growth which clothes the landscape



I Elevated views are expansive and panoramic extending across the existing landscape

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

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FIGURE NO.	Figure 4.4	REV	-

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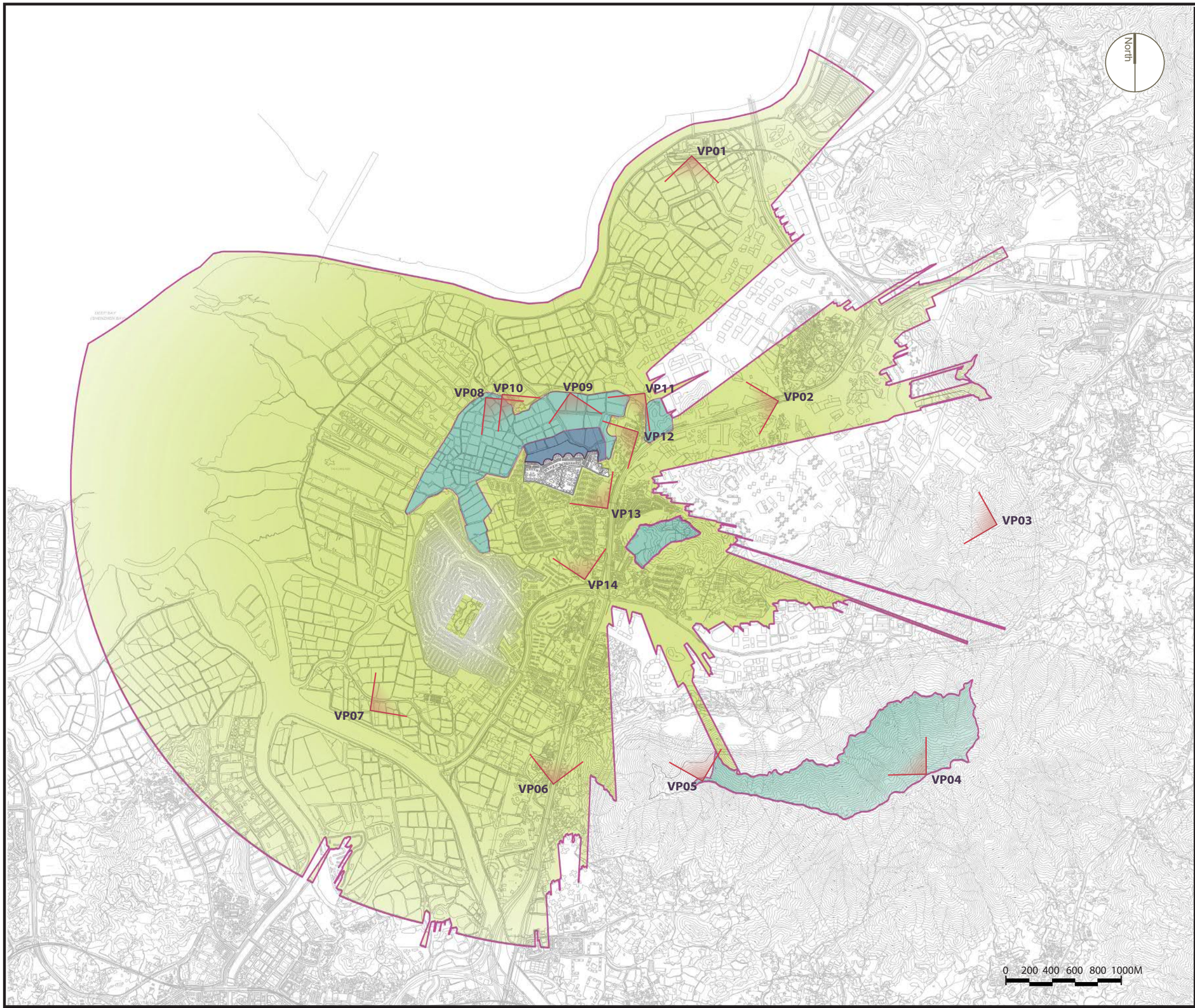

LEGEND

- Application Site Boundary
- Zone of Visual Influence
- VP — Representative vantage points (VPs) and angle of main view
- Primary ZVI – Area from which the majority of the development can be seen. Largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.
- Secondary ZVI – Area with more limited visibility of the Indicative Scheme due to intervening obstacles including buildings, mature vegetation and landform. Visible part of the proposal largely limited to the upper portions of the residential blocks.
- Tertiary ZVI – For the most part views of the Indicative Scheme are obscured or screened by intervening visual obstacles including the landform andand built development. The locations are distanced and therefore limited to glimpsed views of the upper portion of the some of the proposed residential blocks.

Local Vantage Points

Vantage Point 01: Vie w looking south west from Lok Ma Chau MTR Station (VP 01)

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)

Vantage Point 04: View looking north west from Kai Kung Leng(VP 04)

Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 05)

Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)

Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Envelope and Visually Sensitive Receivers

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.5	REV	-

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LEGEND

- Application Site Boundary
- Zone of Visual Influence
- VP — Representative vantage points (VPs) and angle of main view
- Primary ZVI – Area from which the majority of the development can be seen. Largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.
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- Tertiary ZVI – For the most part views of the Indicative Scheme are obscured or screened by intervening visual obstacles including the landform andand built development. The locations are distanced and therefore limited to glimpsed views of the upper portion of the some of the proposed residential blocks.

Local Vantage Points

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Envelope and Visually Sensitive Receivers (Blow-up)

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.6	REV	-

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LEGEND

Application Site Boundary

VP — Representative vantage points (VPs) and angle of main view

Proposed Scheme

Local Vantage Points

Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (VP 01)

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)

Vantage Point 04: View looking north west from Kai Kung Leng(VP 04)

Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 05)

Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)

Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Location of Photomontage Vantage Points

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 7.1	REV	-

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LEGEND

- Application Site Boundary
- VP — Representative vantage points (VPs) and angle of main view
- Proposed Scheme

Local Vantage Points

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Location of Photomontage Vantage Points

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 7.2	REV	-

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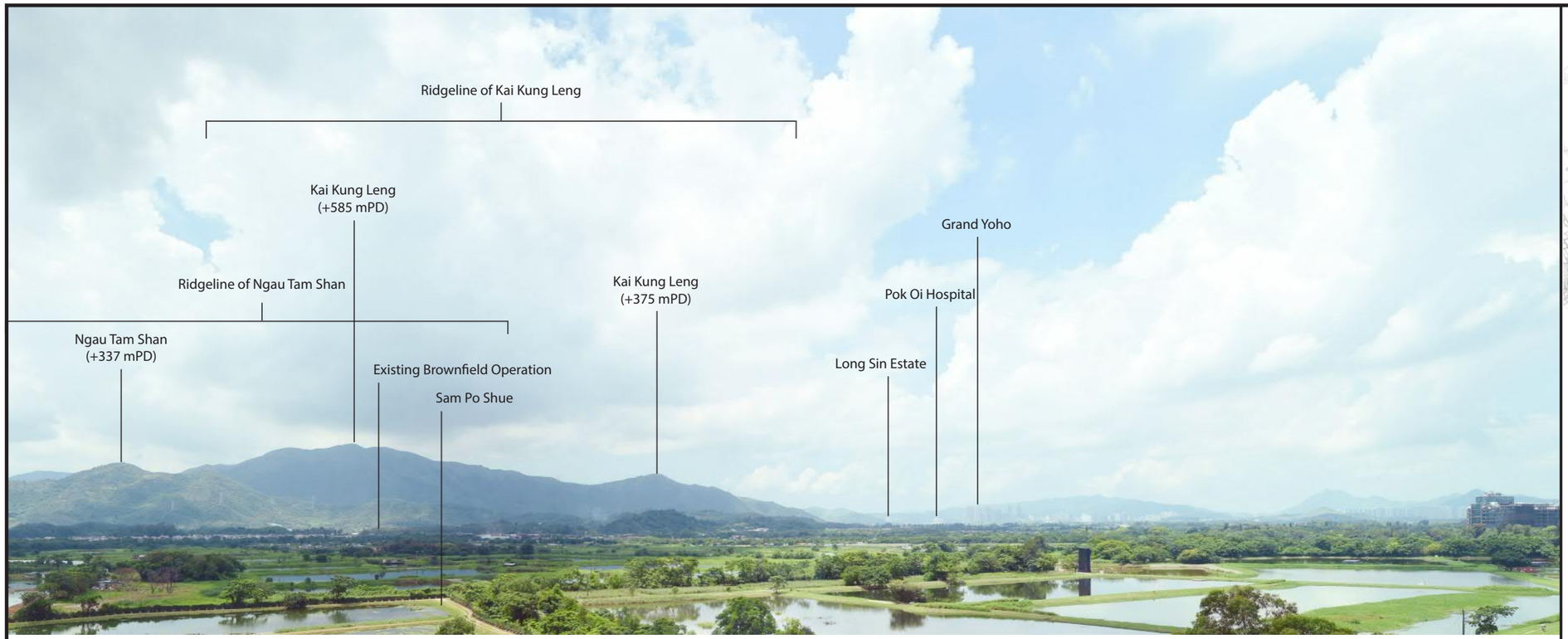
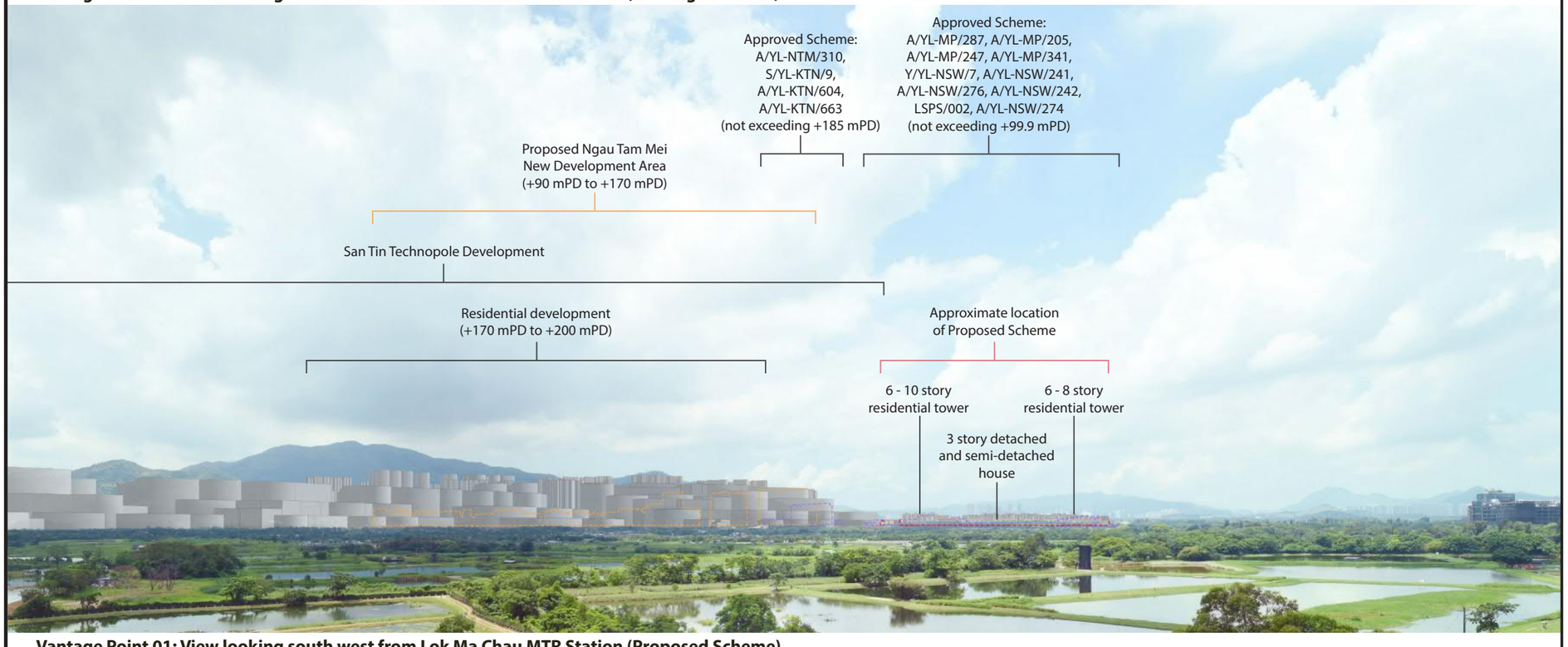
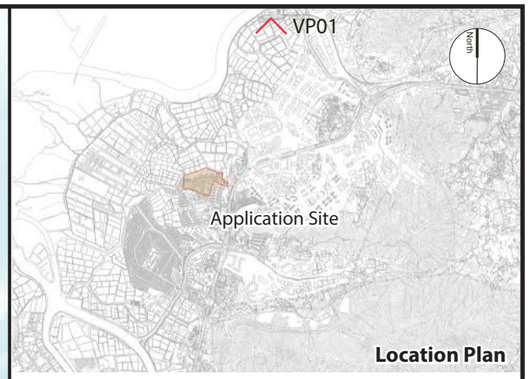


Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (Existing Situation)



Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (Proposed Scheme)



Vantage Point 01 (VP01)

Vantage point elevation: +10 mPD
Viewing distance: 2765m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 7.3	REV	-

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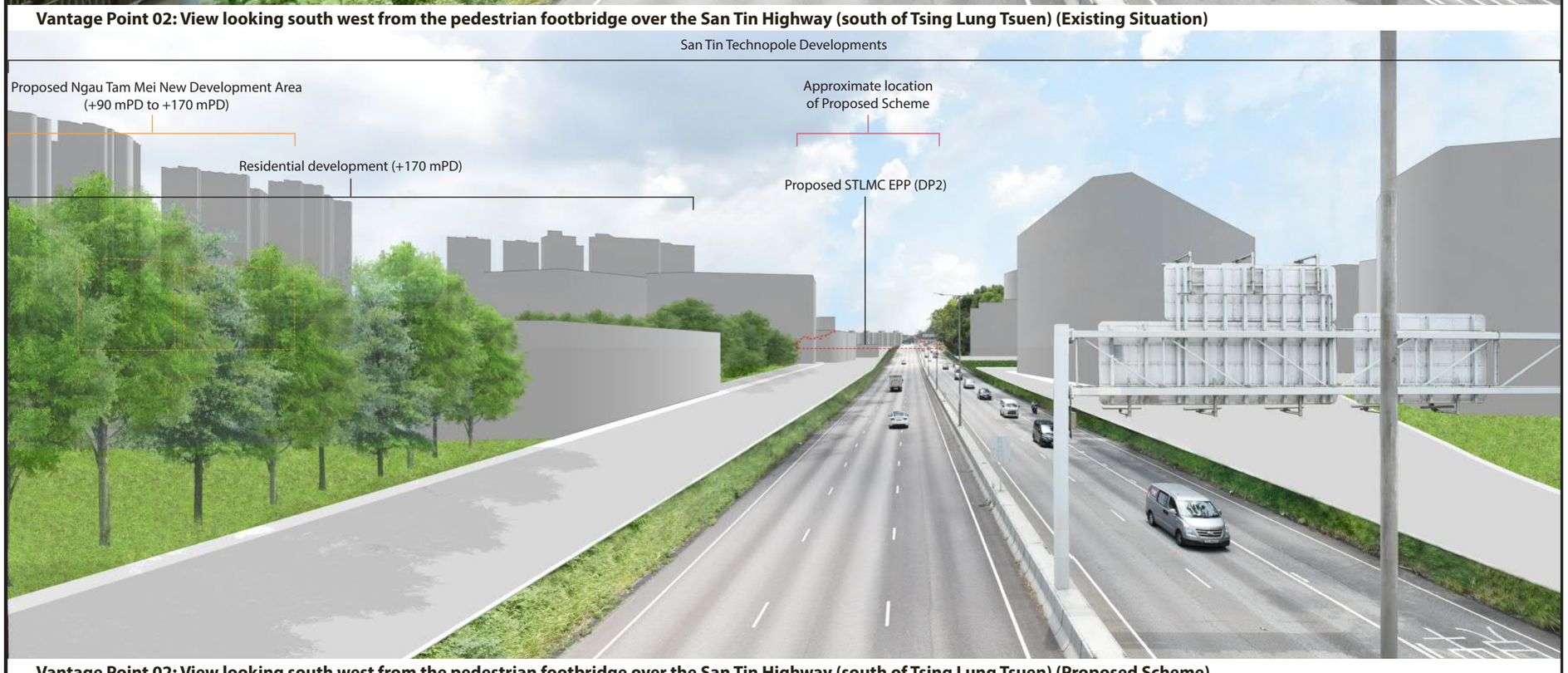
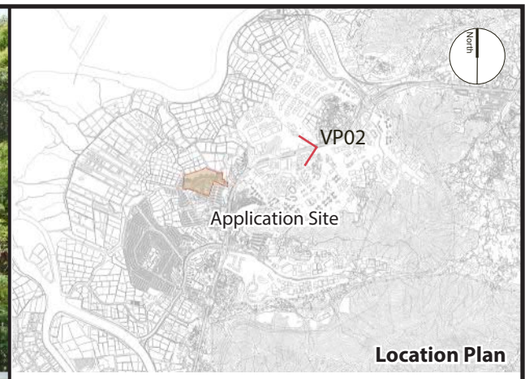
Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (Existing Situation)



Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (Proposed Scheme)



Vantage Point 02 (VP02)

Vantage point elevation: +10 mPD
Viewing distance: 1680 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 7.4	REV	-

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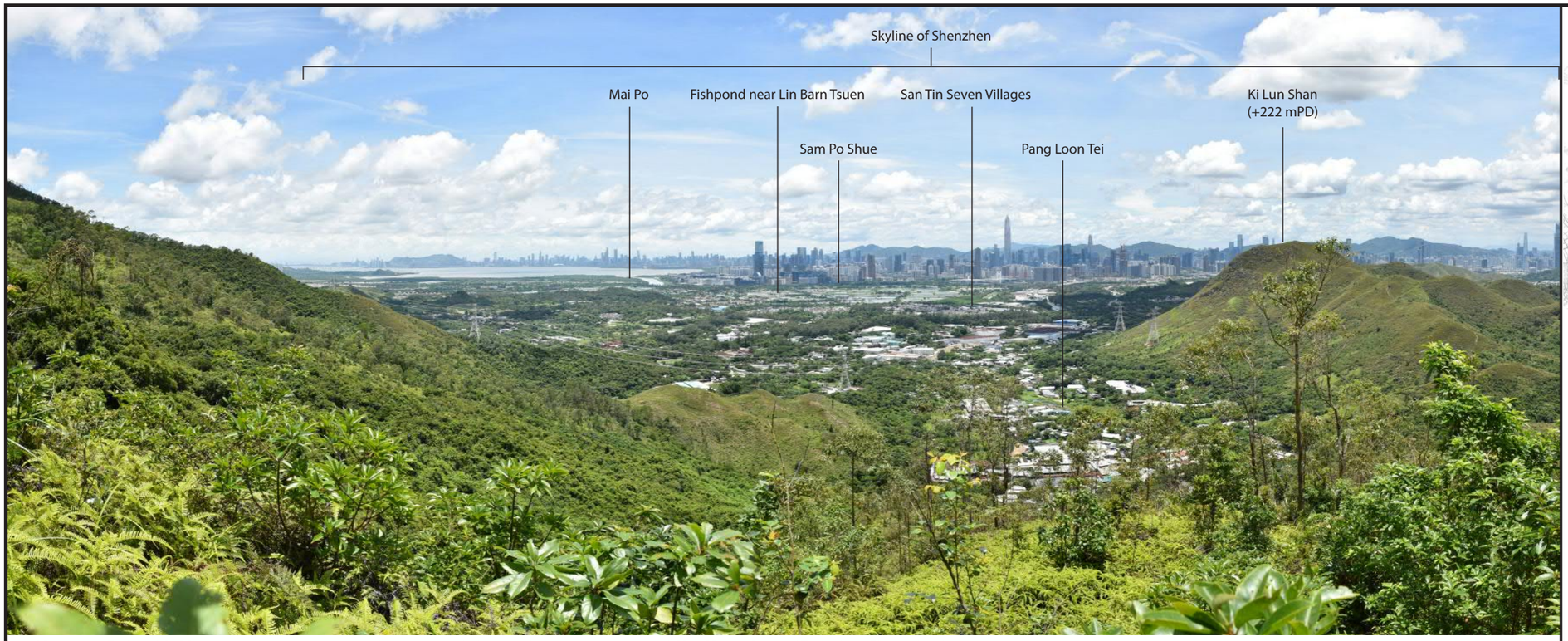
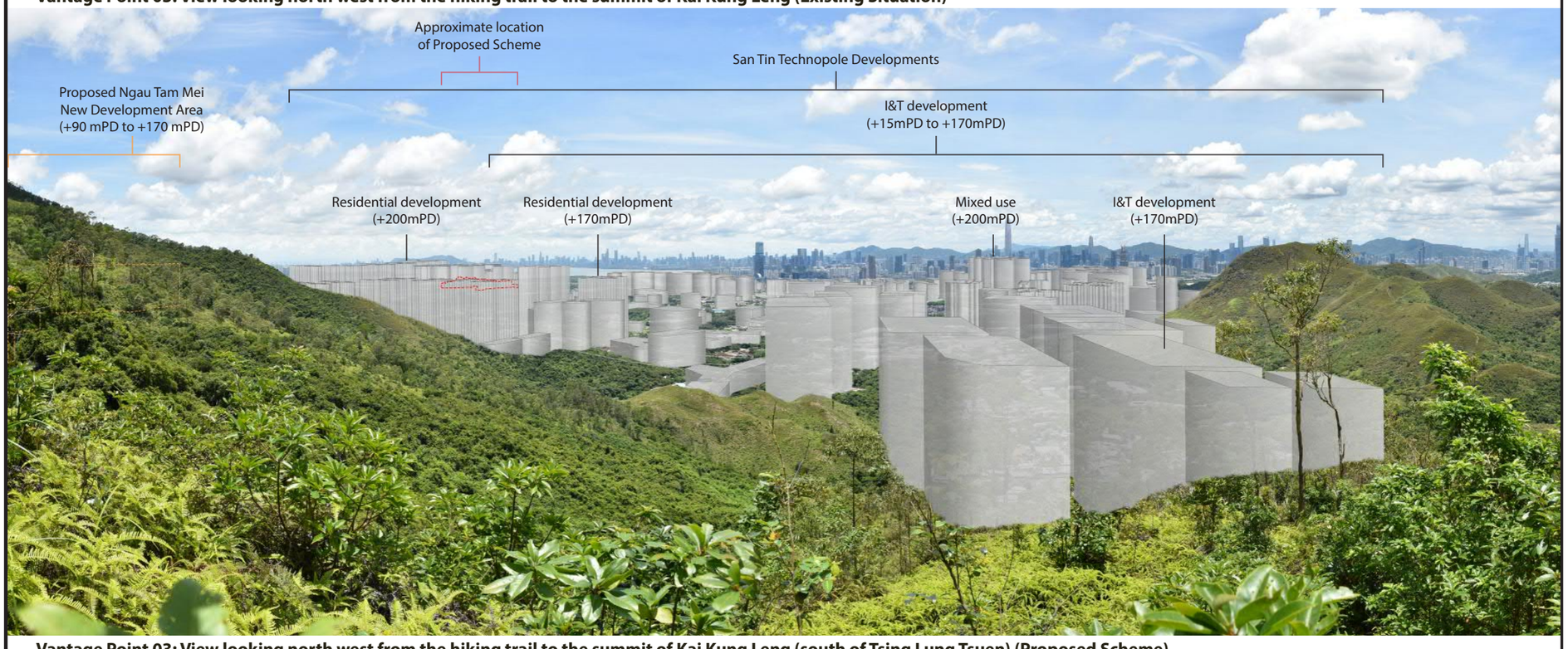
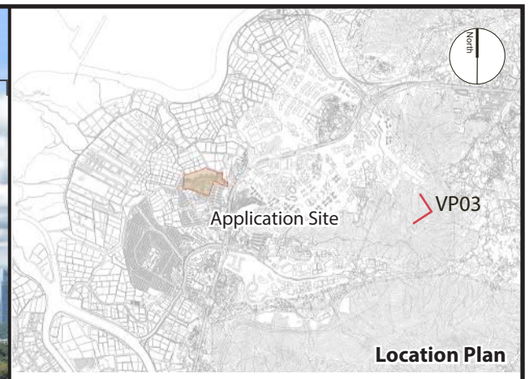


Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (Existing Situation)



Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (south of Tsing Lung Tsuen) (Proposed Scheme)



Vantage Point 03 (VP03)

Vantage point elevation: +200 mPD
Viewing distance: 3555 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 7.5	REV	-

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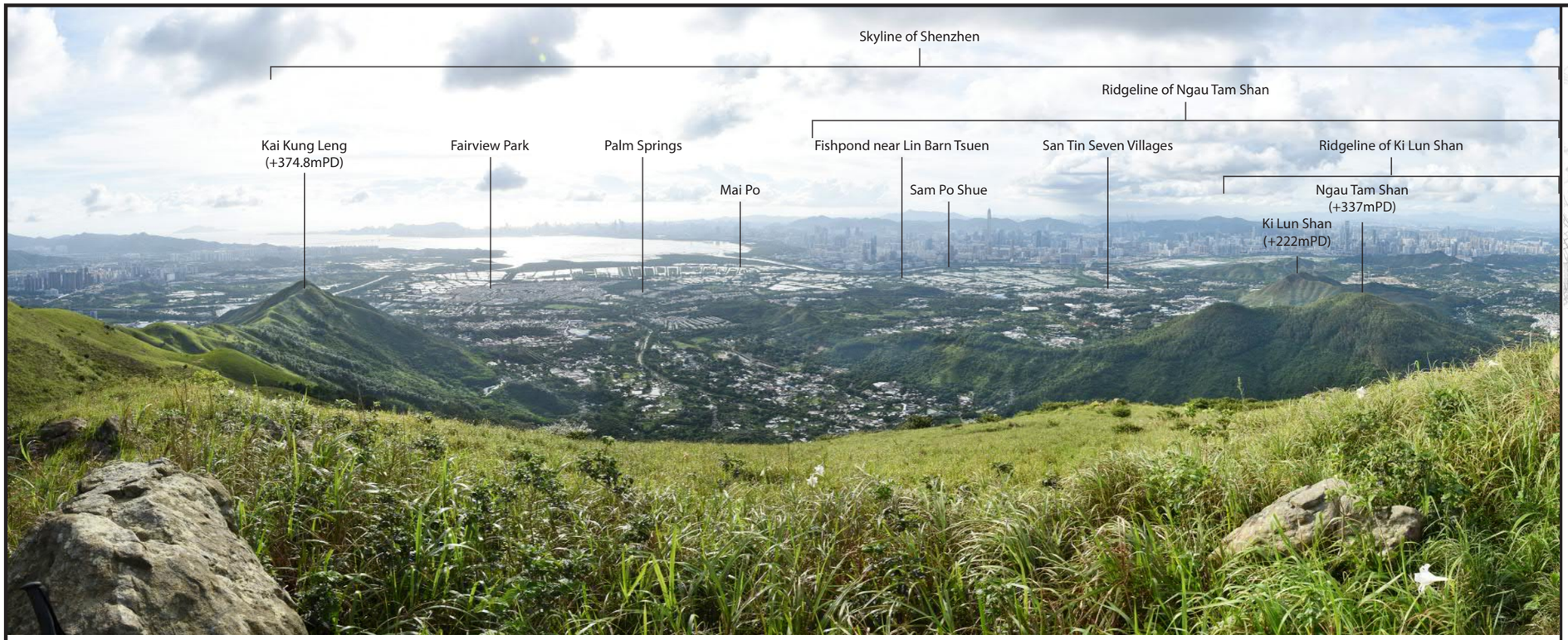
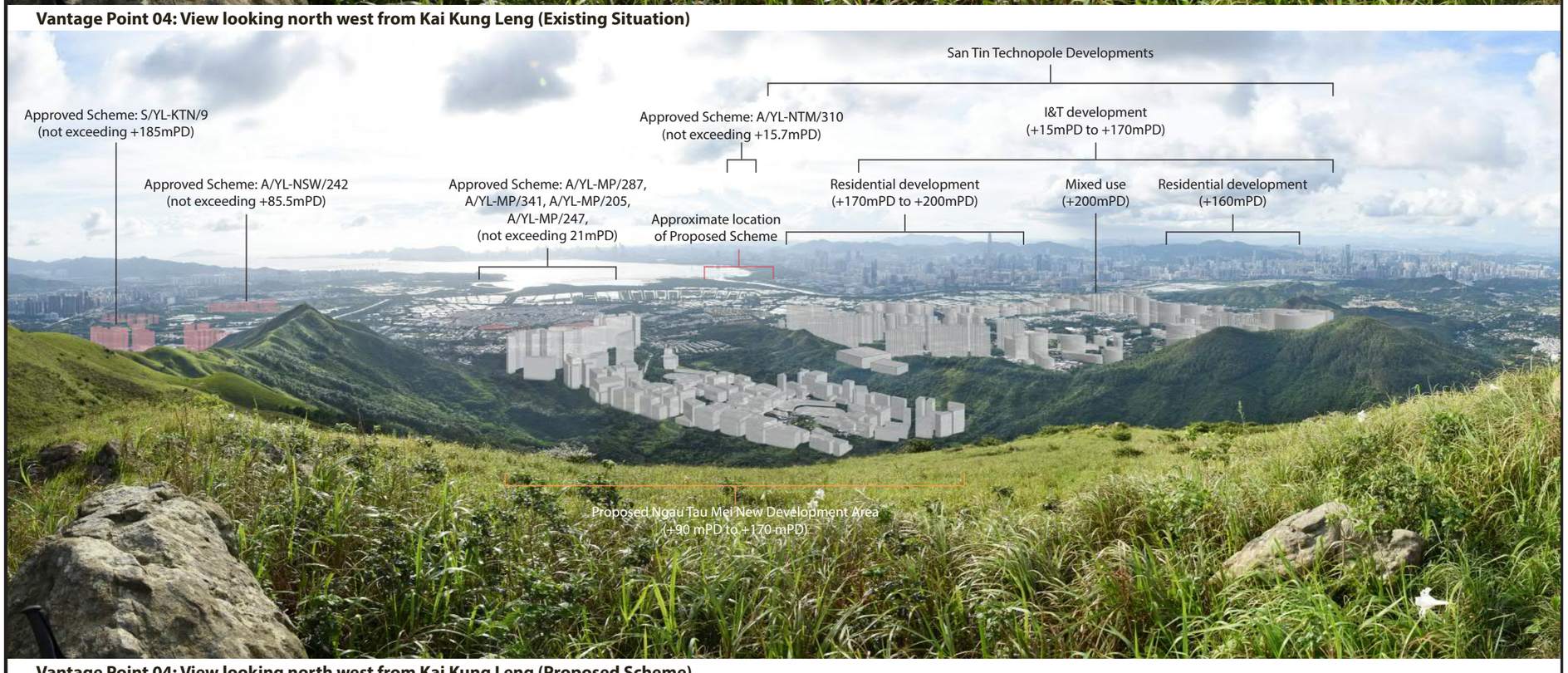


Vantage Point 04: View looking north west from Kai Kung Leng (Existing Situation)



Vantage Point 04: View looking north west from Kai Kung Leng (Proposed Scheme)



Vantage Point 04 (VP04)

Vantage point elevation: +585mPD
Viewing distance: 3935m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.6	REV	-

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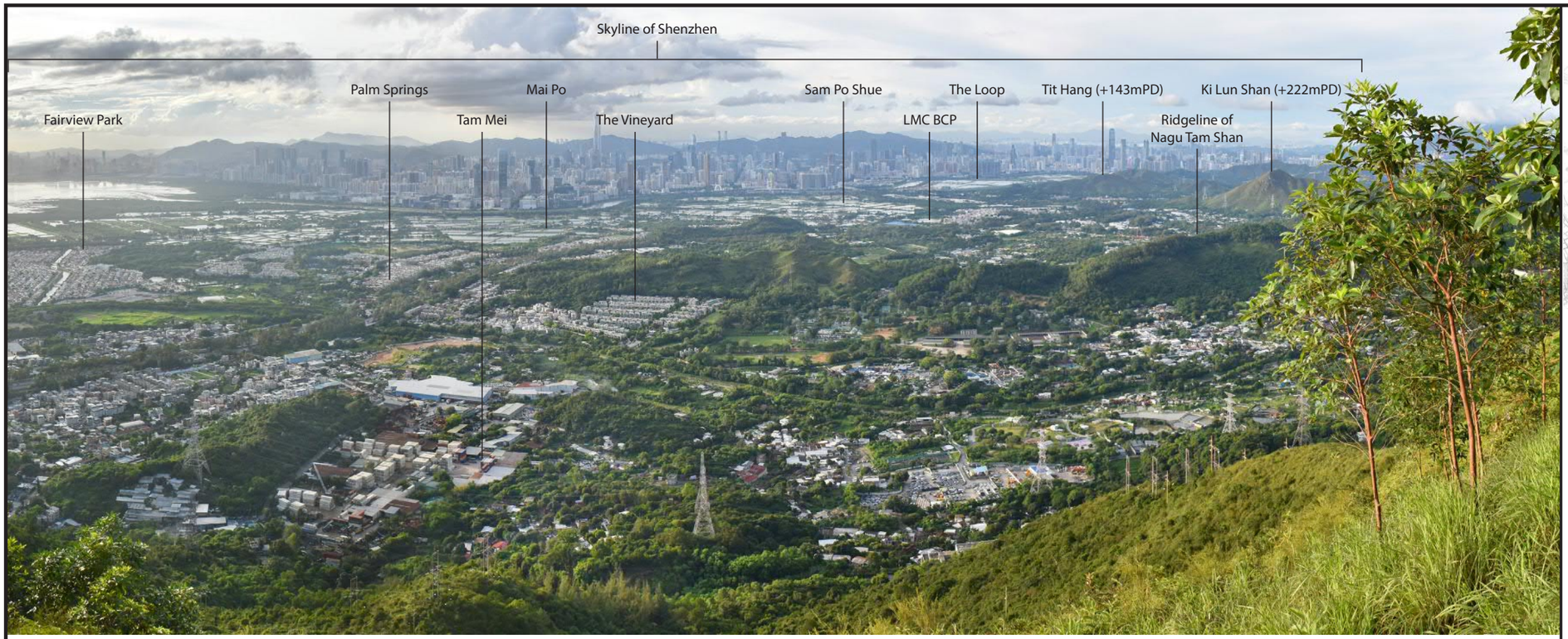
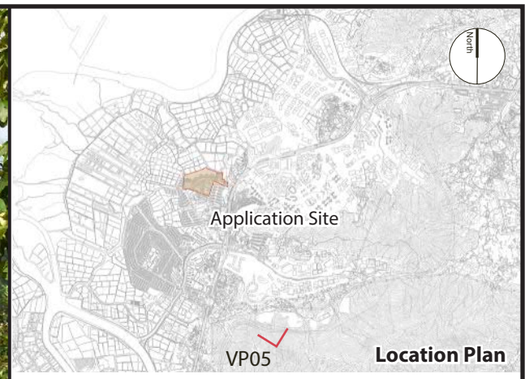


Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (Existing Situation)



Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (Proposed Scheme)



Vantage Point 05 (VP05)

Vantage point elevation: +375 mPD
Viewing distance: 2830 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.7	REV	-

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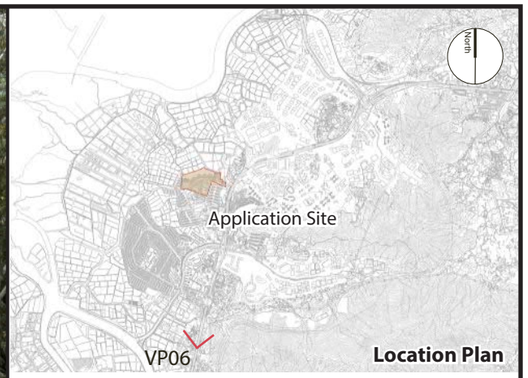
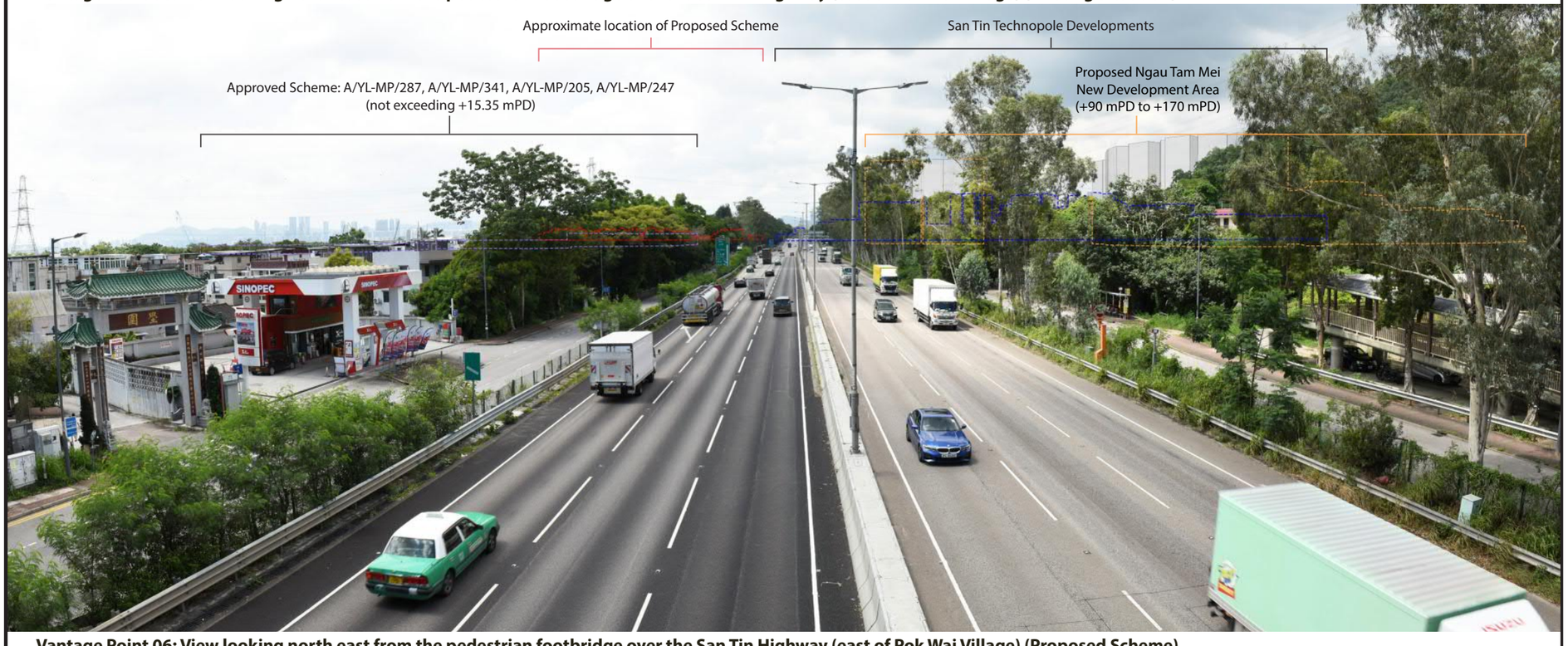
Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (Existing Situation)



Vantage Point 06 (VP06)

Vantage point elevation: +10 mPD
Viewing distance: 2595 m
Maximum height of Proposed Development: +42.0 mPD



Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (Proposed Scheme)

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.8	REV	-

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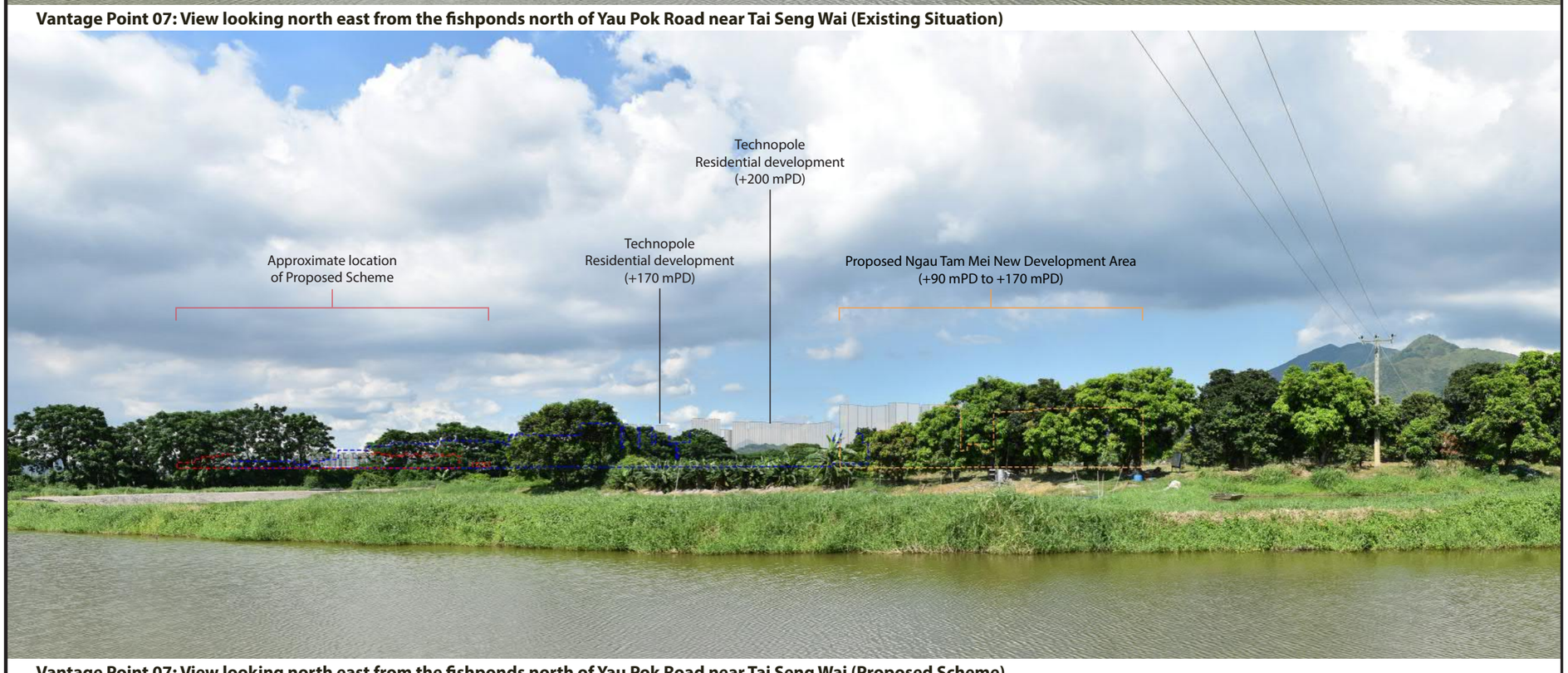
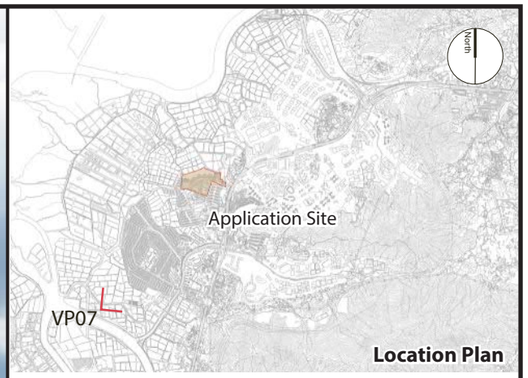
Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (Existing Situation)



Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (Proposed Scheme)



Vantage Point 07 (VP07)

Vantage point elevation: +3.2 mPD
Viewing distance: 2450 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.9	REV	-

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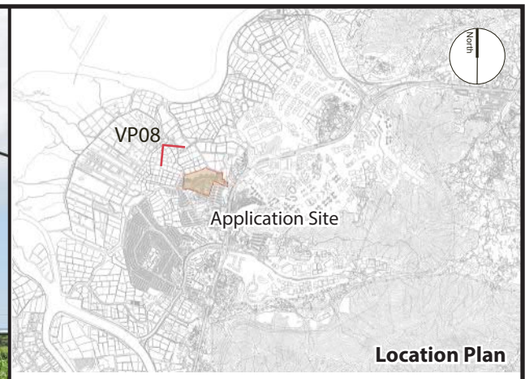
Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (Existing Situation)



Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (Proposed Scheme)



Vantage Point 08 (VP08)

Vantage point elevation: +3.9 mPD
Viewing distance: 765 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.10	REV	-

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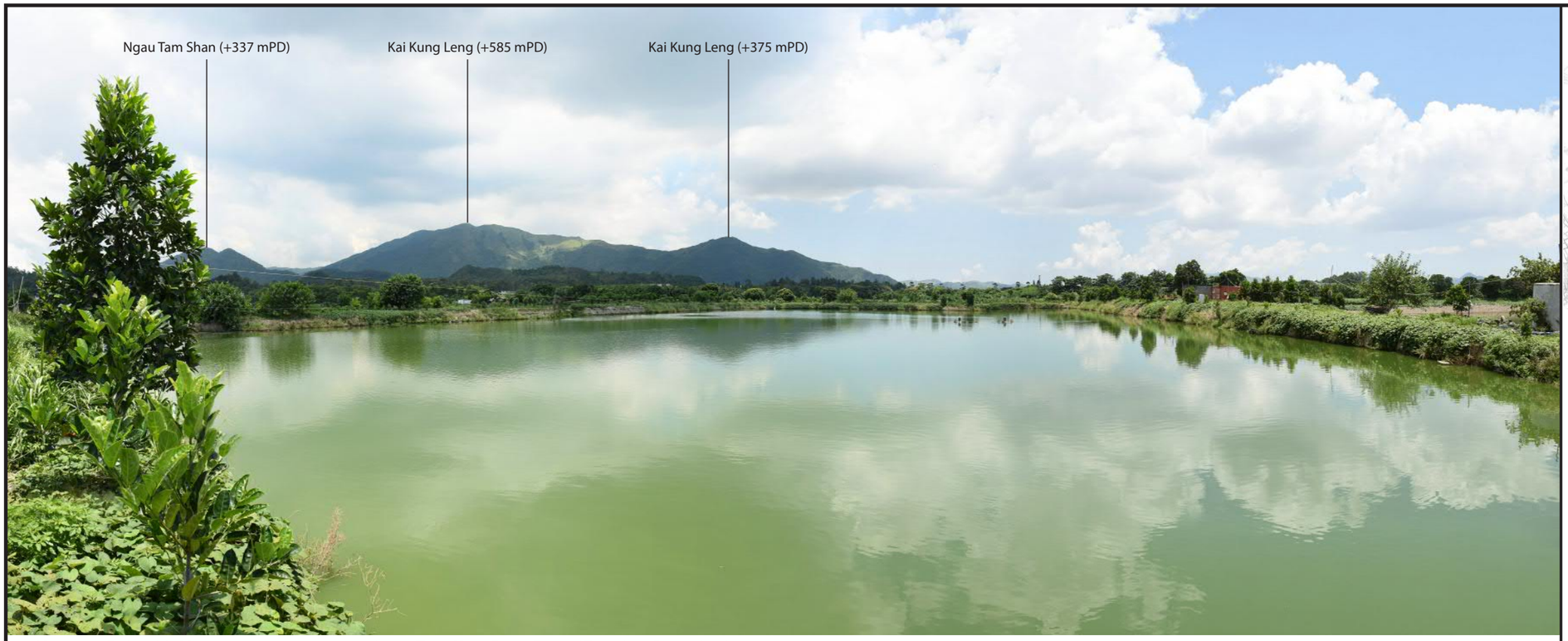
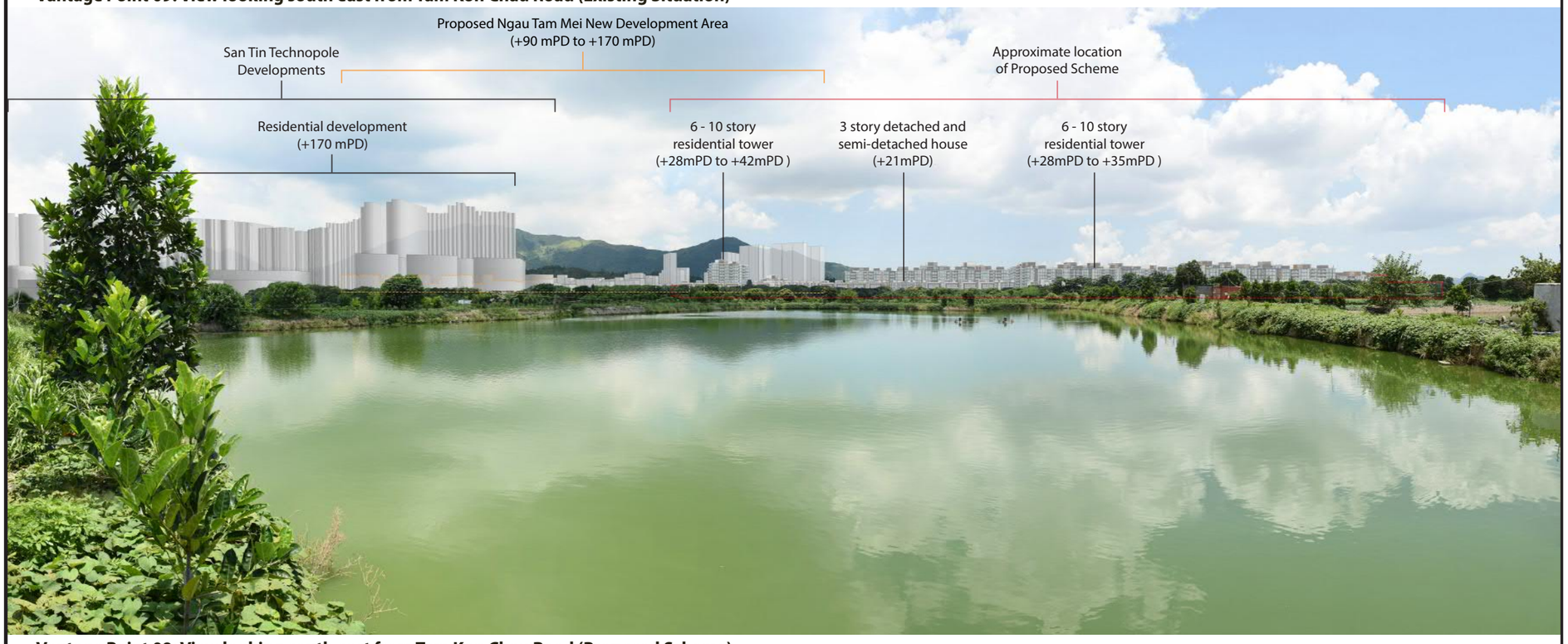
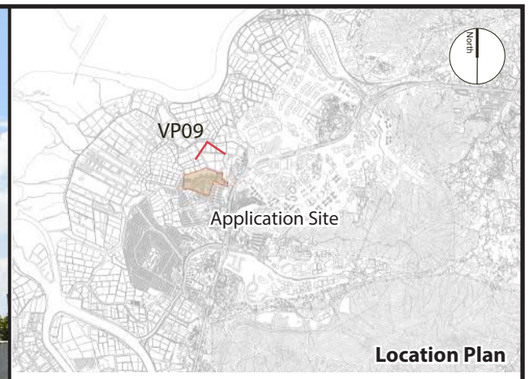


Vantage Point 09: View looking south east from Tam Kon Chau Road (Existing Situation)



Vantage Point 09: View looking south east from Tam Kon Chau Road (Proposed Scheme)



Vantage Point 09 (VP09)

Vantage point elevation: +3.2 mPD
Viewing distance: 550 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.11	REV	-

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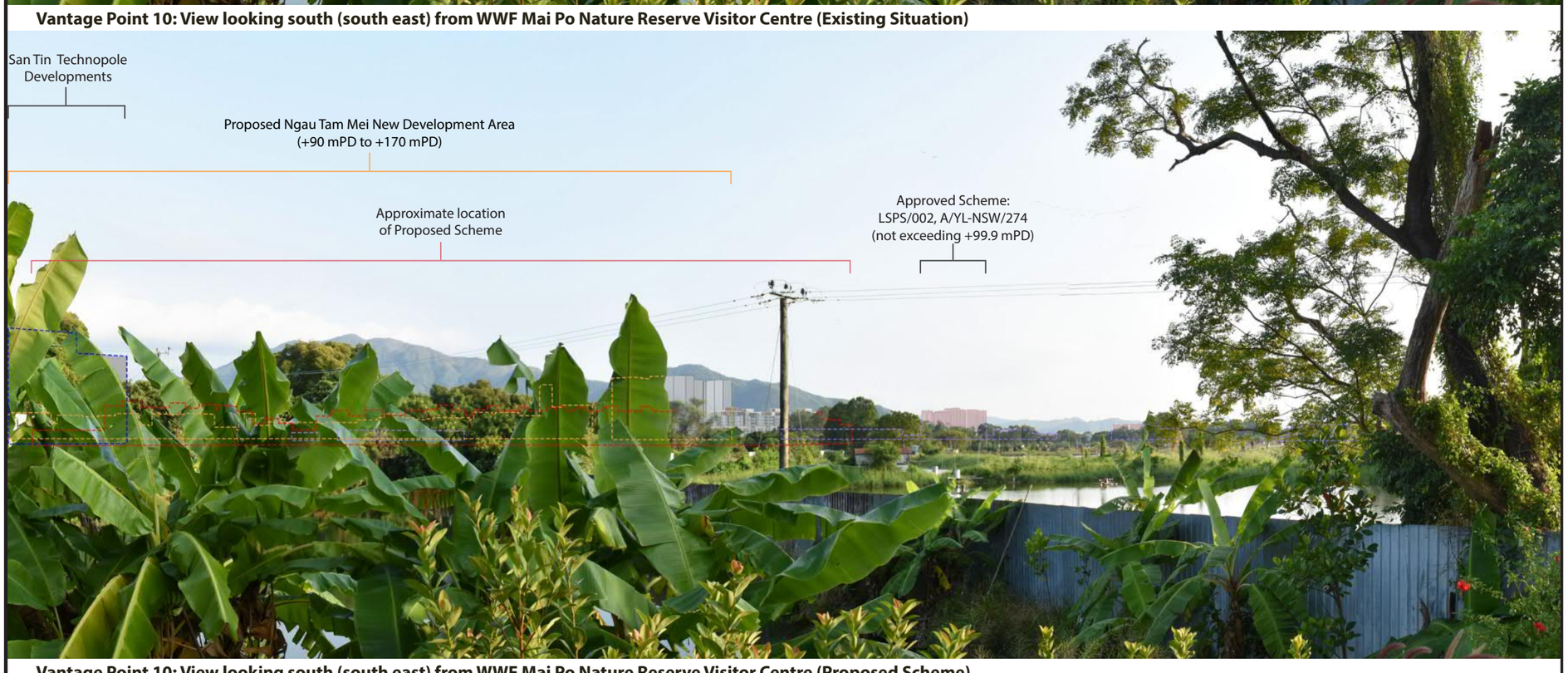
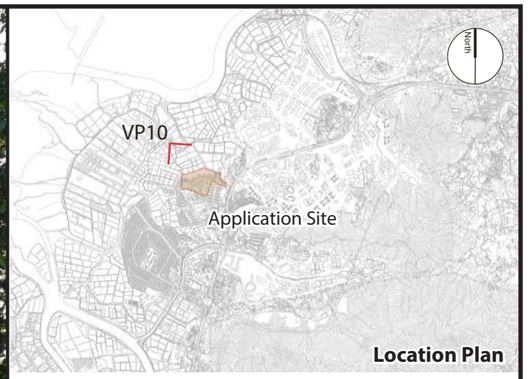
Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (Existing Situation)



Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (Proposed Scheme)



Vantage Point 10 (VP10)

Vantage point elevation: +5.8 mPD
Viewing distance: 720 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.12	REV	-

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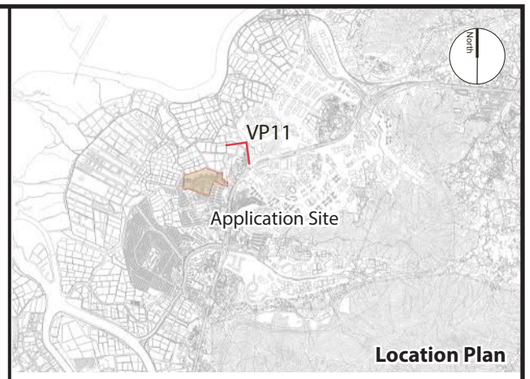
Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Existing Situation)



Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme)



Vantage Point 11 (VP11)

Vantage point elevation: +4.0 mPD
Viewing distance: 650 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.13	REV	-

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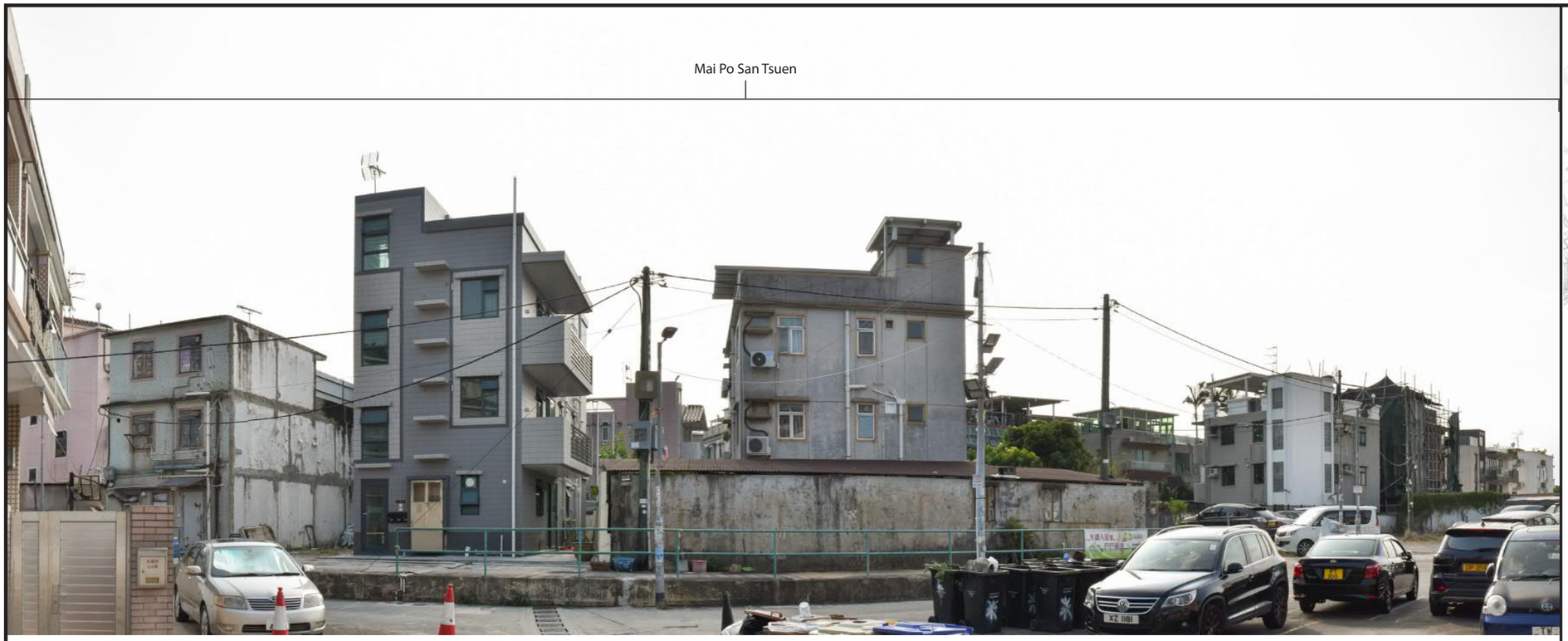
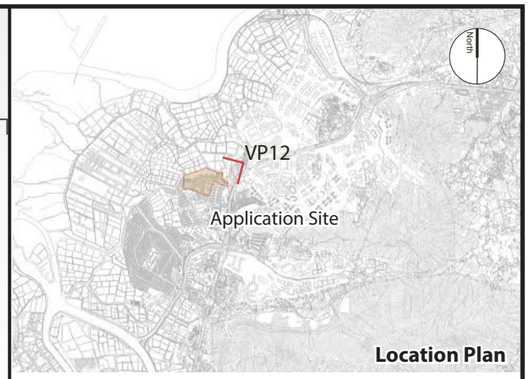
Website: scenic@studioscenic.com



Vantage Point 12: View looking west from the Tst Tong of Mai Po Tsuen (Existing Situation)



Vantage Point 12: View looking west from the Tst Tong of Mai Po Tsuen (Proposed Scheme)



Vantage Point 12 (VP12)

Vantage point elevation: +3.5 mPD
Viewing distance: 398 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.14	REV	-

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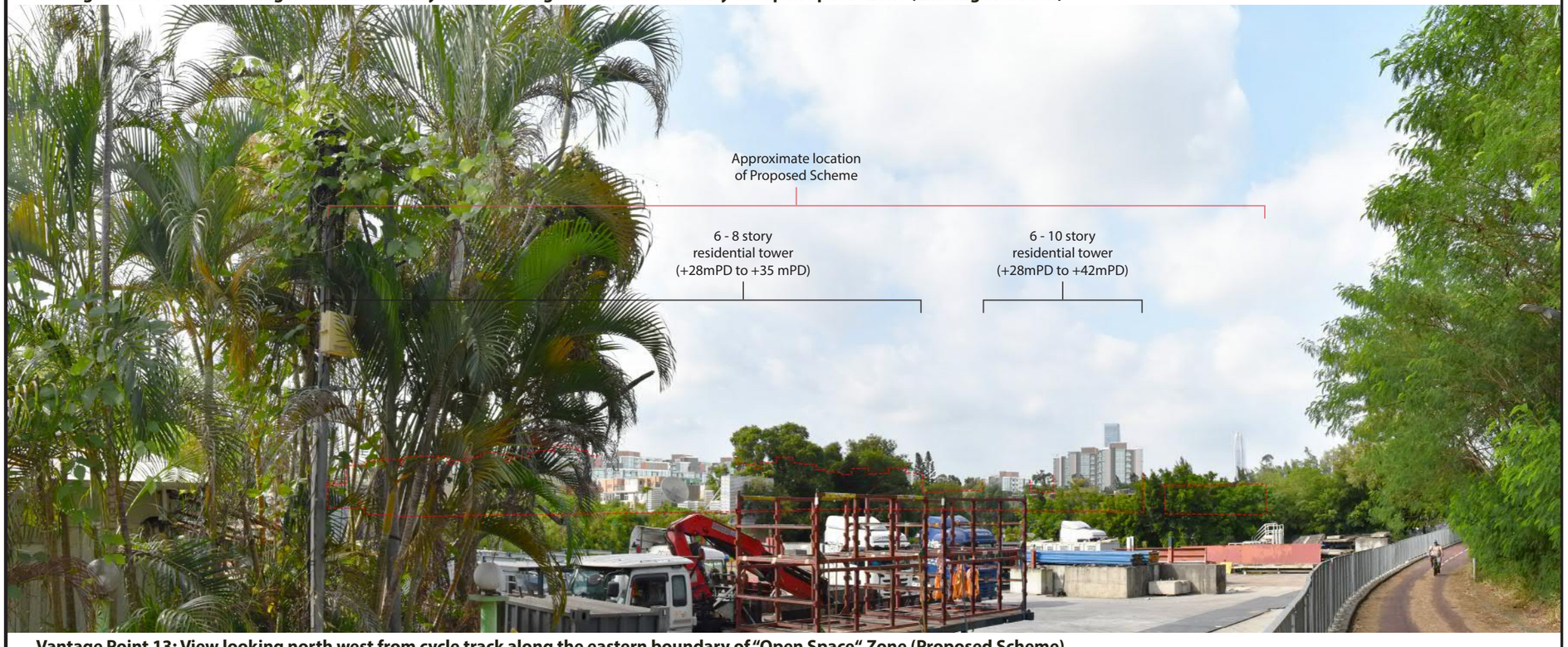
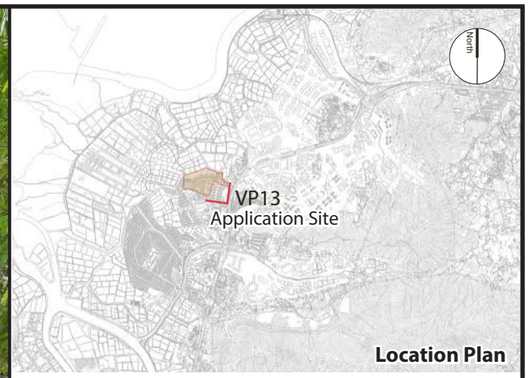
Website: scenic@studioscenic.com



Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" Zone (Existing Situation)



Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" Zone (Proposed Scheme)



Vantage Point 13 (VP13)

Vantage point elevation: +6.7 mPD
Viewing distance: 330 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

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FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.15	REV	-

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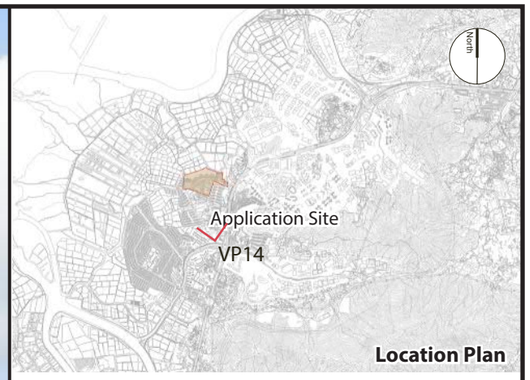
Website: scenic@studioscenic.com



Vantage Point 14:View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (Existing Situation)



Vantage Point 14:View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (Proposed Scheme)



Vantage Point 14 (VP14)

Vantage point elevation: +5.0 mPD
Viewing distance: 750 m
Maximum height of Proposed Development: +42.0 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.16	REV	-

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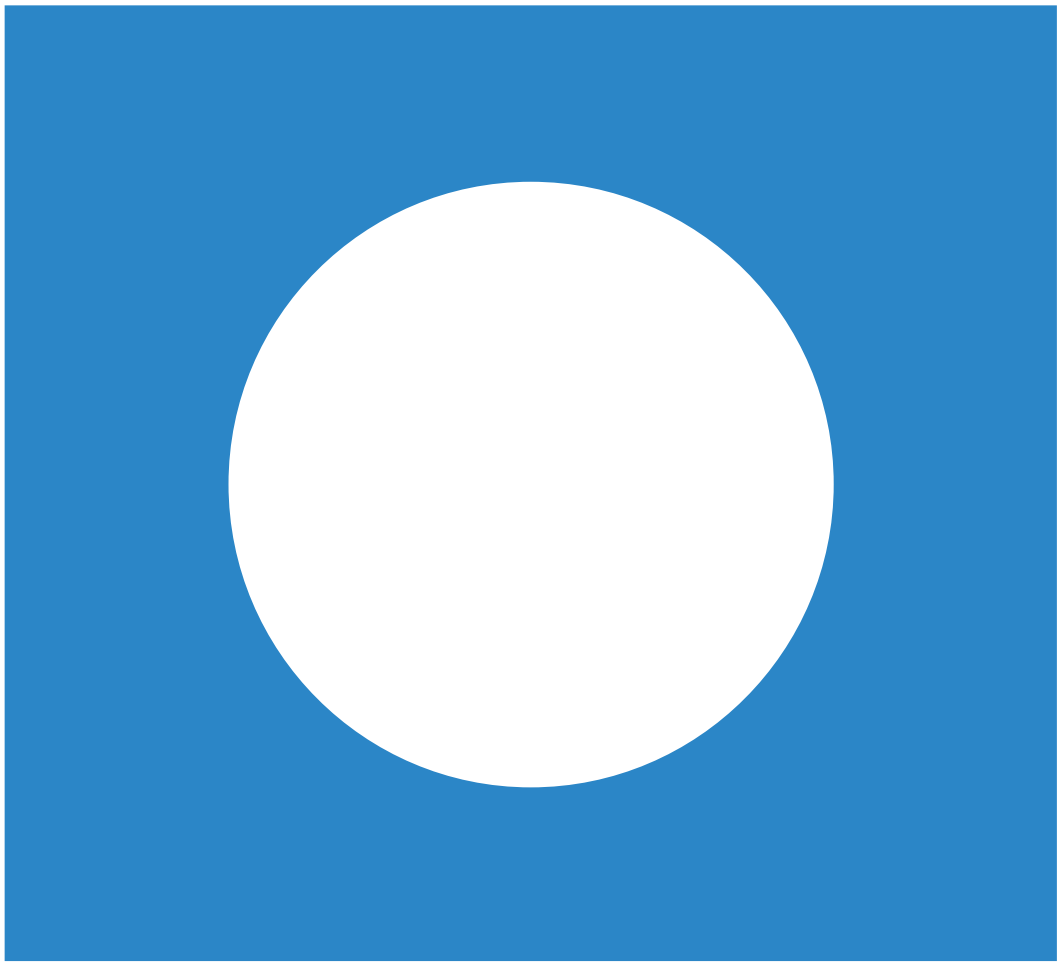
Appendix 11: Air Ventilation Assessment

MOTT MACDONALD



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

January 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

January 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

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1 Introduction

1.1 Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the Approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	39,072m^2
Communal Streetside Landscape	2,988m^2
Communal Water Body	5,103m^2
Private Garden	15,444m^2
Domestic Buildings and Clubhouse	42,078m^2
Internal Road/Driveway	34,120m^2
Domestic Components	
Plot Ratio Domestic Non-Domestic	1.3 1.28 0.02
Maximum Domestic GFA (Approx.)	265,847m^2
Maximum Non-Domestic GFA (Approx.)	3,800 m^2
Site Coverage (not more than)	25%
Total Number of Units	3,751
Average Unit Size (Approx.)	74.5m^2
Ancillary Recreational Facilities (Approx.)	11,581 m^2
Estimated Population	9,998*
Completion Year	2031

Building Height	
3-storey House	+21mPD
6--storey Residential Tower	+28mPD
8-storey Residential Tower	+35mPD
10-storey Residential Tower	+42mPD
Clubhouse (2-storey)	+17 mPD
Residential Care Home for Elderly (4-storey)	+30 mPD

Remarks:
* Based on person per flat ration of 2.8.

1.2 Study Objectives

In order to assess if any potential adverse air ventilation impacts might be induced on the surrounding pedestrian wind environment due to the proposed residential development, a site-specific AVA-IS using Computational Fluid Dynamics (CFD) has been conducted to demonstrate that the building’s potential impact on the local wind environment has been duly considered by comparing the Proposed Scheme with a Baseline Scheme.

The objective of this study is to assess quantitatively the potential air ventilation impacts of the Proposed Scheme and the Baseline Scheme on the surroundings using the methodology of AVA, based on the “Housing Planning and Lands Bureau – Technical Circular No. 1/06, Environment, Transport and Works Bureau – Technical Circular No. 1/06” issued on 19th July 2006 (the Technical Circular) and “Technical Guide for Air Ventilation Assessment for Development in Hong Kong – Annex A” (the Technical Guide) of the Technical Circular.

2 Site Characteristics

2.1 Project Site and Its Surrounding Area

The Project Site is located at Wo Shang Wai, Yuen Long, with an area of approximately 207,408 m^2. The Project Site is currently a land area zoned as OU(CDWRA) under the Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8 ("OZP"). Location of the Project Site is shown in **Figure 2.1**.

There are fish ponds from the south to the north of the Project Site and mountains such as Ki Lun Shan, Ngau Tam Shan and Pine Tree Hill at the east of the Project Site. Please refer to **Appendix E** for the topography around the Project Site.

To the north of the Project Site lies a cluster of low-lying fishponds within the "Other Specified Uses" ("OU") zone. Royal Palms with building height of approximately 16mPD under "Residential (Group C)" ("R(C)") zone is located at the east and southeast of the Project Site. Mai Po Ventilation Building with building height of approximately 21.5mPD under OU (CDWRA) zone lies to the east of the Project Site. There is also a cluster of village houses under "Village Type Development" ("V") zone at the east of the Site across Mai Po South Road, namely Mai Po San Tsuen with building height of approximately 12.7mPD.

To the south of the Project Site lies a cluster of residential developments under R(C) zone, namely Wo Shang Wai Village, Palm Springs – Arcadia and Palm Springs Plaza with building height of approximately 7.7mPD, 16mPD and 13.6mPD respectively.

To the west and southwest of the Project Site also lies a cluster of residential developments under R(C) zone, namely Palm Springs – Westwood with building height of approximately 16mPD. To the further west of the Project Site across Palm Springs – Westwood is a low-lying area with numerous fishponds under OU zone.

Figure 2.1 shows an overview of the Project Site and its surroundings. **Figure 2.2** shows an overview of the Project Site and its surroundings as shown on the OZP. The building height for the existing developments in the vicinity of the Project Site are listed out in **Table 2.1**.

Table 2.1: Existing Developments around the Project Site

Name of Existing Developments	Building Height (mPD)
Royal Palms	16
Palm Springs - Arcadia	16
Palm Springs - Westwood	16
Palm Springs Plaza	13.6
Wo Shang Wai Village	7.7
Mai Po Ventilation Building	21.5
Mai Po San Tsuen	12.7

Figure 2.1: Overview of the Project Site and its Surroundings

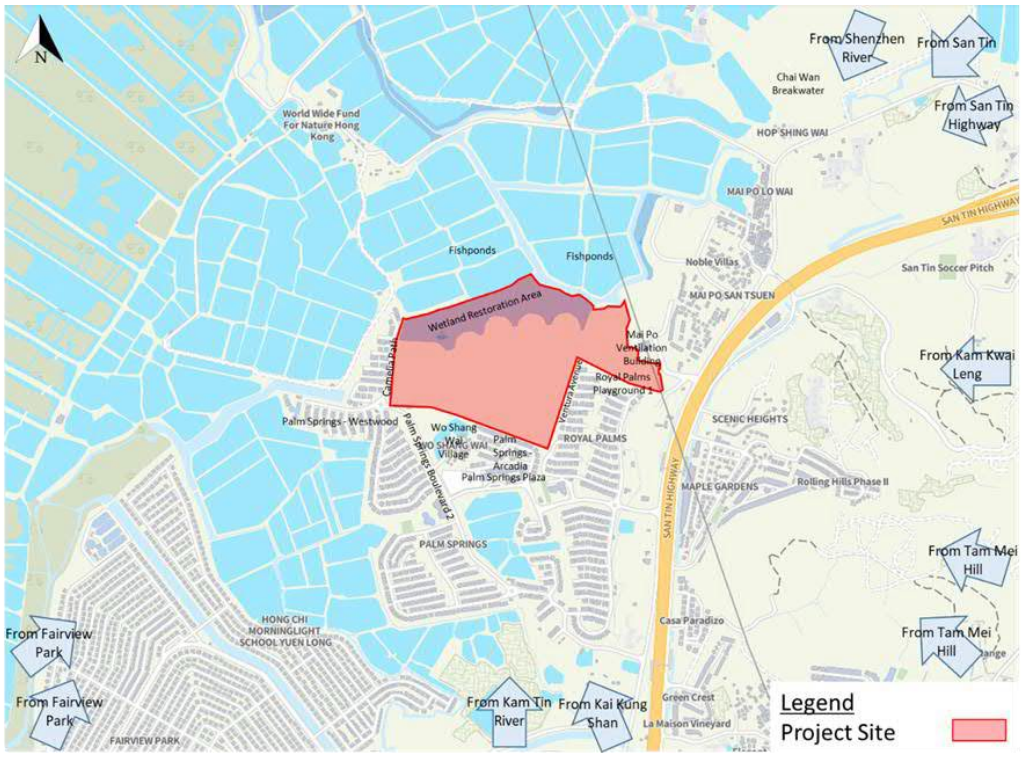
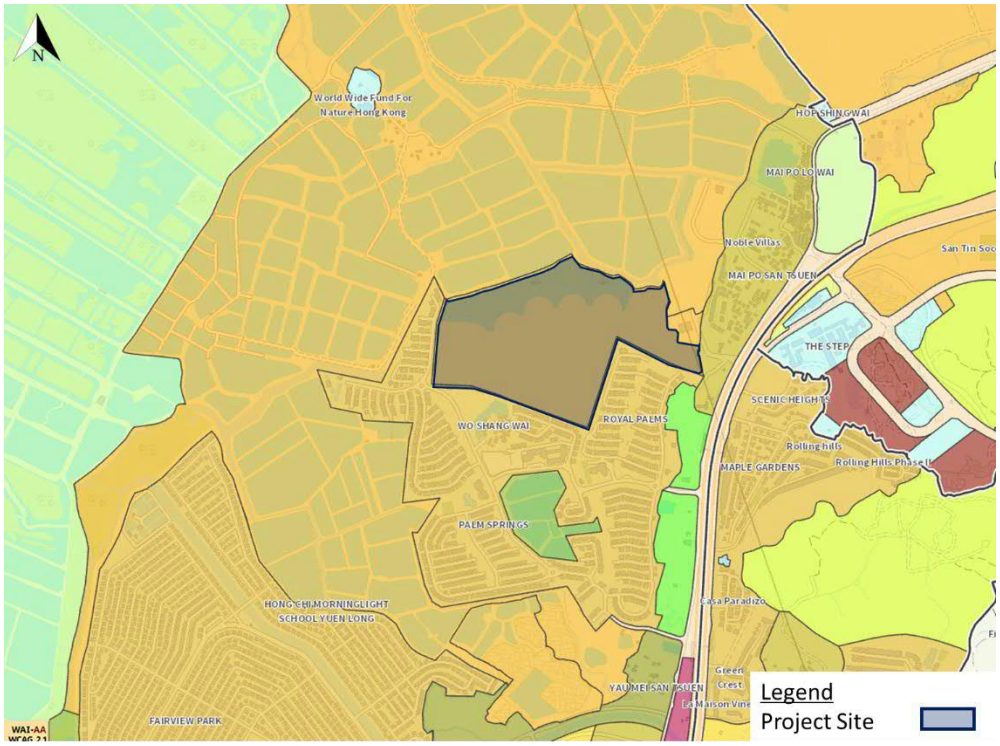


Figure 2.2: Overview of the Project Site and its Surroundings as shown on the OZP



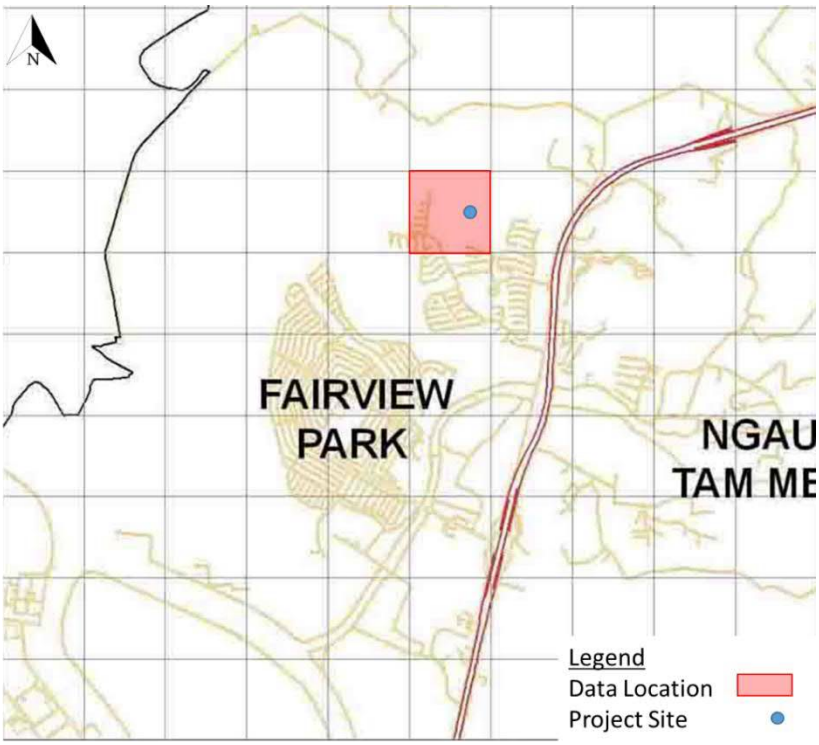
3 Wind Availability Data

The wind profile input for the CFD simulation requires wind data at different heights and at the wind boundary level. The characteristics of the site wind availability should be identified in order to investigate the wind performance of the Project Site and its surrounding area. Site wind availability data could be used to assess the wind characteristics in terms of the magnitude and frequency of approaching wind from each wind direction. In this study, the simulated Regional Atmospheric Modelling System (RAMS) wind data from Planning Department (PlanD) has been used for the quantitative assessment.

3.1 Site Wind Availability Data

City University of Hong Kong (CityU) utilized the meso-scale numerical model Regional Atmospheric Modeling System (RAMS) to produce site wind availability data for Hong Kong and is available at PlanD's database[1]. Based on the archived dataset, wind statistics and wind roses for each 0.5km×0.5km grid box at different height levels could be extracted. Simulated data at grid (X055, Y080) corresponds to the location of the Project Site and annual wind conditions at 500m above ground are referenced in this study. The location of grid (X055, Y080) is shown in **Figure 3.1**. The extracted wind roses show that easterlies dominate under the annual wind condition while south westerly winds dominate under the summer wind condition. **Figure 3.2** and **Figure 3.3** shows the annual and summer wind roses at 500m above ground level for grid (X055, Y080) respectively.

Figure 3.1: Location of the Selected RAMS Wind Data - Grid (X055, Y080)



[1] http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/index.html

Figure 3.2: Annual Wind Rose at 500m – Grid (X055, Y080)

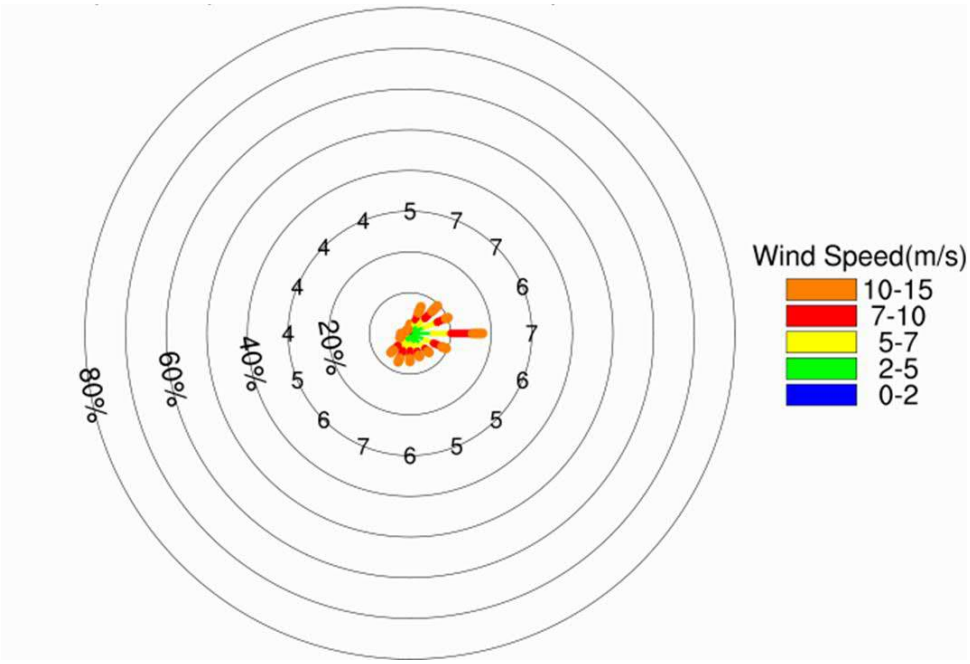
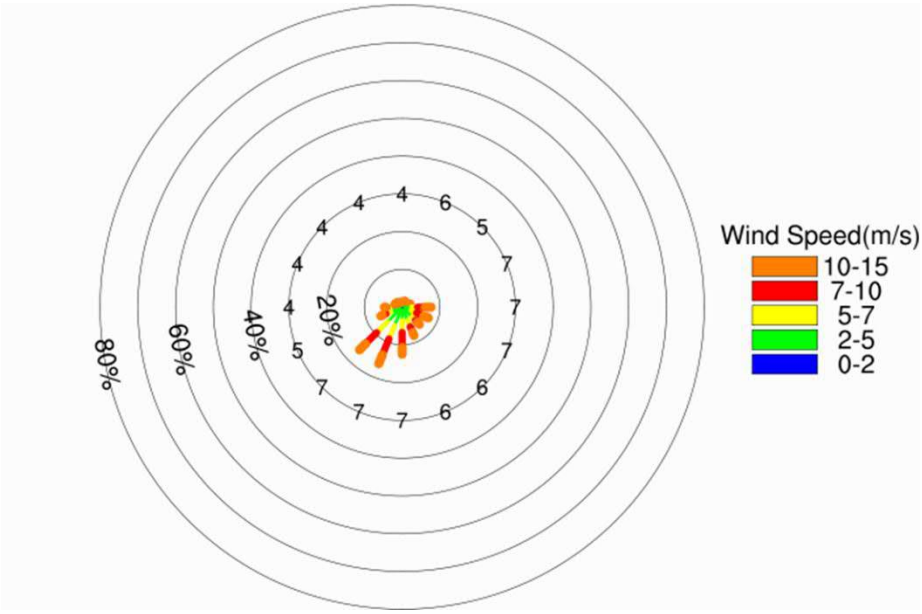


Figure 3.3: Summer Wind Rose at 500m – Grid (X055, Y080)



3.2 Annual Prevailing Wind

Nine prevailing wind directions (**bolded** in **Table 3.1**) are considered in this quantitative assessment which covers 83.2% of the total annual wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are North-Northeast (7.2%), Northeast (9.8%), East-Northeast (10.2%), East (18.1%), East-Southeast (9.8%), Southeast (6.7%), South (7.0%), South-Southwest (7.7%) and Southwest (6.7%) winds.

Table 3.1: Annual Wind Frequency at 500m

Direction	N	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	SSE
Frequency (%)	2.3	**7.2**	**9.8**	**10.2**	**18.1**	**9.8**	**6.7**	6.2
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**7.0**	**7.7**	**6.7**	2.7	2.2	1.1	1.1	1.1

3.3 Summer Prevailing Wind

Seven prevailing wind directions (**bolded** in **Table 3.2**) are considered in this quantitative assessment which covers 76.4% of the total summer wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are East (8.1%), East-Southeast (7.8%), Southeast (6.6%), South-Southeast (8.2%), South (12.9%), South-Southwest (16.5%) and Southwest (16.3%).

Table 3.2: Summer Wind Frequency at 500m

Direction	N	NNE	NE	ENE	**E**	**ESE**	**SE**	**SSE**
Frequency (%)	1.4	1.8	1.6	2.4	**8.1**	**7.8**	**6.6**	**8.2**
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**12.9**	**16.5**	**16.3**	6.2	4.7	2.1	1.8	1.4

3.4 Wind Profile

As mentioned in Section 5.1, the RAMS wind data extracted from Planning Department's Website will be adopted in this AVA Initial Study. The wind profile data from 10 – 500m will be directly adopted as it reflects the exact wind data whereas the power law equation will be used to approximate near ground wind profile (i.e. 0 – 10m). For wind data above 500m, wind velocity shall be assumed as the wind velocity at 500m. **Figure 3.4** to **Figure 3.7** indicates the overall wind profile curve adopted for the CFD simulation.

The vertical discretization of velocity profile is approximated by using an exponential law, which is a function of ground roughness and height:

$$U_Z = U_G \left(\frac{z}{z_G} \right)^n$$

where

U_G = reference velocity at height z_G

Z_G = reference height

Z = height above ground

U_Z = velocity at height z

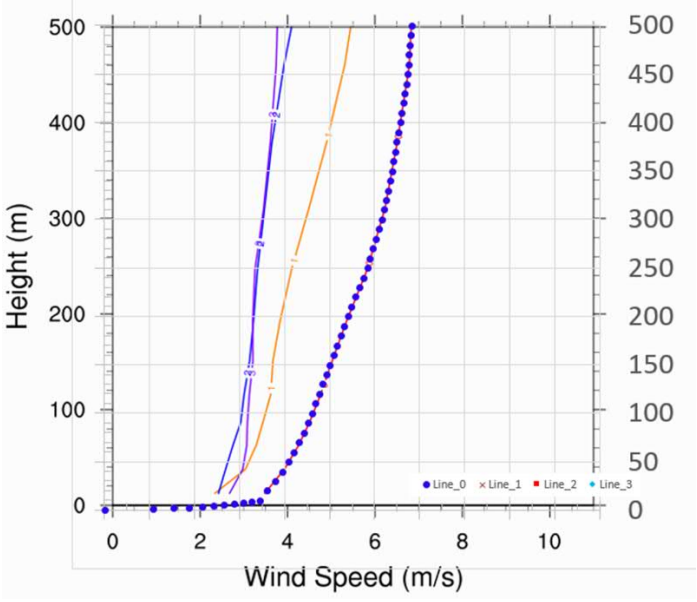
n = power law exponent

The power n is related to the ground roughness. A larger value of the power n represents the higher roughness of the ground i.e. the dense city. Alternatively, smaller n represents the lower ground roughness, i.e. the sea surface. **Table 3.3** shows the n value adopted for CFD simulation.

Table 3.3: Value of n (Power Law Exponent) Adopted for CFD Simulation

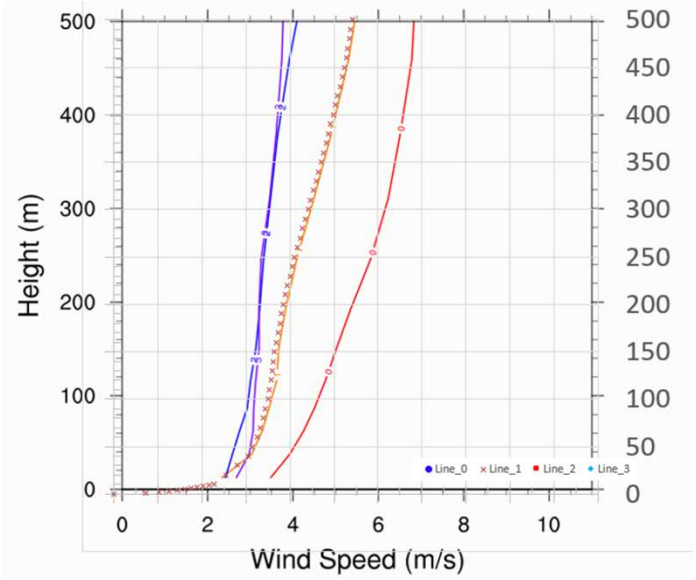
Direction	NNE	NE	ENE	E	ESE	SE
Value of n	0.35	0.35	0.35	0.35	0.35	0.35
Direction	**SSE**	**S**	**SSW**	**SW**	**WSW**	
Value of n	0.35	0.35	0.35	0.35	0.35	

Figure 3.4: Wind Profile Curve for Wind Directions of 22.5º - 112.4º at Grid (X055, Y080)



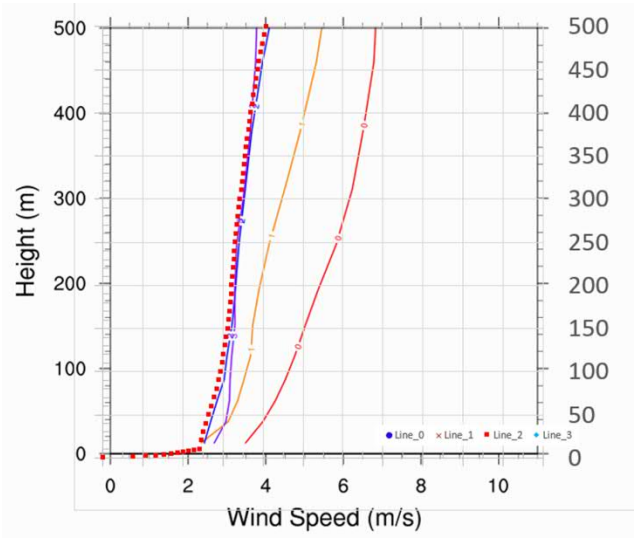
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.5: Wind Profile Curve for Wind Directions of 112.5º - 202.4º at Grid (X055, Y080)



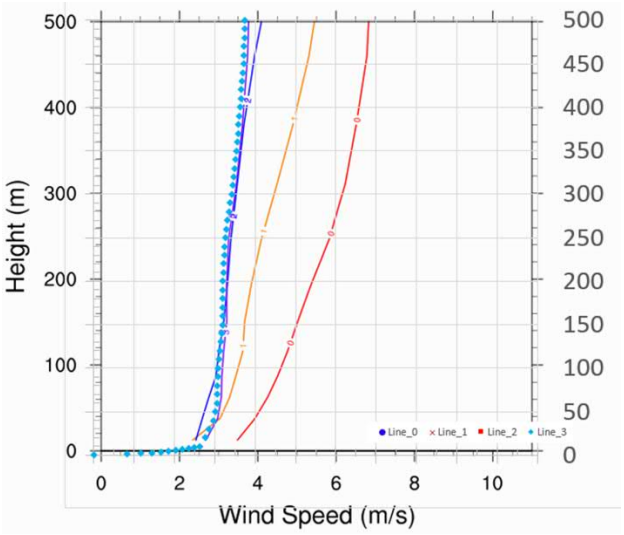
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.6: Wind Profile Curve for Wind Directions of 202.5º - 292.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.7: Wind Profile Curve for Wind Directions of 292.5º - 22.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Table 3.4 shows the data for each wind profile curve adopted in the current AVA Initial Study, which acts as the inlet boundary data in the CFD simulation.

Table 3.4: Wind Profile Data for All Wind Directions

Height	Wind Speed (m/s)			
	22.5˚ – 112.4˚	112.5˚ – 202.4˚	202.5˚ – 292.4˚	292.5˚ – 22.4˚
0	0.00	0.00	0.00	0.00
10	3.44	2.27	2.42	2.64
20	3.61	2.55	2.46	2.76
40	3.95	3.05	2.59	2.98
60	4.21	3.25	2.73	3.05
80	4.43	3.39	2.87	3.07

100	4.61	3.51	2.96	3.10
150	5.01	3.65	3.12	3.20
200	5.40	3.85	3.23	3.20
250	5.83	4.10	3.31	3.26
300	6.15	4.41	3.44	3.42
350	6.38	4.71	3.56	3.54
400	6.56	4.98	3.70	3.63
450	6.73	5.24	3.88	3.72
500	6.81	5.42	4.08	3.75

4 Design Schemes for Initial Study

Two schemes were studied for the AVA, namely Baseline Scheme and Proposed Scheme based on the design options provided by the project team.

The 3D simulation model takes information via the Geographical Information System (GIS) platform to construct the surrounding buildings and site topography. All major elevated structures such as elevated walkway have been incorporated in the simulation model. No noise barriers are located within the Surrounding Area.

In addition, the western tip of a planned/committed development of San Tin Technopole under the approved EIA Report, "*Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation*" is located within the Surrounding Area. Nonetheless, no building structures, elevated structures or noise barriers are proposed in this region. Please refer to **Appendix G** for the location of this planned / committed development.

Overviews of the whole domain 3D simulation model are provided in **Appendix H**.

4.1 Baseline Scheme

The Baseline Scheme is referred to the previous approved scheme under Planning Application No. A/YL-MP/344. It comprises of 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. **Figure 4.1** to **Figure 4.4** shows the simulation model of the Baseline Scheme. Architectural layout drawings of the Baseline Scheme are provided in **Appendix A**.

Chapter 11 of "Hong Kong Planning Standards and Guideline" on Air Ventilation was referenced in order to determine the good design features in the Baseline Scheme from an air ventilation standpoint. The following good design feature of the Baseline Scheme is identified and shown in **Appendix A**.

- At least 7.5m-wide building setback from the eastern site boundary.

Figure 4.1: Simulation Model of the Baseline Scheme (Part 1 of 4)

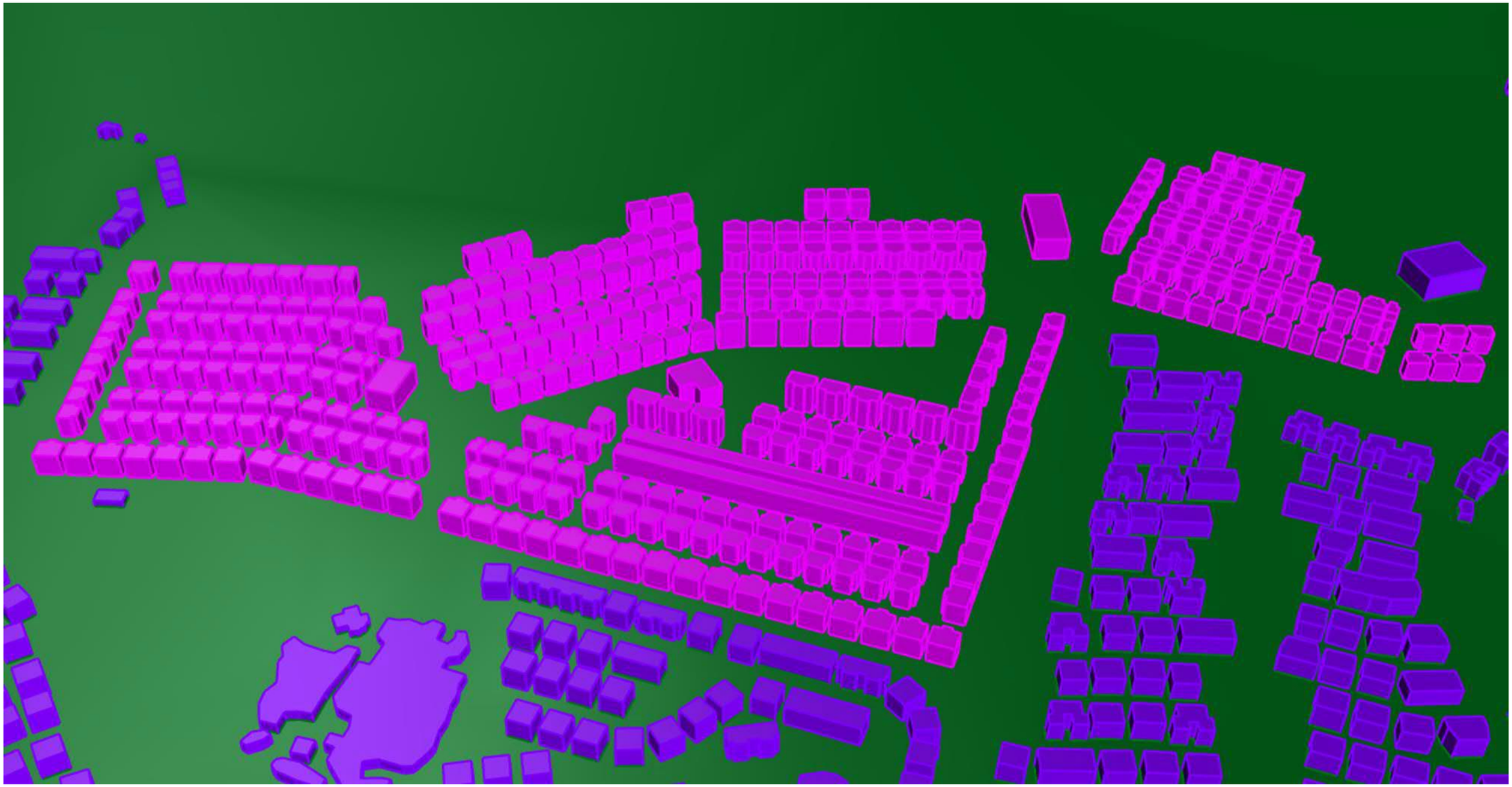


Figure 4.2: Simulation Model of the Baseline Scheme (Part 2 of 4)

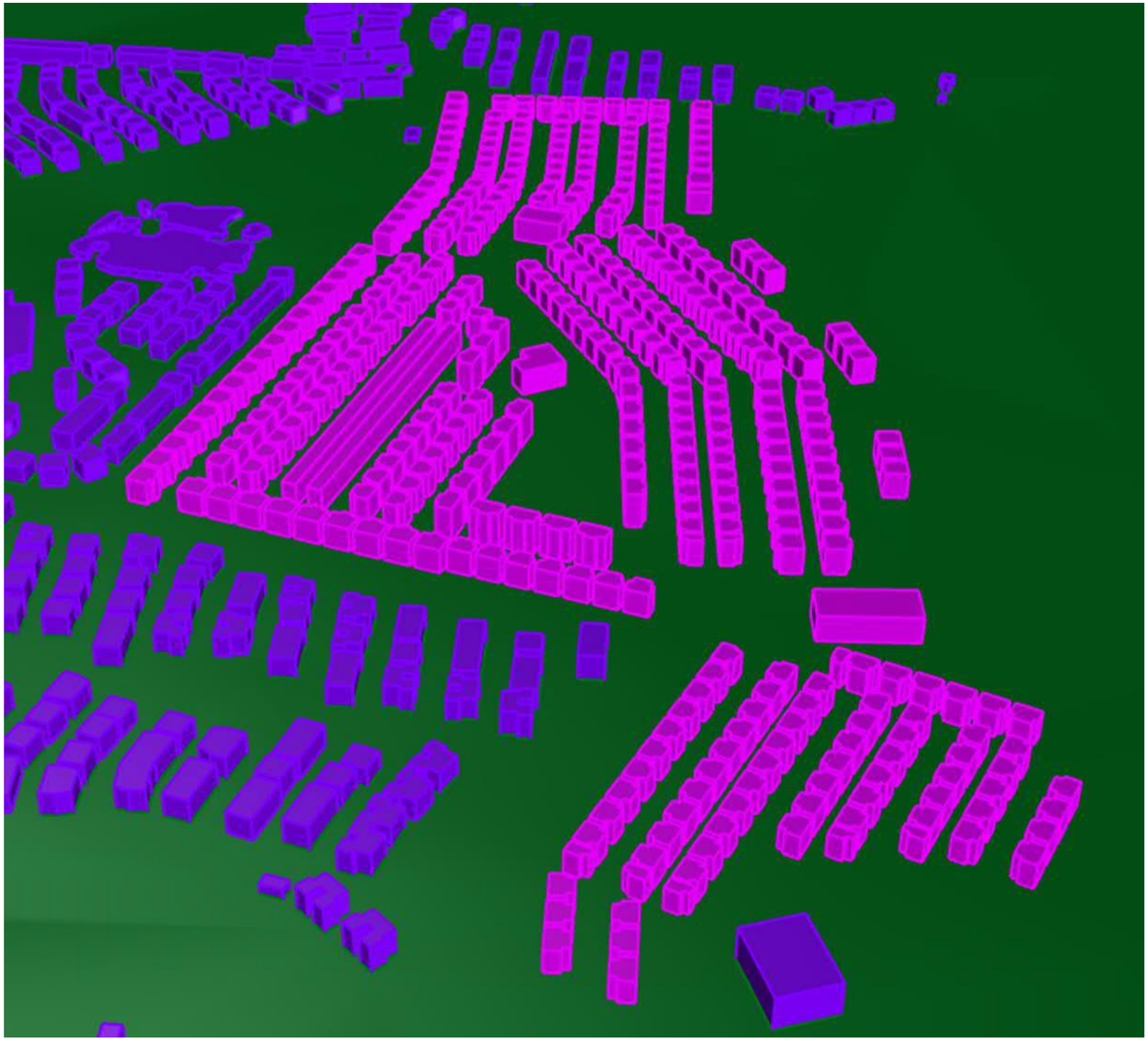


Figure 4.3: Simulation Model of the Baseline Scheme (Part 3 of 4)

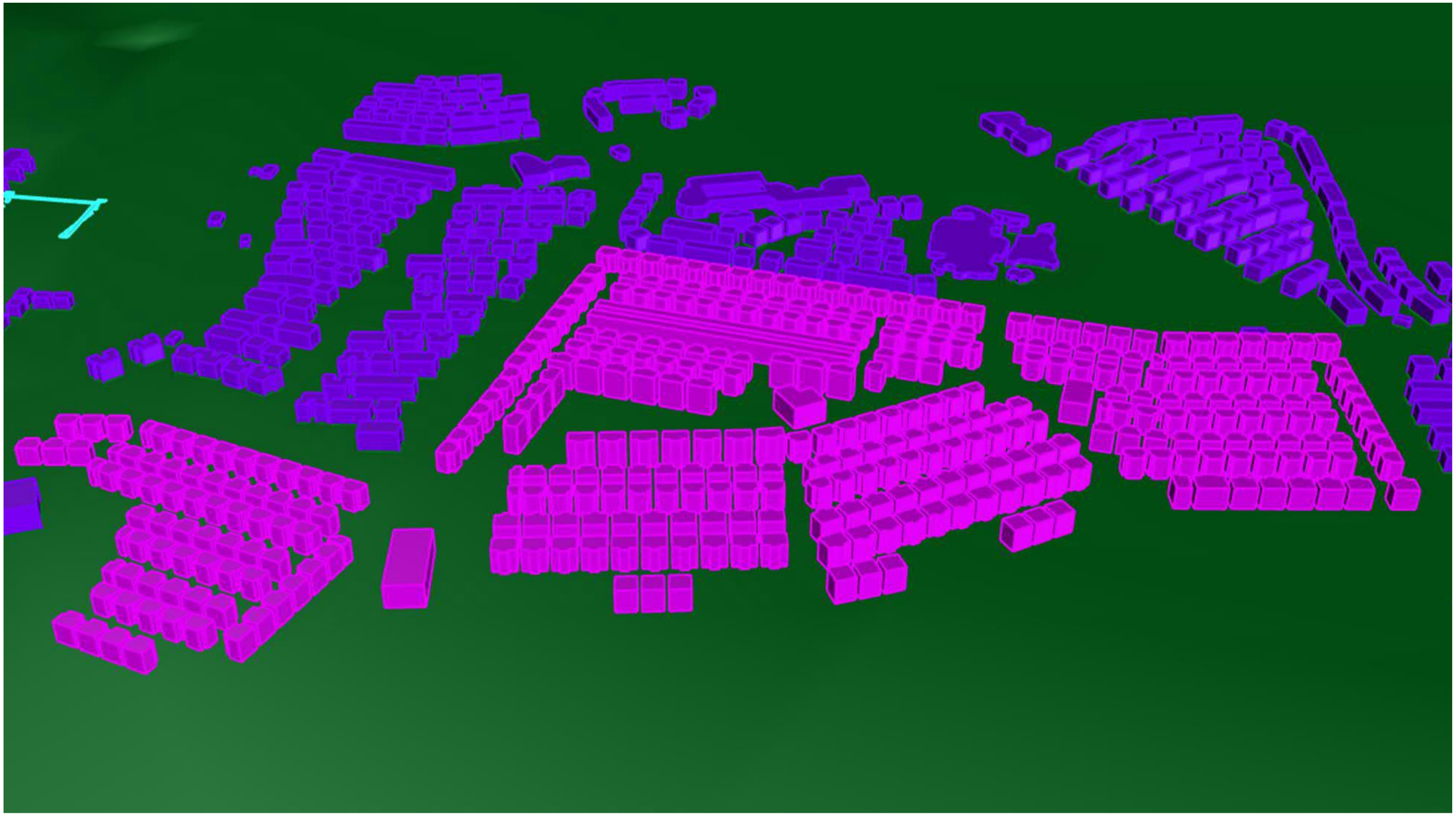
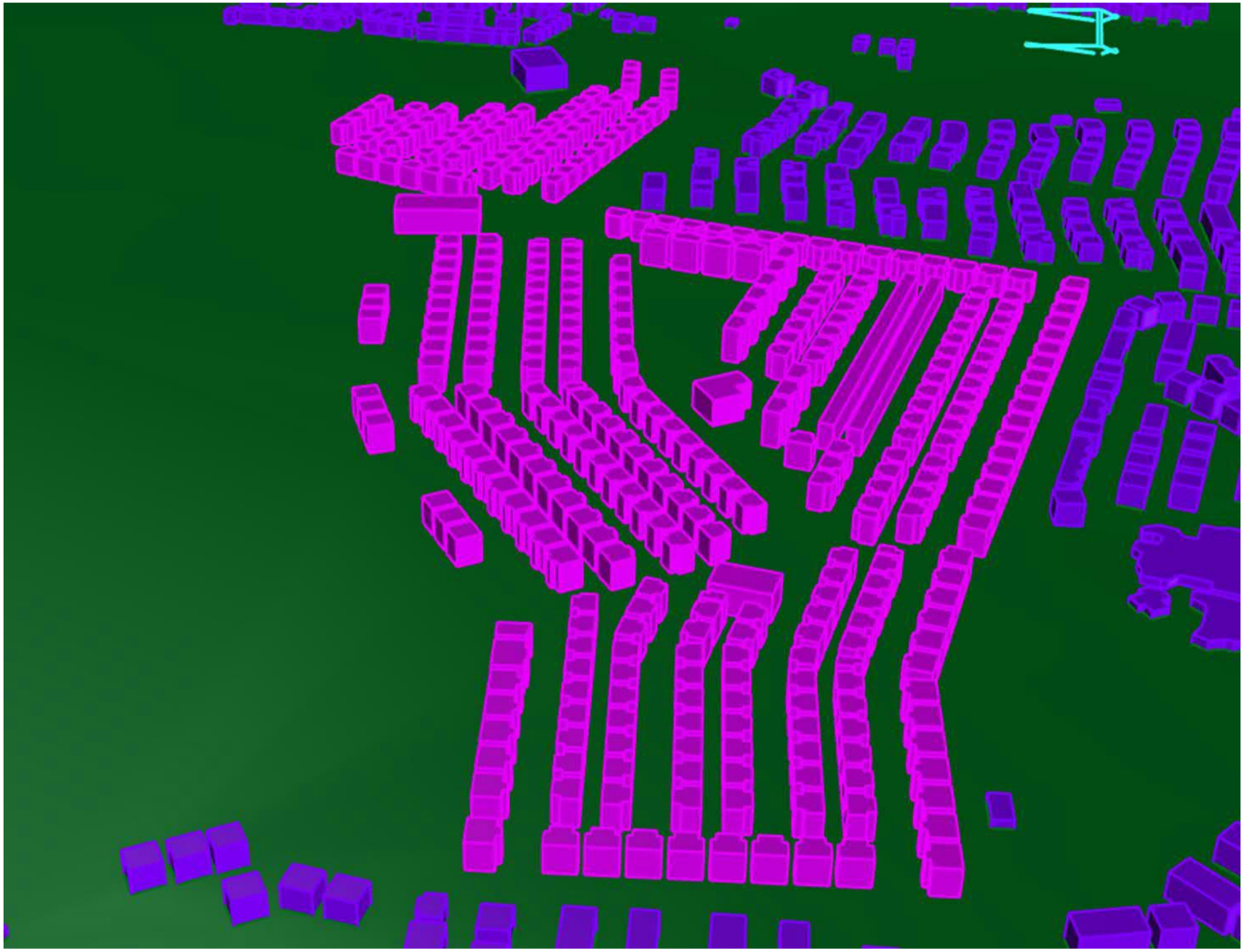


Figure 4.4: Simulation Model of the Baseline Scheme (Part 4 of 4)



4.2 Proposed Scheme

The Proposed Scheme comprises of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28mPD to 42mPD. In addition, there is a 4-storey Residential Care Home for the Elderly (RCHE) above ground with a maximum building height of 30mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 17mPD. In comparison with the Baseline Scheme, the number of buildings is reduced whilst more open spaces and building separations are introduced. The introduction of more open spaces and building separations are expected to enhance the site permeability at pedestrian level.

Chapter 11 of “Hong Kong Planning Standards and Guideline” on Air Ventilation was referenced in order to determine the good design features in the Proposed Scheme from an air ventilation standpoint. The following good design features of the Proposed Scheme are identified and shown in **Appendix B**.

- At least 20m-wide building separations between domestic blocks at the eastern side of the Proposed Scheme.
- At least 25m-wide building separations between residential towers at the center of the Proposed Scheme.
- At least 15m-wide building separations between residential towers at the southern side of the Proposed Scheme.
- At least 15m-wide building separations between domestic blocks at the western side of the Proposed Scheme.

Figure 4.5 to **Figure 4.8** shows the simulation model of the Proposed Scheme. Architectural layout drawings of the Proposed Scheme are provided in **Appendix B**.

Figure 4.5: Simulation Model of the Proposed Scheme (Part 1 of 4)

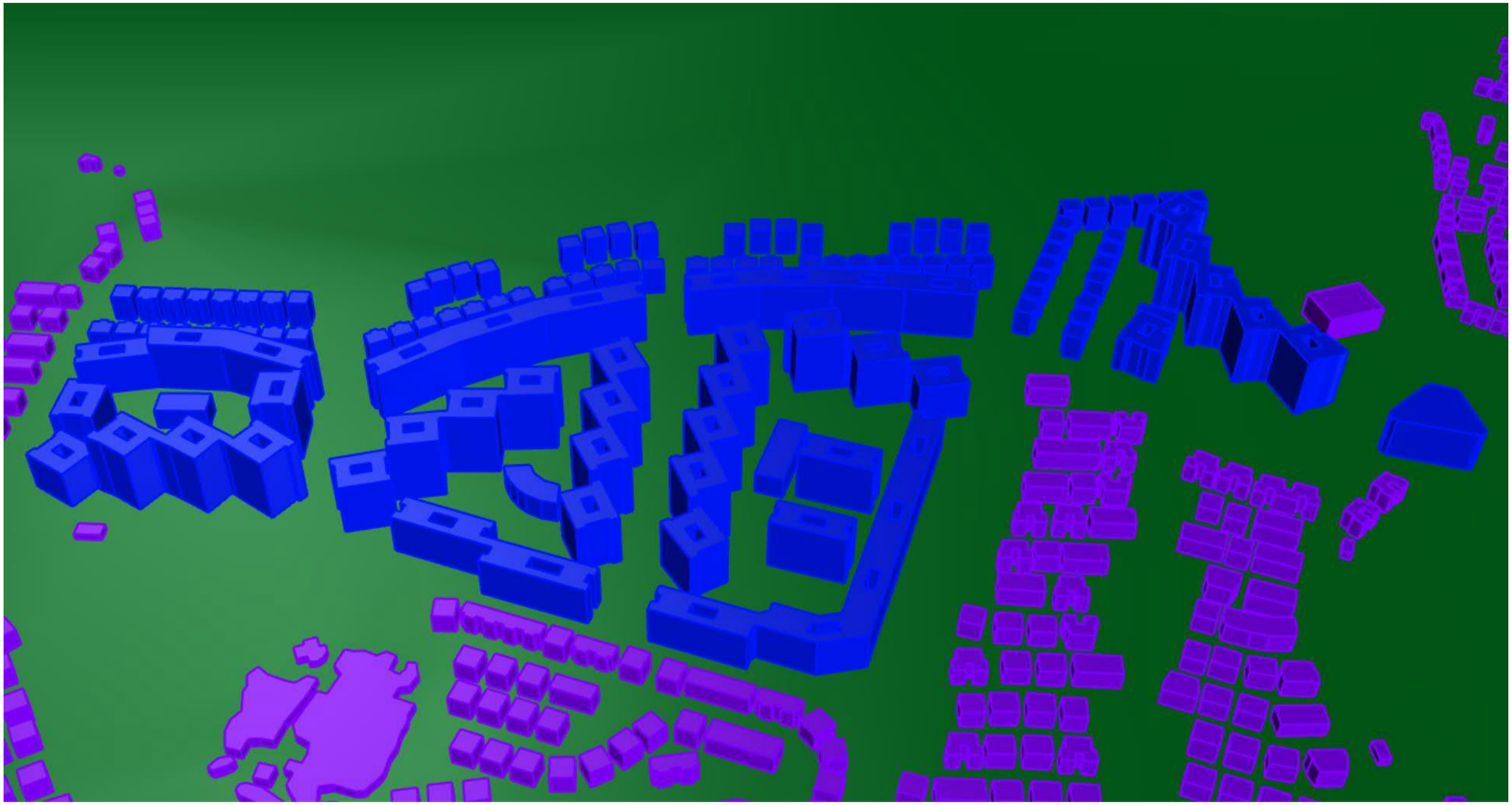


Figure 4.6: Simulation Model of the Proposed Scheme (Part 2 of 4)

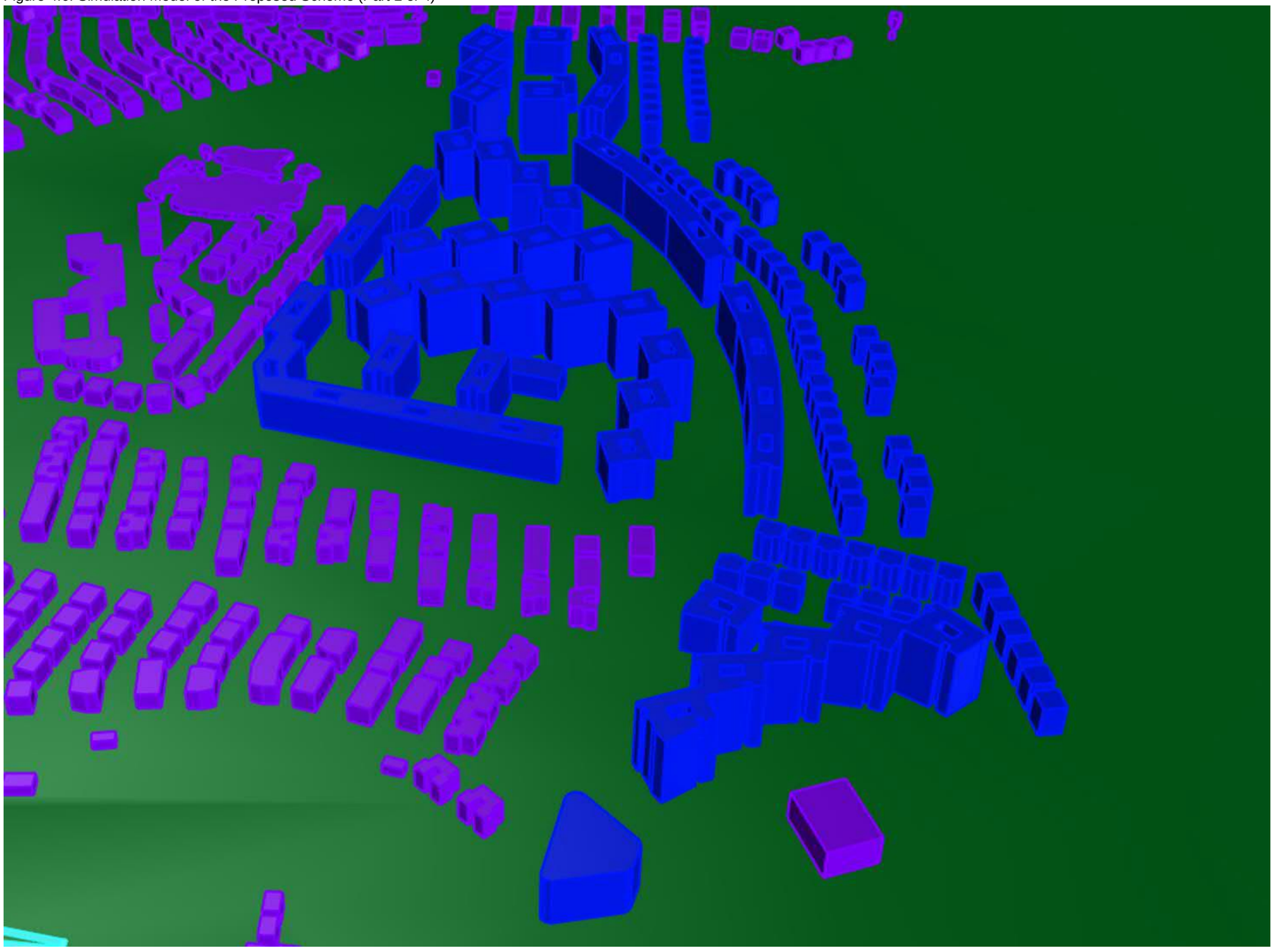


Figure 4.7: Simulation Model of the Proposed Scheme (Part 3 of 4)

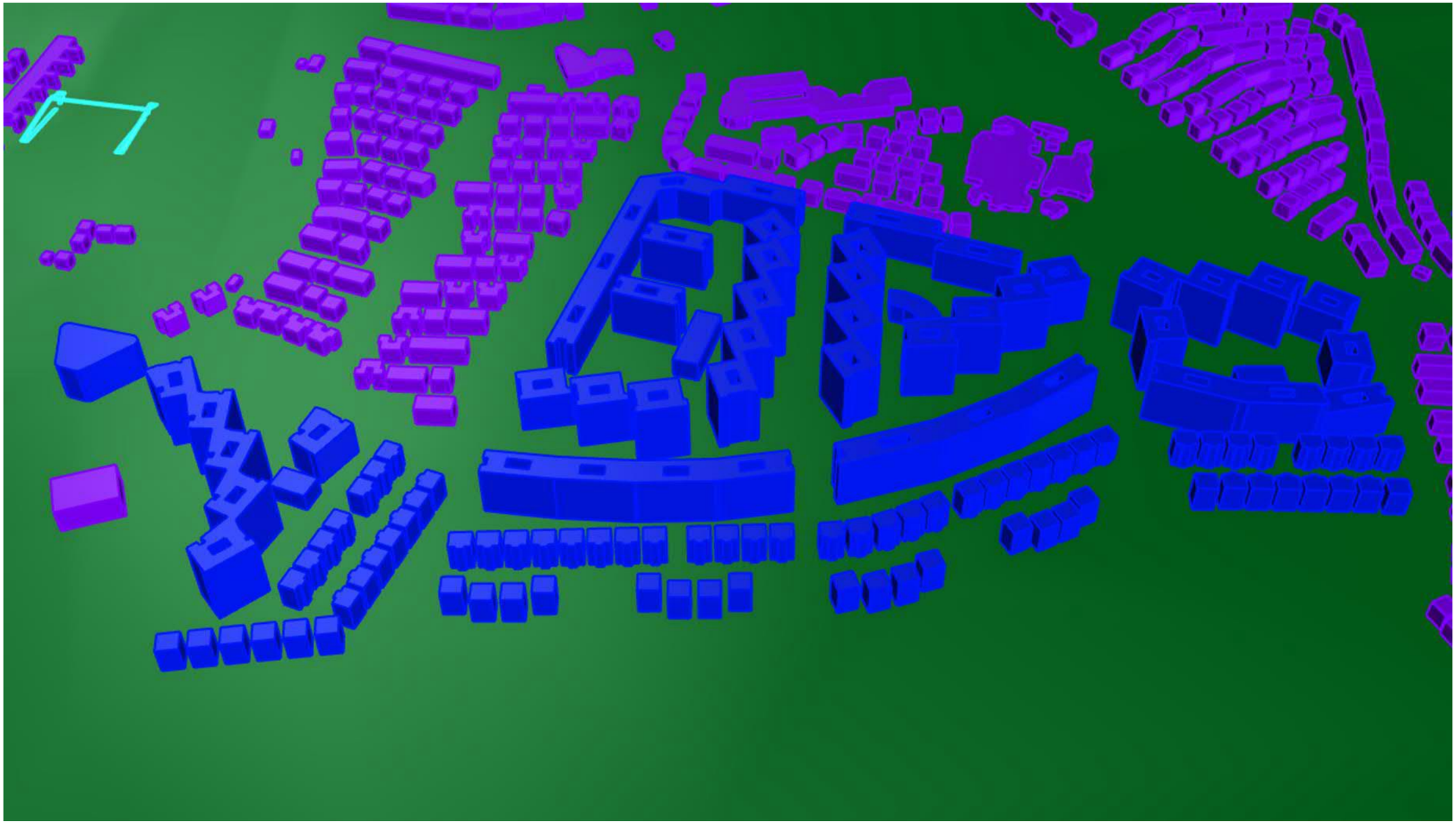


Figure 4.8: Simulation Model of the Proposed Scheme (Part 4 of 4)



5 Methodology

Computational Fluid Dynamics (CFD) was utilized for the AVA. With the use of three-dimensional CFD method, the local airflow distribution can be visualized in detail. The velocity distribution within the flow domain, being affected by the site-specific design and the nearby topography, was simulated under the studied prevailing wind conditions.

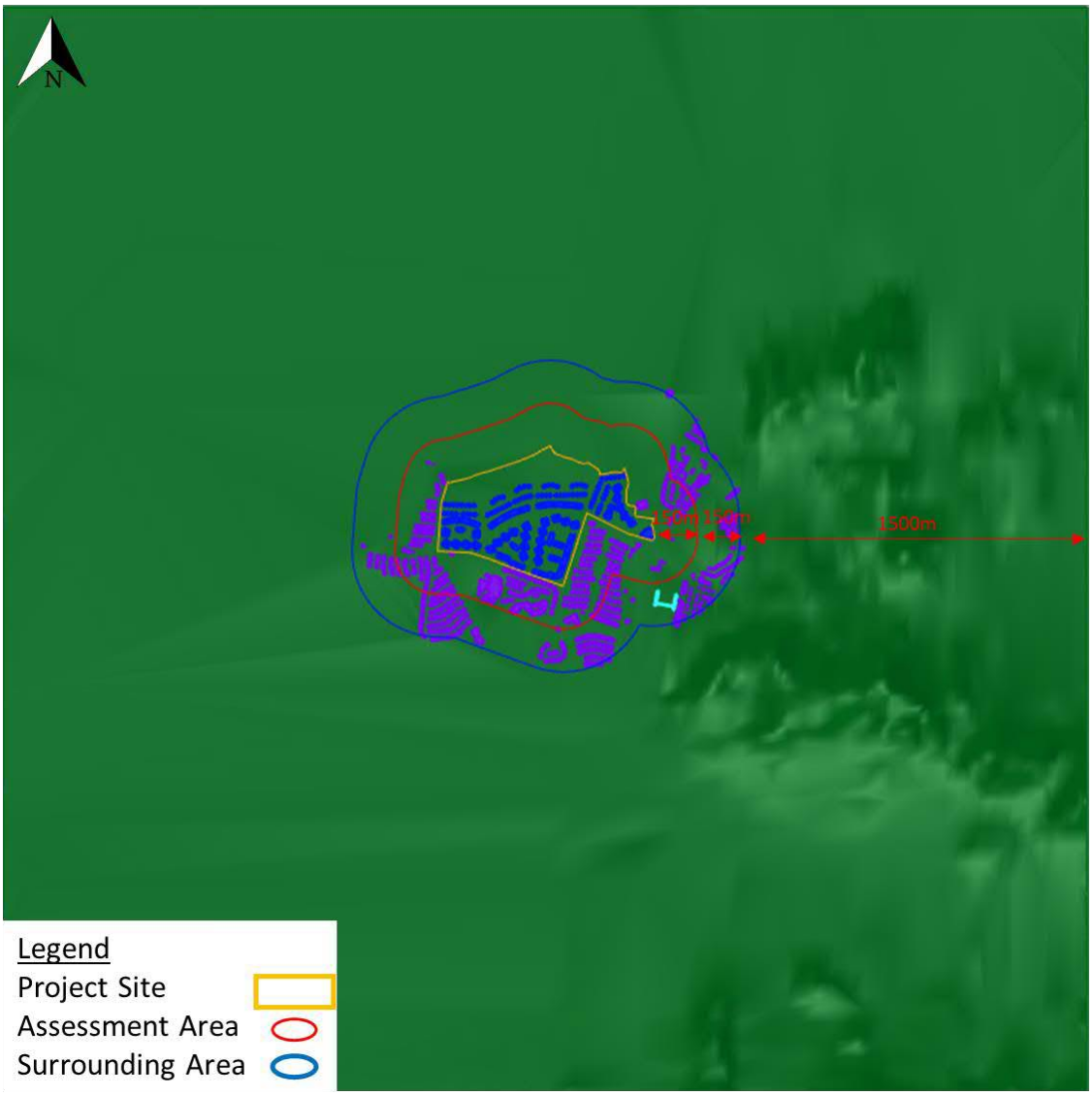
5.1 Assessment and Surrounding Areas

With reference to the Technical Guide, the Assessment Area should include the project’s surrounding up to a perpendicular distance H from the site boundary of the Project Site, which is equivalent to approximately 150m. The Surrounding Area will be up to a perpendicular distance of 2H (i.e. 300m) from the site boundary of the Project Site.

The model takes information on the surrounding buildings and site topography via the Geographical Information System (GIS) platform. The computational domain of the CFD model for this AVA Initial Study is approximately 3800 m (L) x 3800 m (W) x 1000 m (H).

Figure 5.1 shows the size and location of the Project Site, Assessment Area, Surrounding Area and the computational domain. The whole computational domain in different directions are shown in **Appendix H**.

Figure 5.1: Project, Assessment and Surrounding Areas along Computational Domain



5.2 Technical Details for CFD Simulation

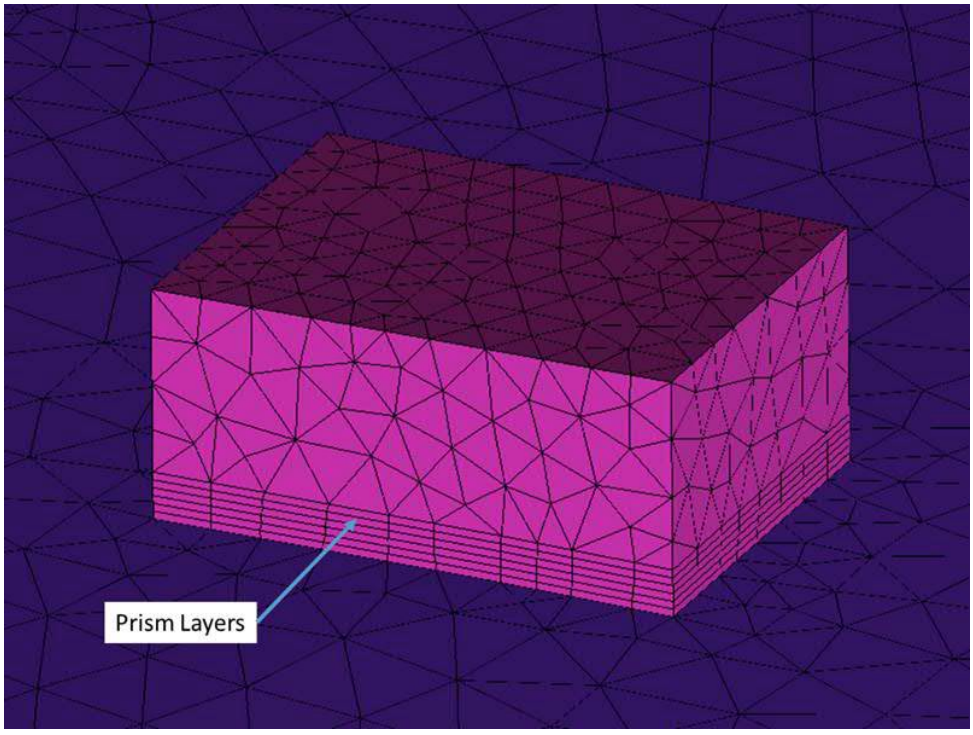
5.2.1 Modelling Tool

A commercial CFD package STAR-CCM+ was used which is widely adopted in the industry for AVA studies and other types of complex fluid flow related problems.

5.2.2 Mesh Setup

Body-fitted unstructured grid technique is used to fit the geometry to reflect the geometry details which is essential for proper modeling on turbulence flow. A prism layer of 3m above ground (totally 6 layers and each layer is 0.5m) is incorporated in the meshing so as to better capture the approaching wind near ground as shown in **Figure 5.2**. The expansion ratio is not greater than 1.1 while the maximum blockage ratio is 2%.

Figure 5.2: Prism Mesh Layers at Ground Level



5.2.3 Mesh Setup

According to COST Action C14 (2004)[2], realizable k – ε turbulence model is adopted as it is recommended for modeling pedestrian wind environment. This turbulence model provides more accurate representation of the levels of turbulence that can be expected in an urban environment.

5.2.4 Calculation Method and Boundary Condition

Pressure-Based segregated algorithm will be adopted to solve the governing equations. The pressure and velocity coupling will be handled by SIMPLE algorithm or its variation. A collocated variable arrangement with Rhie-and-Chow-type approach is also adopted to prevent checker board problem. A higher order differencing scheme is applied to discretize all governing

[2] J. Franke, C. Hirsch, A.G. Jensen, H.W. Krüs, M. Schatzmann, P.S. Westbury, S.D. Miles, J.A. Wisse and N.G. Wright, Recommendations on the use of CFD in Wind Engineering, In J.P.A.J. van Beek (Ed.), Proc. Int. Conf. on Urban Wind Engineering and Building Aerodynamics: COST C14 – Impact of Wind and Storm on City life and Built Environment, Rhode-Saint-Genèse, 2004.

equations. The convergence criterion is set to 0.0001 on mass, momentum and turbulence equations. The calculation will repeat until the solution satisfies this convergence criterion. The prevailing wind direction is set to inlet boundary of the model with respective wind profile as detailed in **Section 3**. The downwind boundary is set to pressure with value of atmospheric pressure. The top and side boundaries are set to symmetry. In addition, to eliminate the boundary effects, the model domain is built more than 5H from the Surrounding Area as recommended in the Technical Circular.

5.2.5 Summary

Based on previous sections, the detail parameters of the model are summarized in **Table 5.1**.

Table 5.1: Summary of CFD Model

	CFD Model
Computational Model Scale	1:1 scale to real environment
Model details	Topography, Buildings blocks, Streets/highways, all major elevated structures and noise barriers are included. No minor structures like signboard, street light, trees, shrubs, turfs, etc are included in the simulation model.
Domain	3800m(L) x 3800m(W) x 1000m(H)
Assessment Area	Within 1H Area
Surrounding building Area	Within 2H Area
Turbulence Model	Realizable k-ε model
Grid Expansion Ratio	Maximum expansion ratio = 1.1
Prismatic layer	6 layer of prismatic layers and 0.5m each (i.e. total 3m above ground)
Inflow boundary Condition	Respective wind profile obtained from RAMS
Outflow boundary	Pressure boundary condition with pressure equal to zero
Wall boundary condition	Logarithmic law boundary
Solving algorithms	SIMPLE with Rhie and Chow approach + Higher order differencing scheme
Blockage ratio	Below $1.0E^{-4}$
Convergence criteria	1:1 scale to real environment

5.3 AVA Indicator

5.3.1 Wind Velocity Ratio

The Wind Velocity Ratio (VR) as stipulated in the Technical Circular will be used to assess the ventilation performance of the proposed development and its surrounding environment. Higher VR implies better ventilation. The calculation of VR is given by the following formula:

$$VR = \frac{V_p}{V_\infty}$$

V_P= the wind velocity at the pedestrian level (2m above ground).

V_∞= the wind velocity at the top of the wind boundary layer (typically assumed to be around 500m above the center of the site of concern, or at a height where wind is unaffected by the urban roughness below).

The Average VR is defined as the frequency weighted average VR with respect to the percentage of occurrence of all considered wind directions. This gives a general idea of the ventilation performance at the considered location at both annual and summer wind conditions.

5.3.2 Spatial Average Velocity Ratio

CFD simulations will be conducted to study the wind environment under annual and summer wind conditions. As specified in the Technical Circular, indicator of ventilation performance should be the VR, defined as the ratio of the wind velocity at the pedestrian level to the wind velocity at the top of the wind boundary layer. Site spatial average velocity ratio (SVR) and a Local spatial average velocity ratio (LVR) should be determined.

The SVR gives an idea of how the lower portion of the proposed development may affect the immediate surroundings. When problems are detected, it is likely that design changes may be needed for the lower portion of the development (e.g. the coverage of the podium).

The LVR gives an idea of how the upper portion of the proposed development may affect the local surroundings. When problems are detected, it is likely that design changes may be needed for the upper portion of the development (e.g. re-orientation of blocks and building height adjustment on the towers).

Table 5.2: Terminology of the AVA Initial Study

Terminology	Description
Site spatial average velocity ratio (SVR)	The SVR represent the average VR of all perimeter test points along the site boundary as identified in the report.
Local spatial average velocity ratio (LVR)	The LVR represents the average VR of all points, i.e. perimeter and overall test points within the Assessment Area, as identified in the report.

5.4 Locations of Test Points

Test points are evenly placed along the site boundary as well as open spaces, along streets and places within the Assessment Area which are frequently accessed by pedestrians. Test points have been placed at 2m above ground or podium level to determine the pedestrian ventilation performance. Three types of test points have been adopted in this study.

5.4.1 Perimeter Test Points

Perimeter test points are the points positioned at the site boundary of the Project Site. In accordance with the Technical Guide, 50 perimeter test points are positioned along the site boundary as shown in **Figure 5.3** to **Figure 5.4**.

Figure 5.3: Demarcation of the Perimeter (P) Test Points in Baseline Scheme

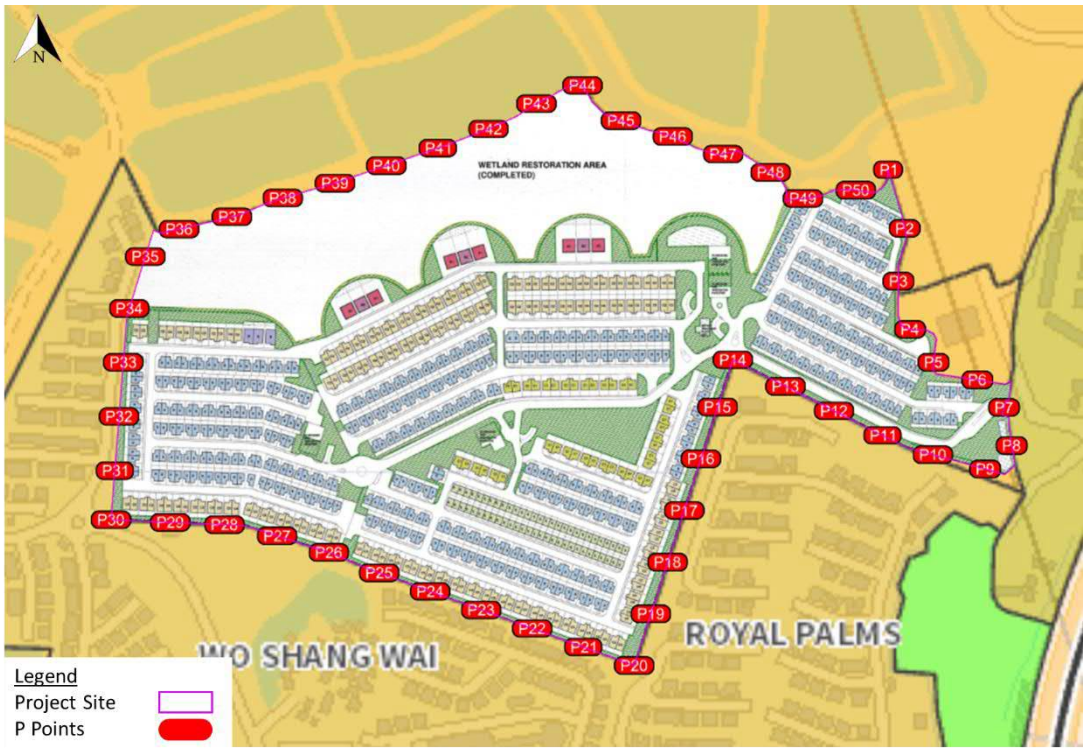
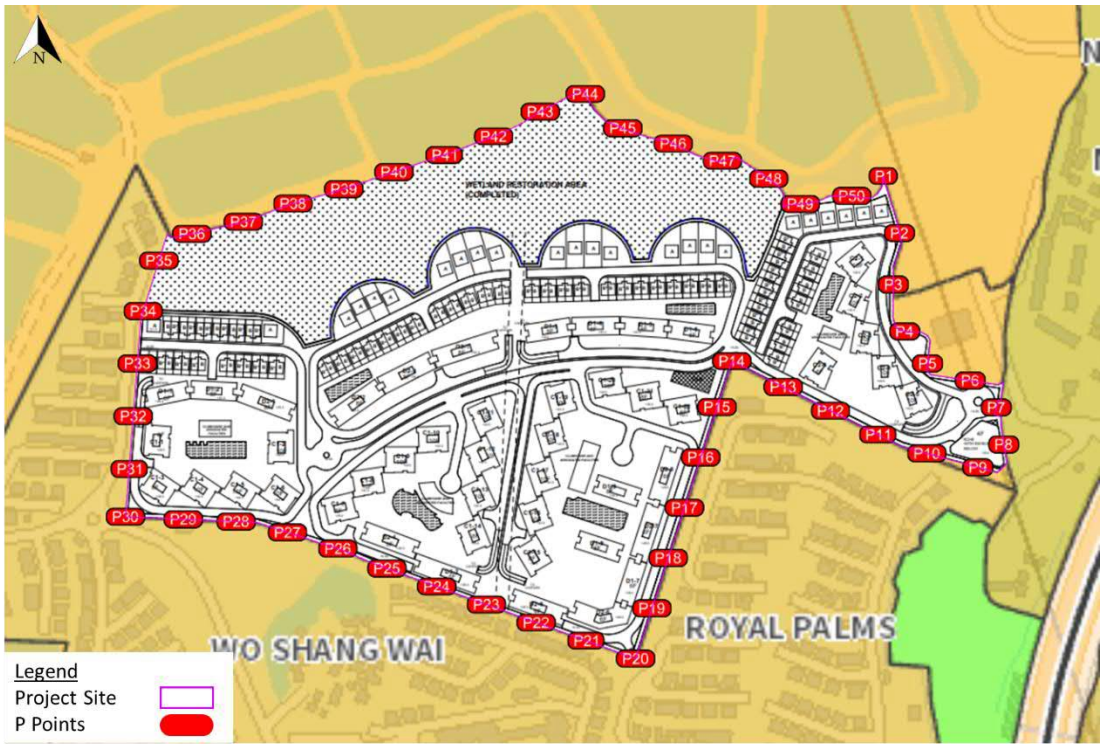


Figure 5.4: Demarcation of the Perimeter (P) Test Points in Proposed Scheme



5.4.2 Overall Test Points

177 overall test points are evenly distributed at open spaces, streets and places that are frequently accessed by pedestrians within the Assessment Area. The locations of the overall test points are shown in **Figure 5.5** to **Figure 5.6**.

Figure 5.5: Demarcation of the Overall (O) Test Points in Baseline Scheme

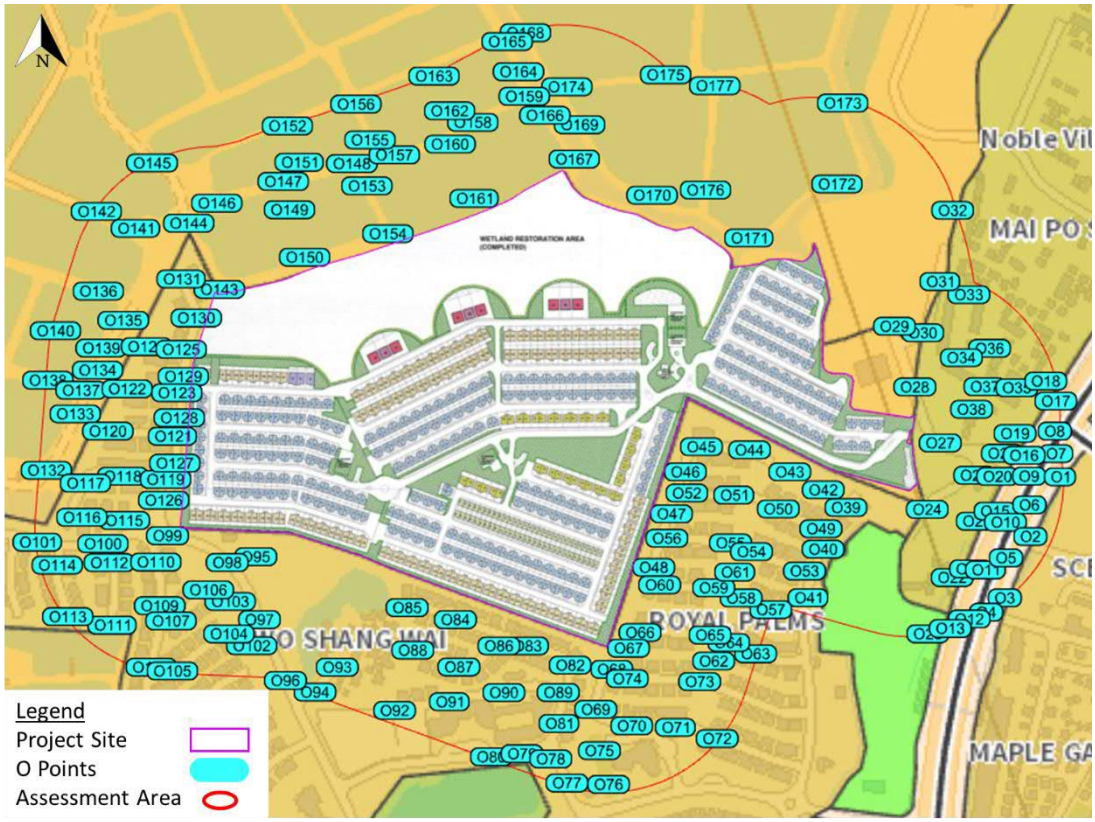
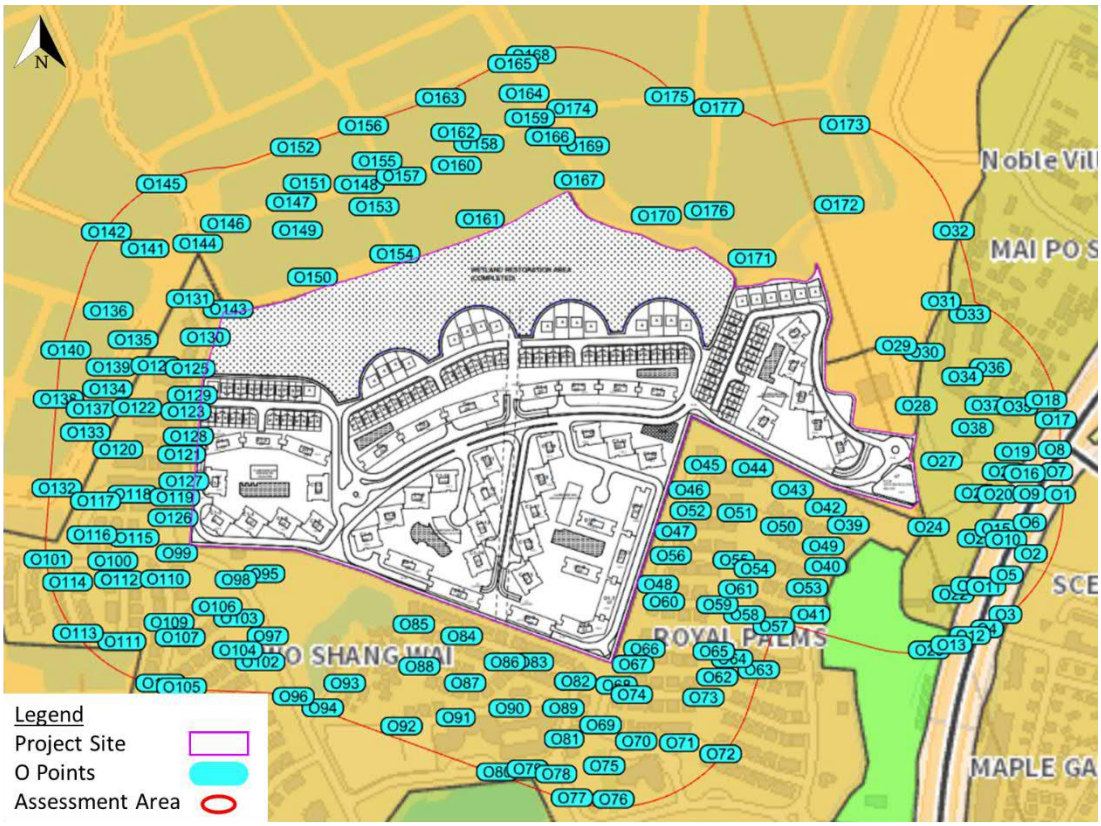


Figure 5.6: Demarcation of the Overall (O) Test Points in Proposed Scheme



5.4.3 SPECIAL TEST POINTS

In addition to the overall test points, special test points are selected within the Project Site. 32 special test points are selected as shown in **Figure 5.7** to **Figure 5.8.**

Figure 5.7: Demarcation of the Special (S) Test Points in Baseline Scheme

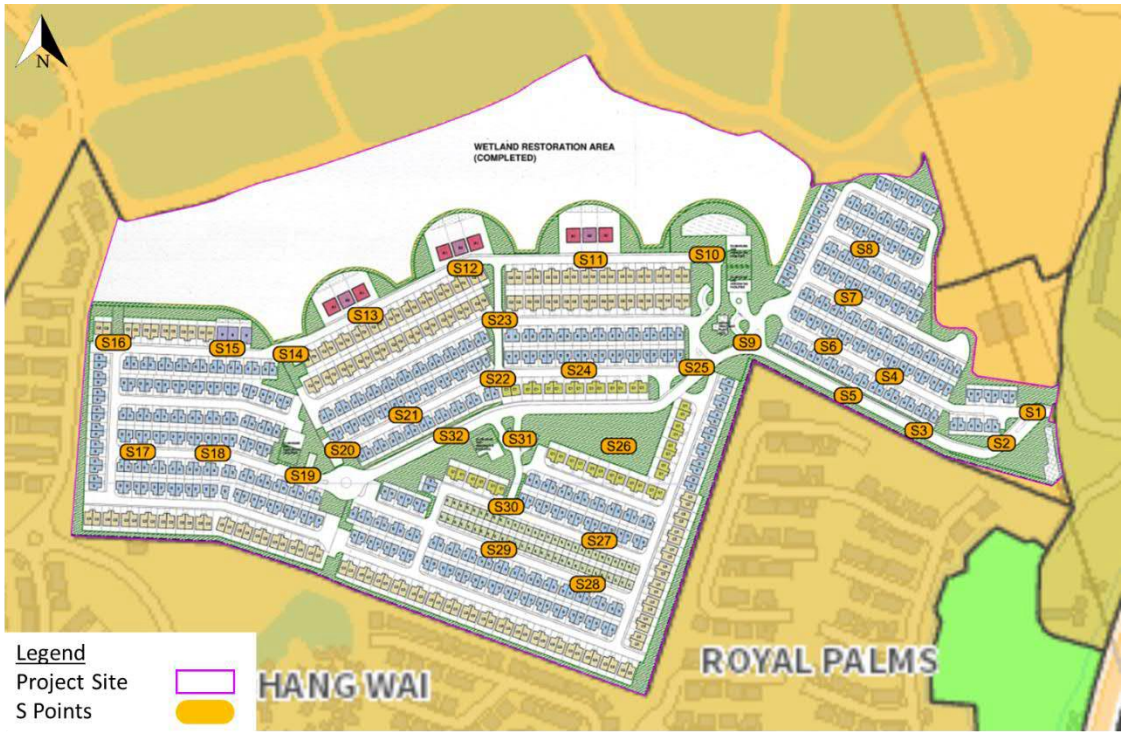
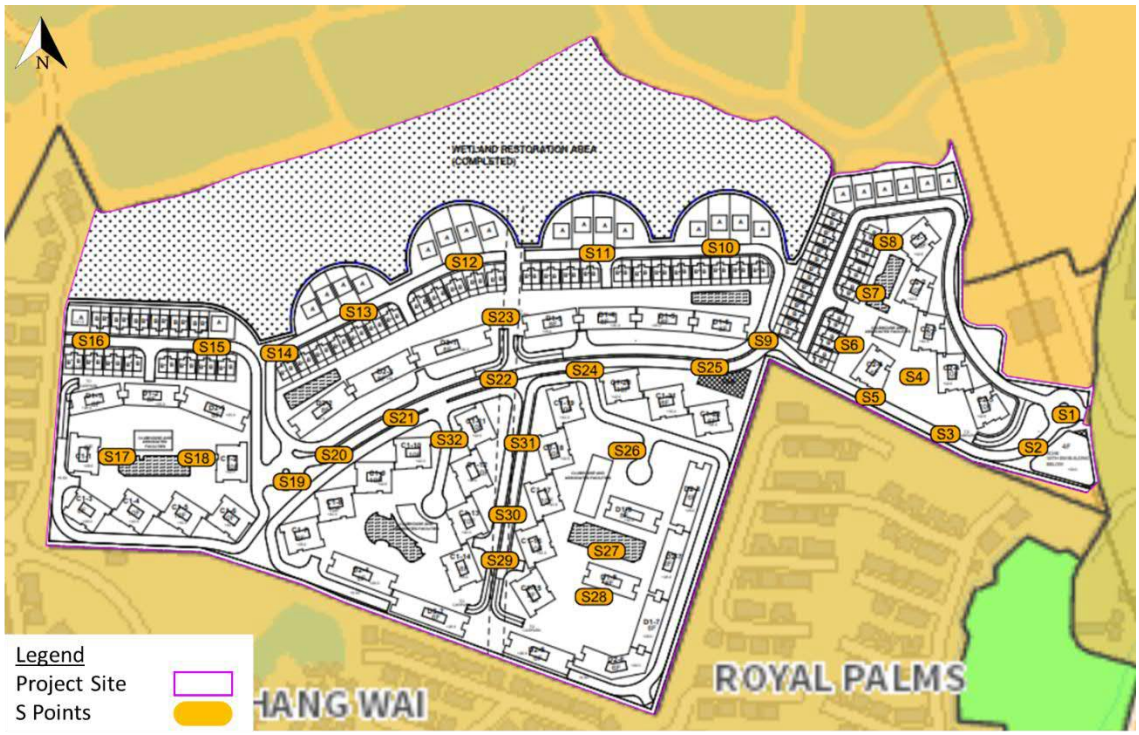


Figure 5.8: Demarcation of the Special (S) Test Points in Proposed Scheme



5.5 Demarcation of Focus Areas

In addition to the SVR for the Project Site (i.e. P1-P50) and LVR (i.e. P1-50 and O1-O177), the spatial average wind velocity ratio (SAVR) of various focus areas will be presented for the in-depth quantitative analysis.

Table 5.3 shows the various focus areas and their representative test points and **Figure 5.9** to **Figure 5.17** show the location of the focus areas within the Assessment Area

Table 5.3: Demarcation of Focus Areas

	Focus Areas	Test Points
A	San Tam Road	O1-O3
B	San Tin Highway	O4-O12
C	Castle Peak Road - Mai Po	O13-O17
D	Road 1	O18-O19
E	Road 2	O20-O23
F	Road 3	O24-O25
G	Mai Po South Road	O26-O29
H	Road 4	O30-O32
I	Mai Po San Tsuen	O33-O38
J	Palm Canyon Drive	O39-O41
K	Royal Palms Playground 1	O42-O43
L	Ventura Avenue	O44-O48
M	Santa Monica Avenue	O49-O52
N	Monterey Avenue	O53-O54
O	Marin Avenue	O55-O56
P	Victoriana Avenue	O57-O58
Q	Napa Avenue	O59-O60
R	Royal Palms Playground 2	O61-O62
S	Carmel Avenue	O63-O64
T	Coronado Avenue	O65-O66
U	Santa Clara Avenue	O67-O72
V	San Diego Avenue	O73-O74
W	Tennis Court	O75-O76
X	Palm Springs Boulevard 1	O77-O80
Y	Narcissus Path	O81-O85
Z	Banyan Path	O86-O88
AA	Sunflower Path	O89-O92
AB	Wo Shang Wai Village	O93-O94
AC	Basketball Court	O95
AD	Palm Springs Boulevard 2	O96-O101
AE	Palm Springs Playground	O102-O103

	Focus Areas	**Test Points**
AF	Laurel Path	O104-O105
AG	Gmelina Path	O106-O107
AH	Pinaceae Drive	O108-O110
AI	Hibiscus Path	O111-O112
AJ	Michelia Path	O113-O114
AK	Kapok Path	O115-O119
AL	Lotus Path	O120-O121
AM	Cherry Path	O122-O123
AN	Cedar Path	O123-O125
AO	Camelia Path	O126-O131
AP	Fishponds 1	O132-O142
AR	Fishponds 2	O143-O177

Figure 5.9: Location of the Focus Areas within the Assessment Area (Overview)

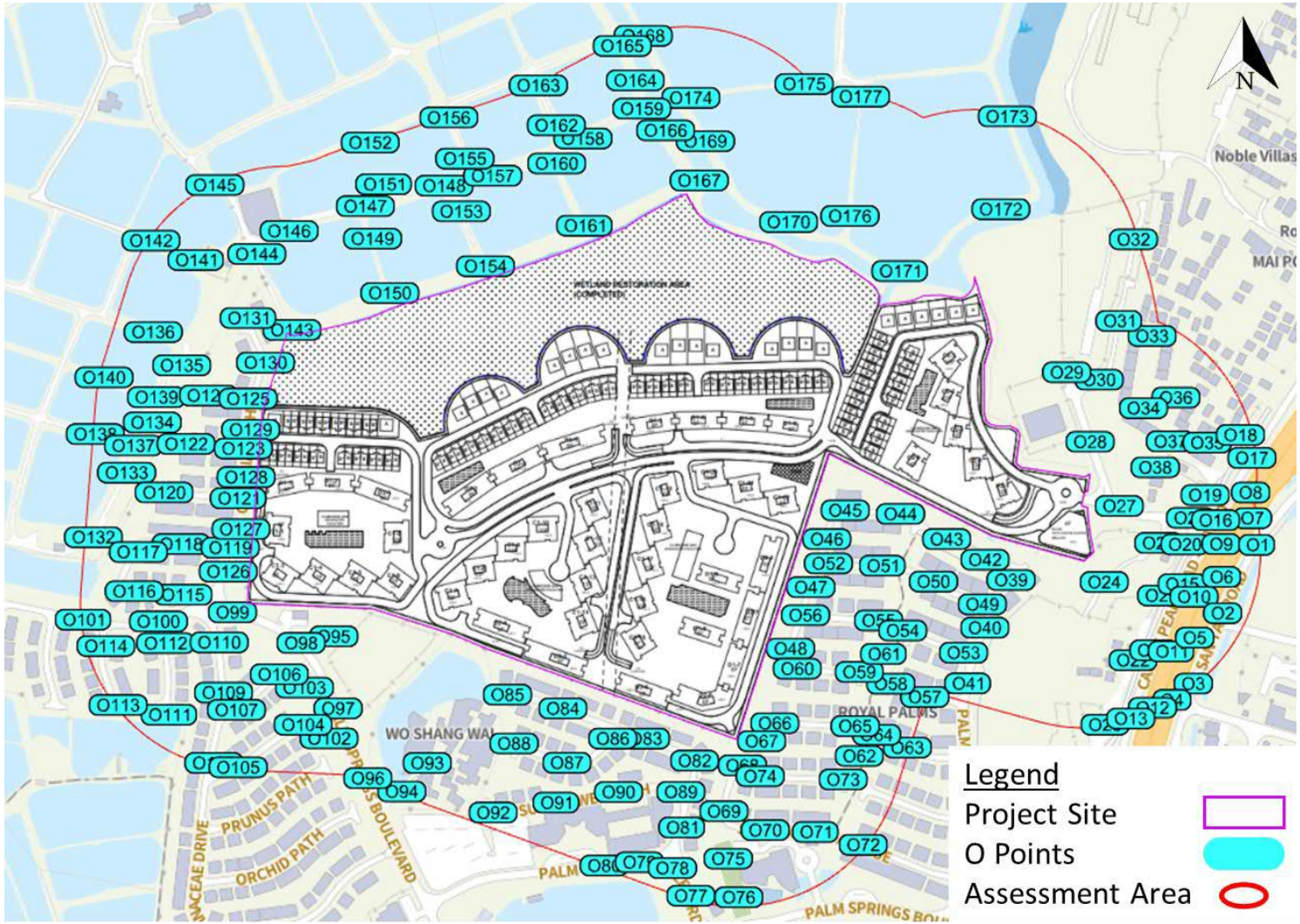


Figure 5.10: Location of the Focus Areas within the Assessment Area (East)

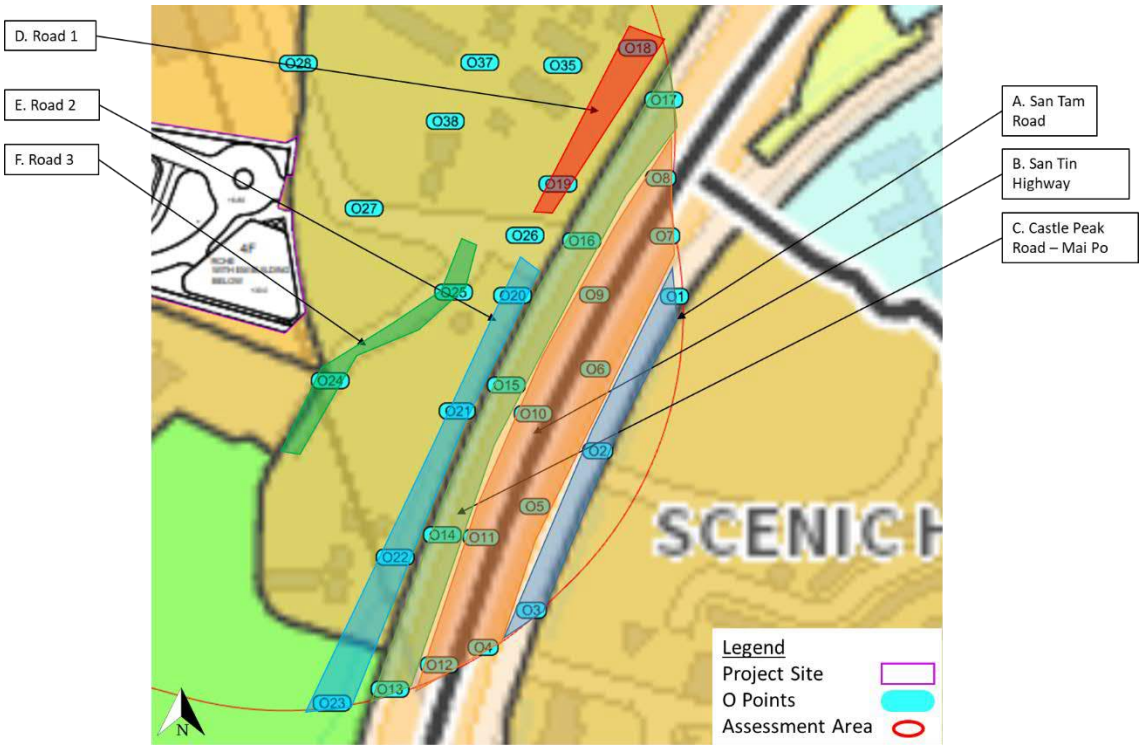


Figure 5.11: Location of the Focus Areas within the Assessment Area (Northeast)

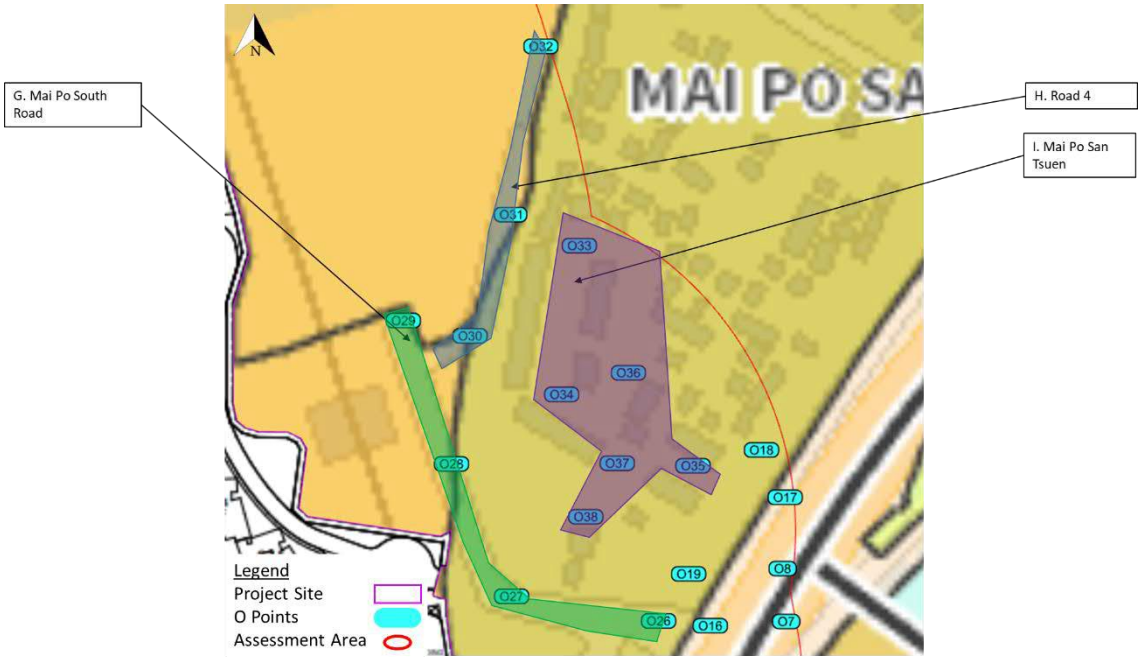


Figure 5.12: Location of the Focus Areas within the Assessment Area (Southeast)

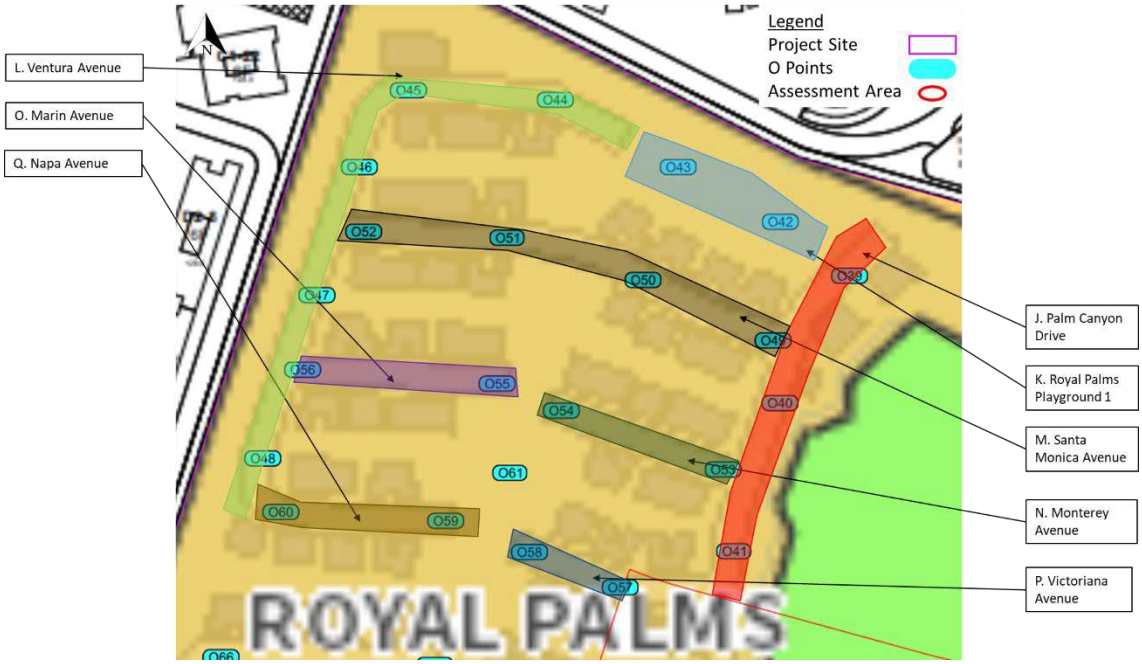


Figure 5.13: Location of the Focus Areas within the Assessment Area (South Part 1)

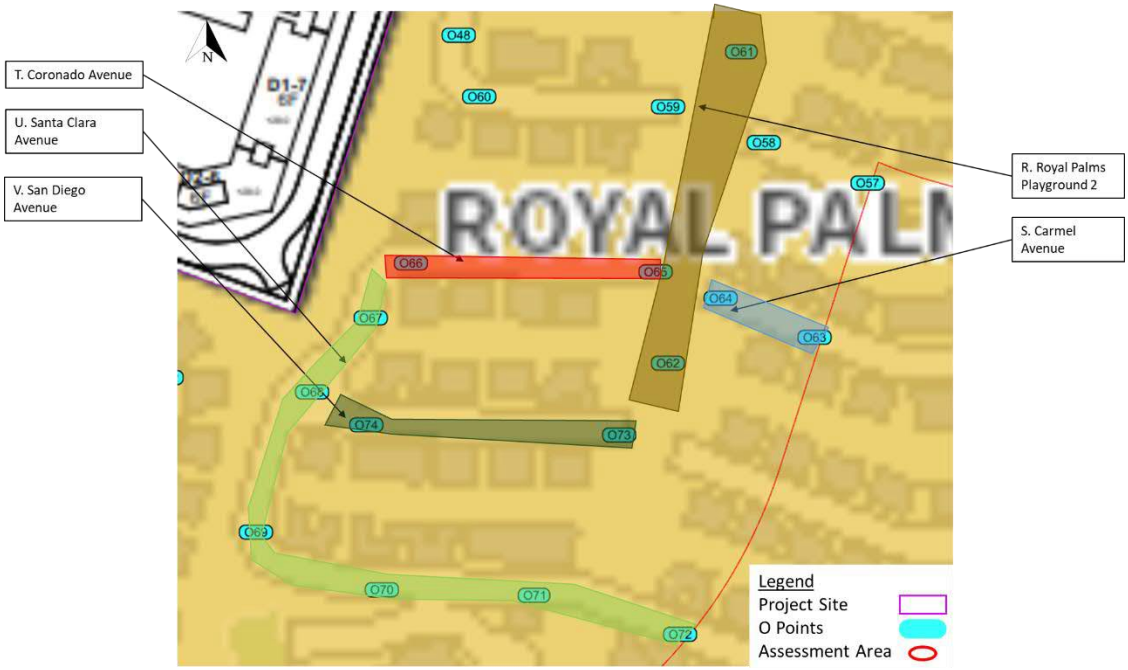


Figure 5.14: Location of the Focus Areas within the Assessment Area (South Part 2)

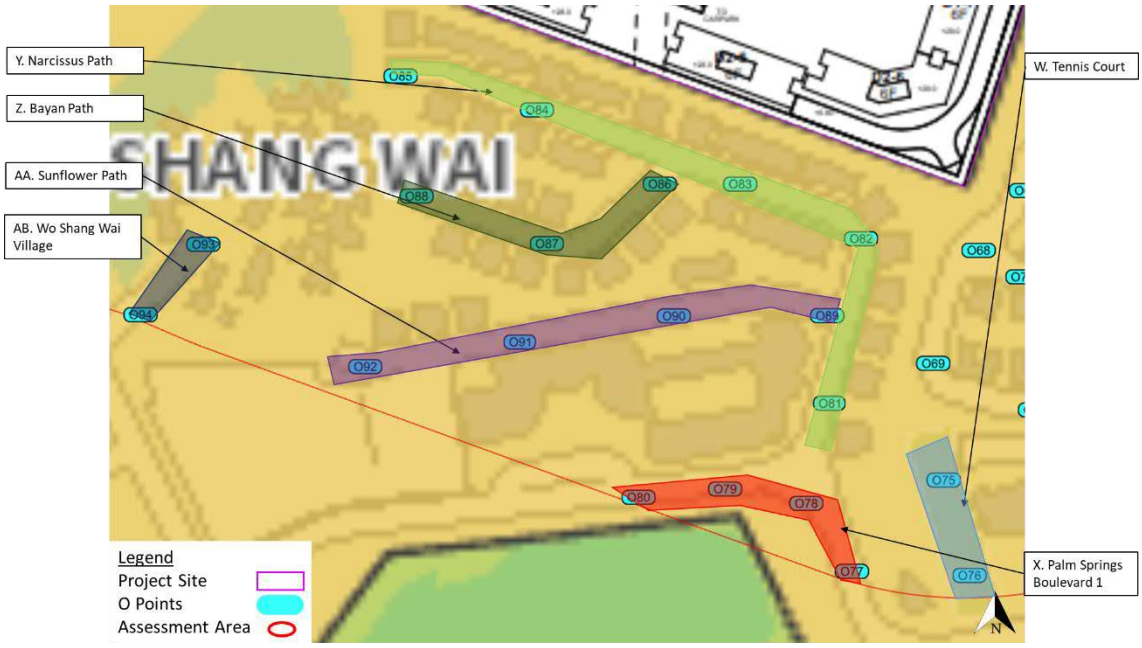


Figure 5.15: Location of the Focus Areas within the Assessment Area (Southwest)

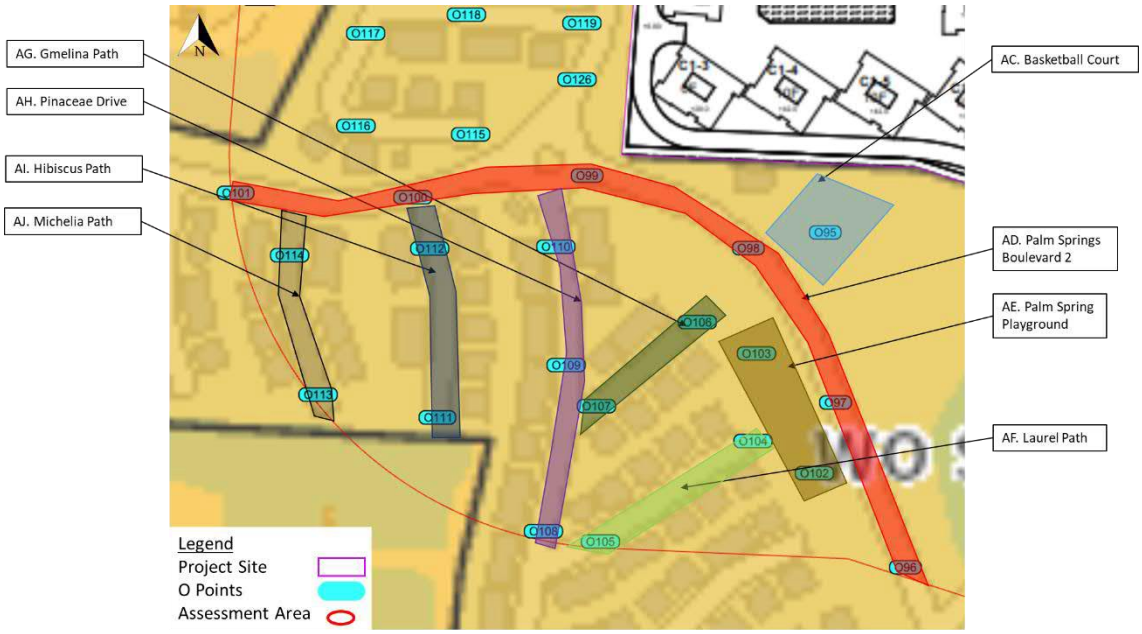


Figure 5.16: Location of the Focus Areas within the Assessment Area (West)

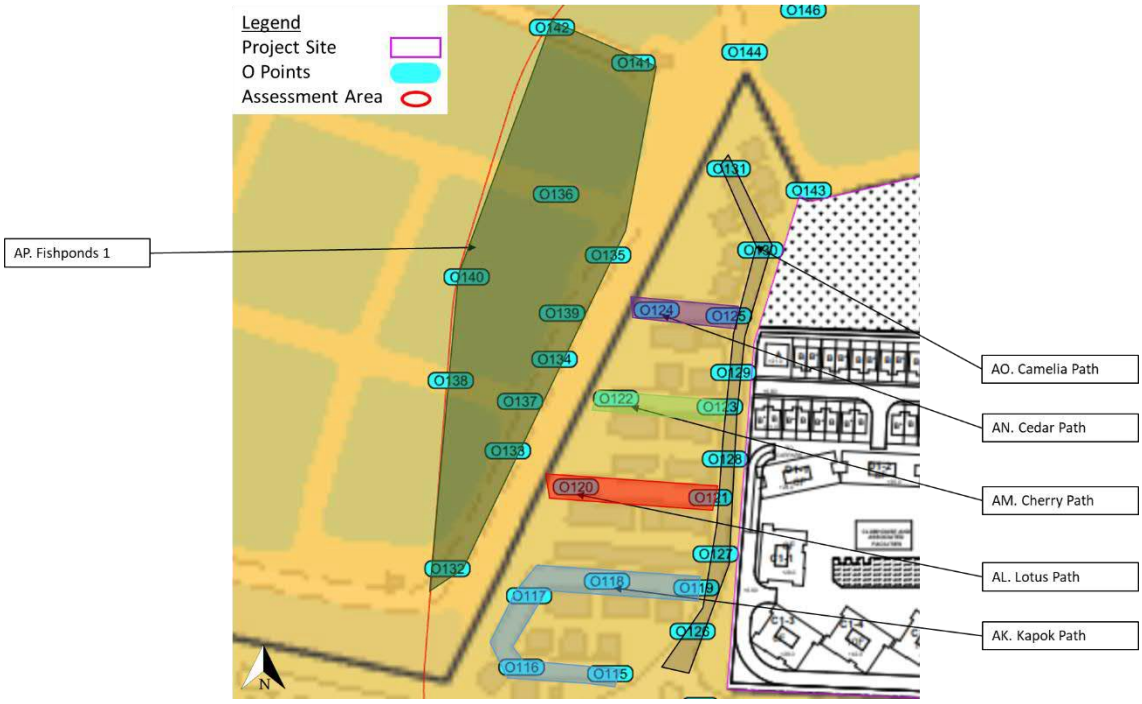
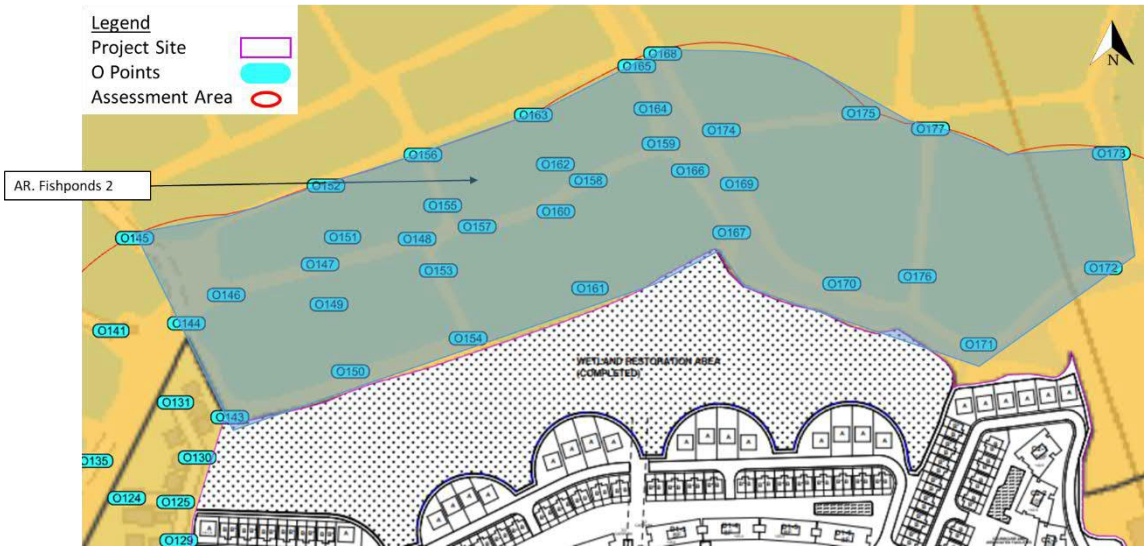


Figure 5.17: Location of the Focus Areas within the Assessment Area (North)



6 Results and Discussion

6.1 Directional Analysis

6.1.1 NNE Wind - Wind Frequency: 7.2% (Annual)

The incoming NNE wind mainly comes from Shenzhen River. For the Project Site, the incoming NNE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NNE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates stagnant zones at immediate downwind regions including Palm Springs – Arcadia, Wo Shang Wai Village and Palm Springs – Westwood. Nonetheless, two streams of NNE wind are able to penetrate through the Project Site to ventilate the aforementioned downwind regions. One stream of NNE wind flows along the open spaces within the Project Site to reach the downwind regions of Wo Shang Wai Village whereas the other stream of NNE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, NNE wind is also shielded by the proposed low-rise residential houses and mid-rise residential towers within the Project Site. However, due to the less dense arrangement of these proposed residential developments when compared to the Baseline Scheme, a larger portion of NNE wind is able to penetrate through the Project Site via the building separations at the eastern and western side of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.1 and **Figure 6.3** shows the VR contour plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.2** and **Figure 6.4** shows the VR vector plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.1: VR Contour Plot at Pedestrian Level under NNE Wind for Baseline Scheme

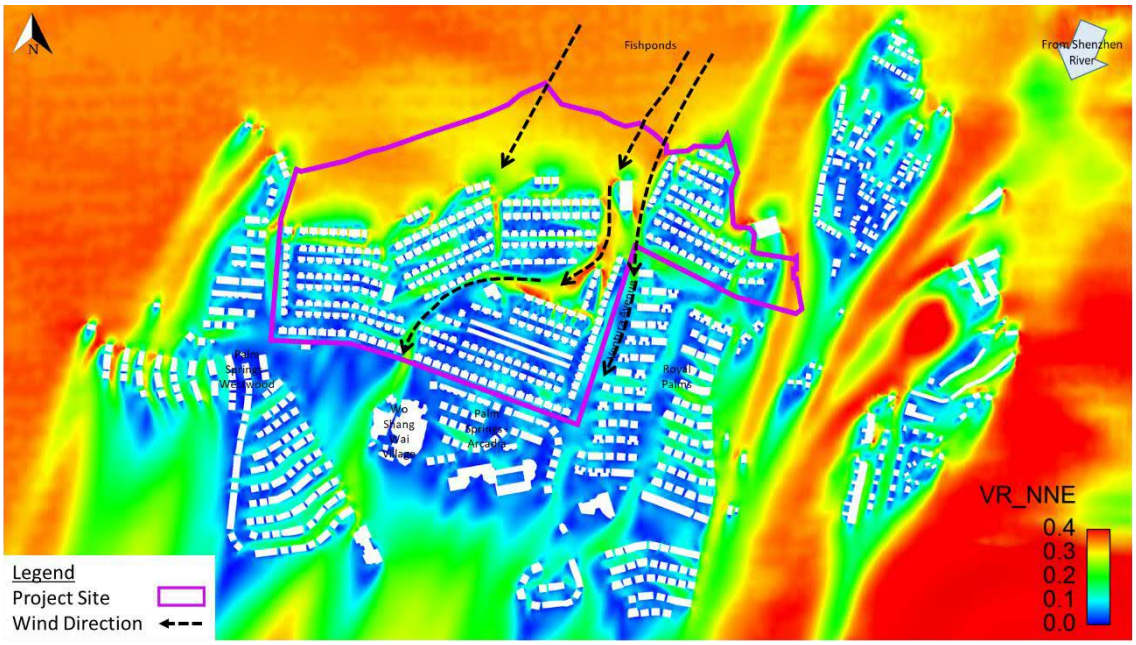


Figure 6.2: VR Vector Plot at Pedestrian Level under NNE Wind for Baseline Scheme

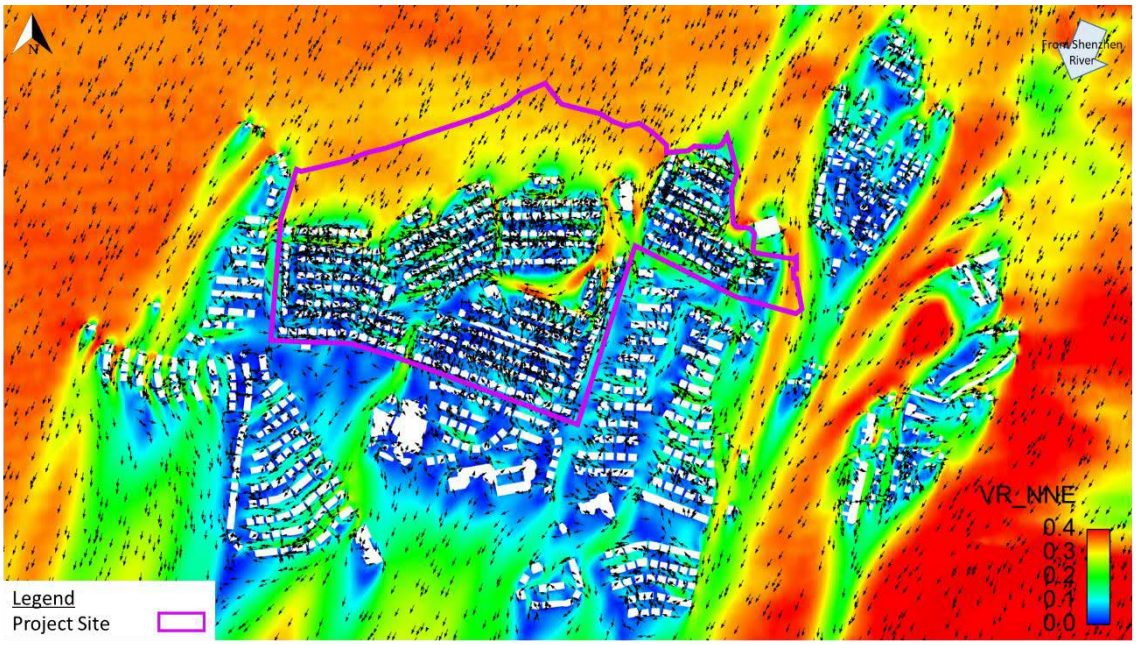


Figure 6.3: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme

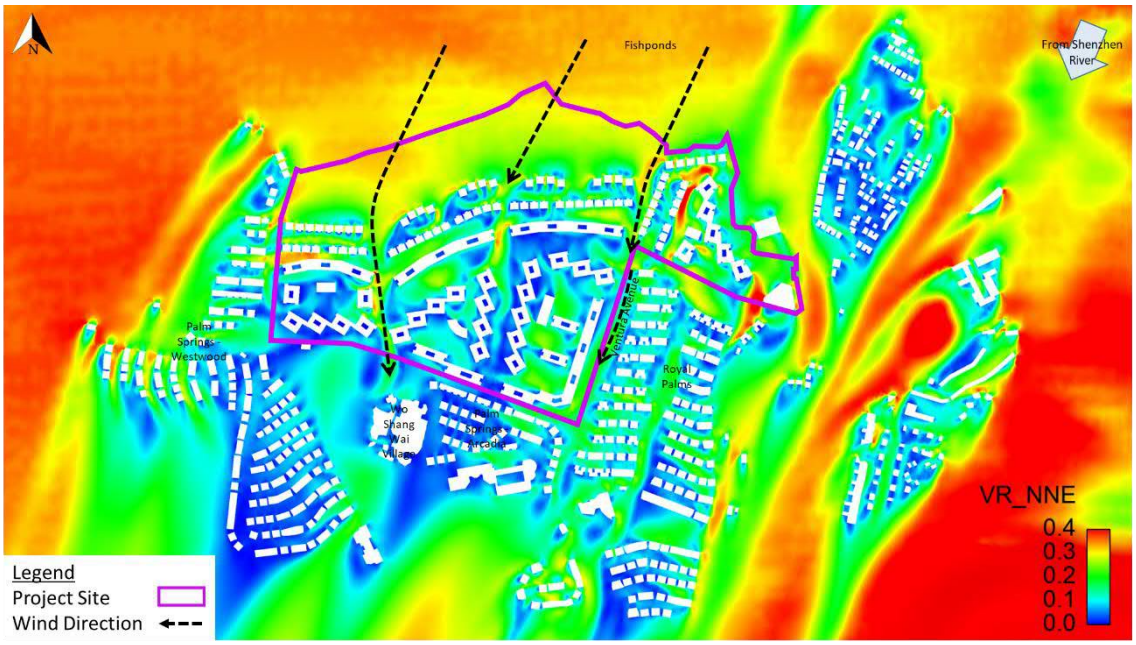
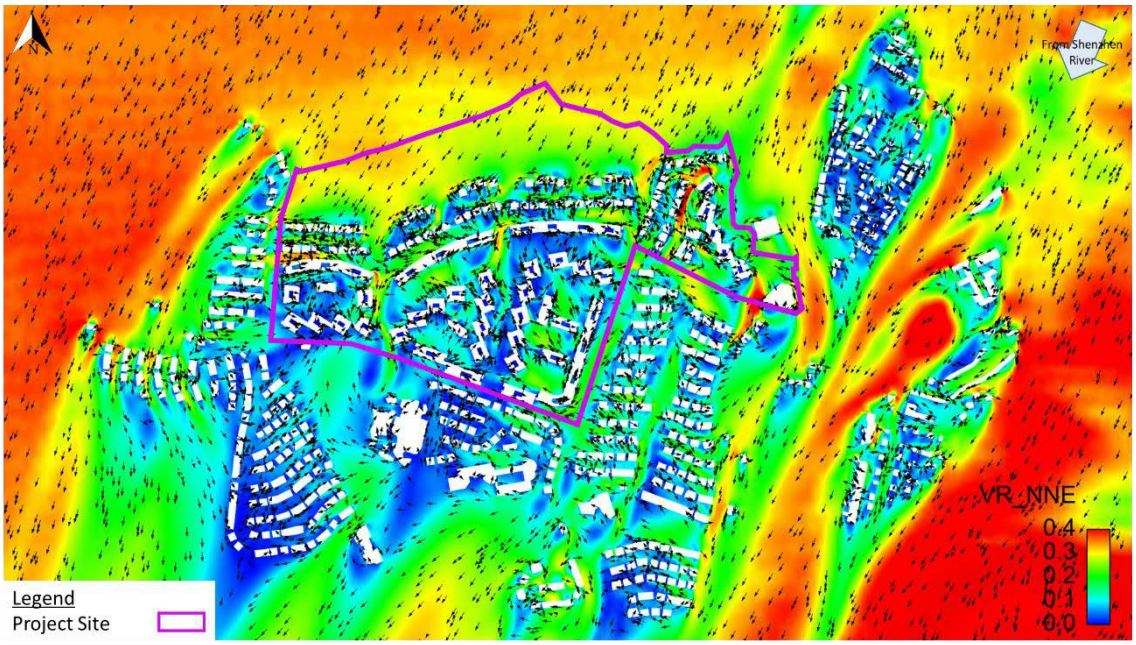


Figure 6.4: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme



6.1.2 NE Wind - Wind Frequency: 9.8% (Annual)

The incoming NE wind mainly comes from San Tin. For the Project Site, the incoming NE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates stagnant zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, a portion of incoming NE wind is deflected towards Camelia Path by the proposed houses at the north western portion of the Project Site to ventilate Palm Springs – Westwood. Another portion of NE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, a portion of incoming NE wind is also blocked by the proposed low-rise residential houses and mid-rise residential towers within the Project Site. In particular, the residential developments at the western portion of the Project Site deflected the incoming NE wind towards Camelia Path hence a significantly larger stagnant zone is observed at Palm Springs – Westwood when compared with the Baseline Scheme. Nonetheless, due to the less dense arrangement of these proposed residential developments when compared to the Baseline Scheme, a larger portion of NE wind is able to penetrate through the Project Site via the building separations at the eastern and western of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue, Palm Springs - Arcadia and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.5 and **Figure 6.7** shows the VR contour plots of NE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.6** and **Figure 6.8** shows the VR vector plots of NE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.5: VR Contour Plot at Pedestrian Level under NE Wind for Baseline Scheme

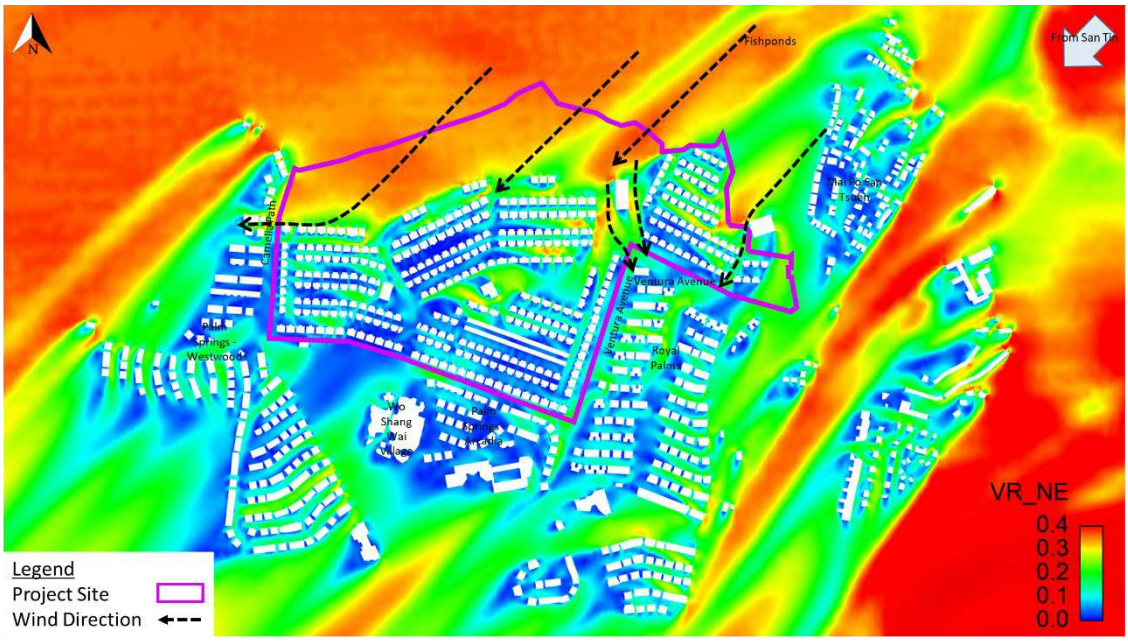


Figure 6.6: VR Vector Plot at Pedestrian Level under NE Wind for Baseline Scheme

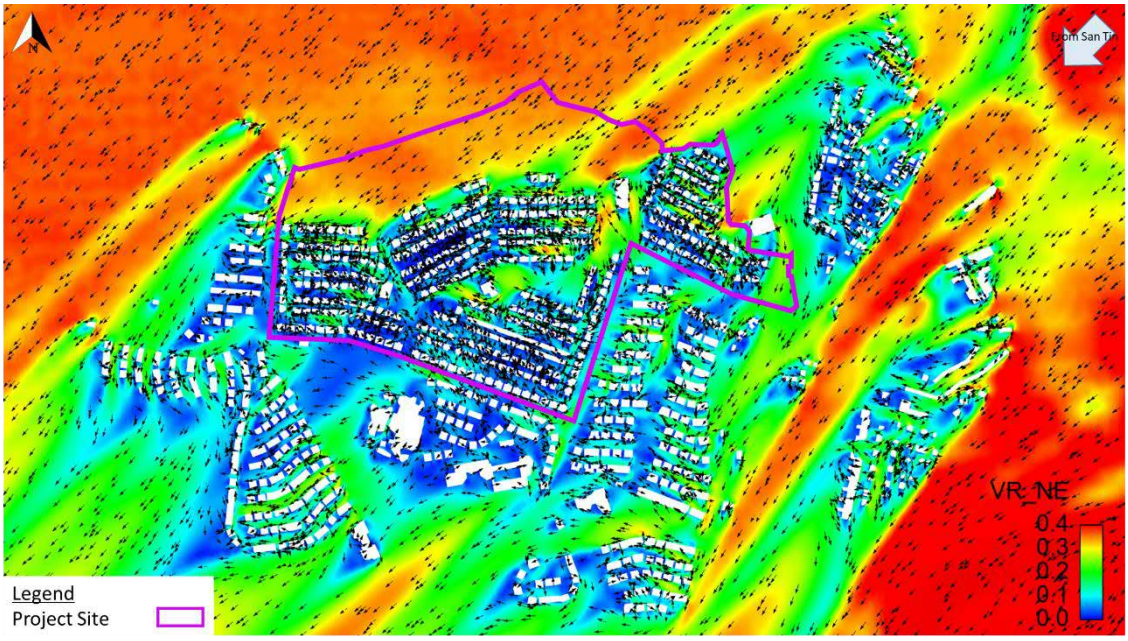


Figure 6.7: VR Contour Plot at Pedestrian Level under NE Wind for Proposed Scheme

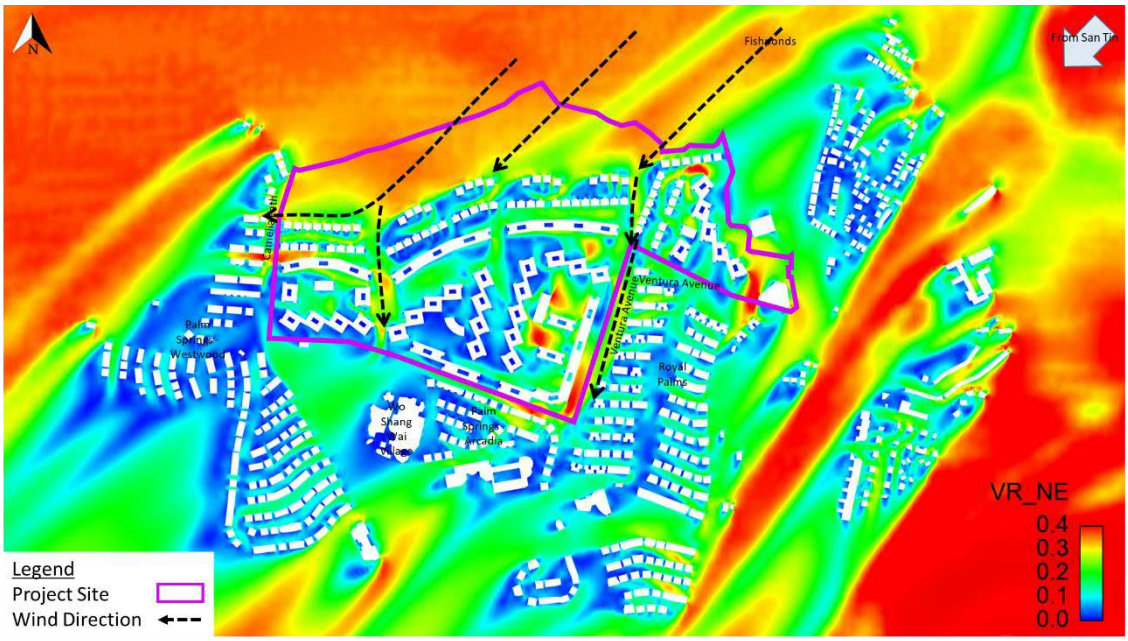
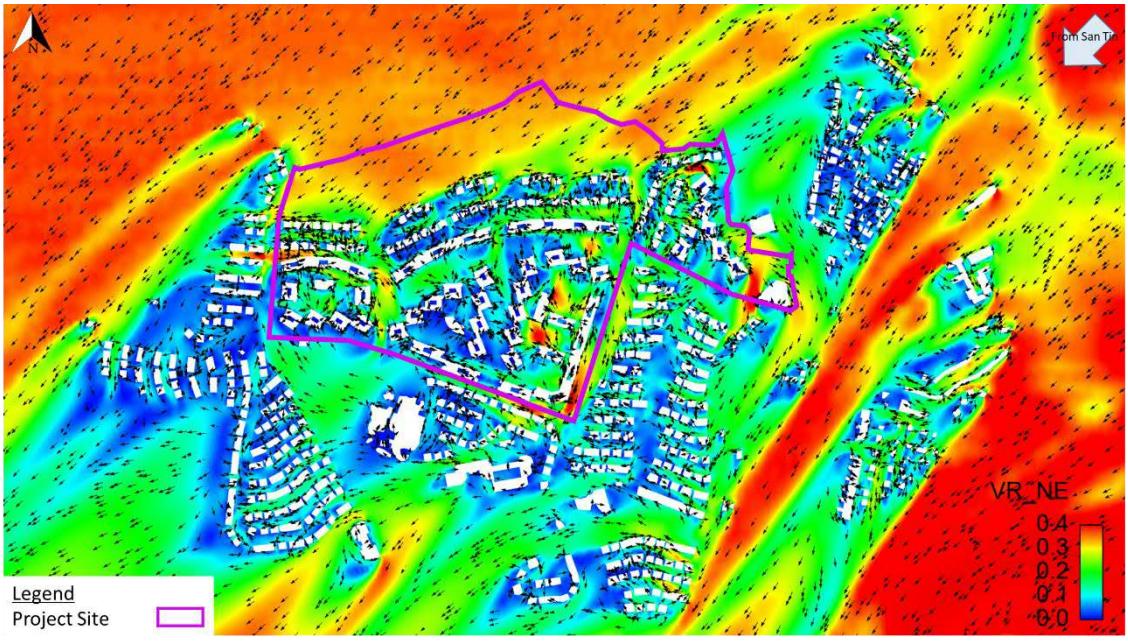


Figure 6.8: VR Vector Plot at Pedestrian Level under NE Wind for Proposed Scheme



6.1.3 ENE Wind - Wind Frequency: 10.2% (Annual)

The incoming ENE wind mainly comes from San Tin Highway. However, incoming ENE wind to the Project Site will be obstructed by the low-rise residential developments of Mai Po San Tsuen at the upwind regions.

In the Baseline Scheme, incoming ENE wind is obstructed by Mai Po San Tsuen and the proposed low-rise houses within the Project Site hence the combined shielding effect creates stagnant zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, two streams of ENE wind are able to penetrate through the Project Site freely. One stream of ENE wind will penetrate through the Project Site to reach Camelia Path via the Wetland Restoration Area whereas a second stream of ENE wind will reach Royal Palms Playground 1, Royal Palms and Ventura Avenue via the open space resulting from the building setback from the eastern site boundary.

In the Proposed Scheme, a portion of incoming ENE wind is also obstructed by Mai Po San Tsuen and the proposed low-rise residential houses and mid-rise residential towers within the Project Site hence stagnant zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia are comparable with the Baseline Scheme. However, the proposed mid-rise residential towers and the RCHE at the eastern portion of the Project Site block some of ENE wind from passing through the Project Site when compared with the Baseline Scheme. This weaken the ventilation at pedestrian level hence slightly lower VRs are observed at the eastern site boundary and Royal Palms Playground 1 when compared with the Baseline Scheme.

Figure 6.9 and **Figure 6.11** shows the VR contour plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively**. Figure 6.10** and **Figure 6.12** shows the VR vector plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.9: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

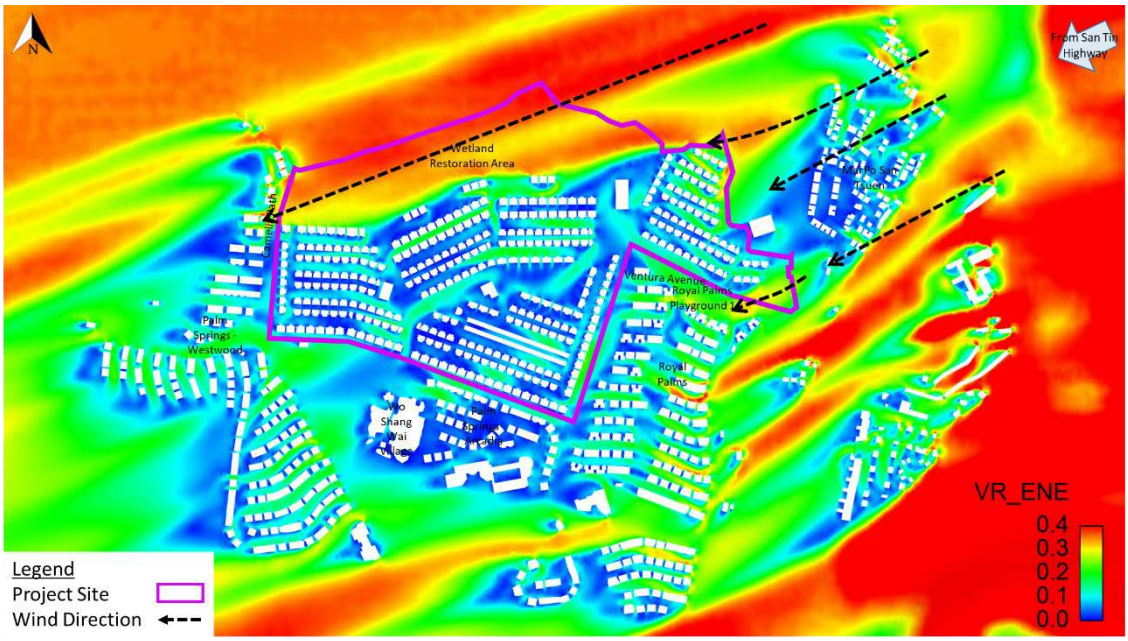


Figure 6.10: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

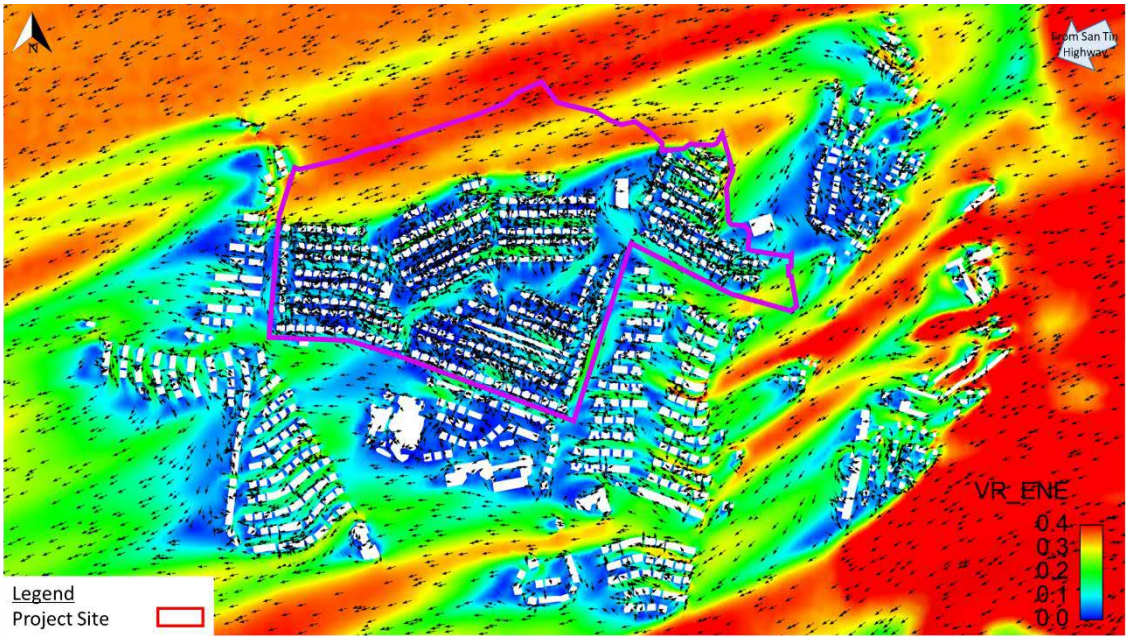


Figure 6.11: VR Contour Plot at Pedestrian Level under ENE Wind for Proposed Scheme

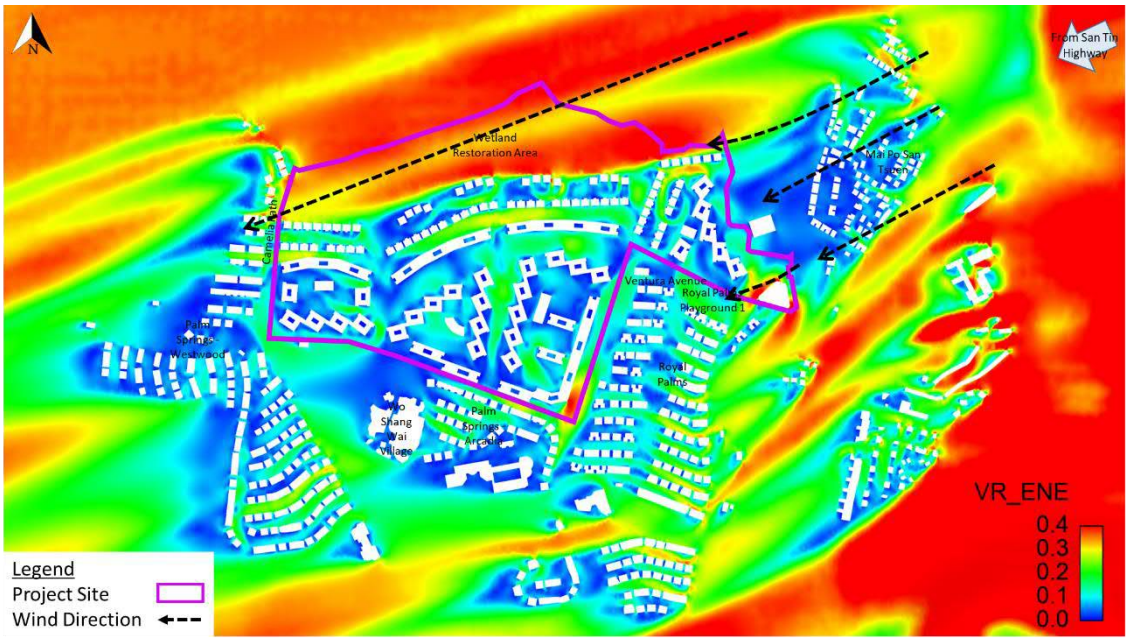
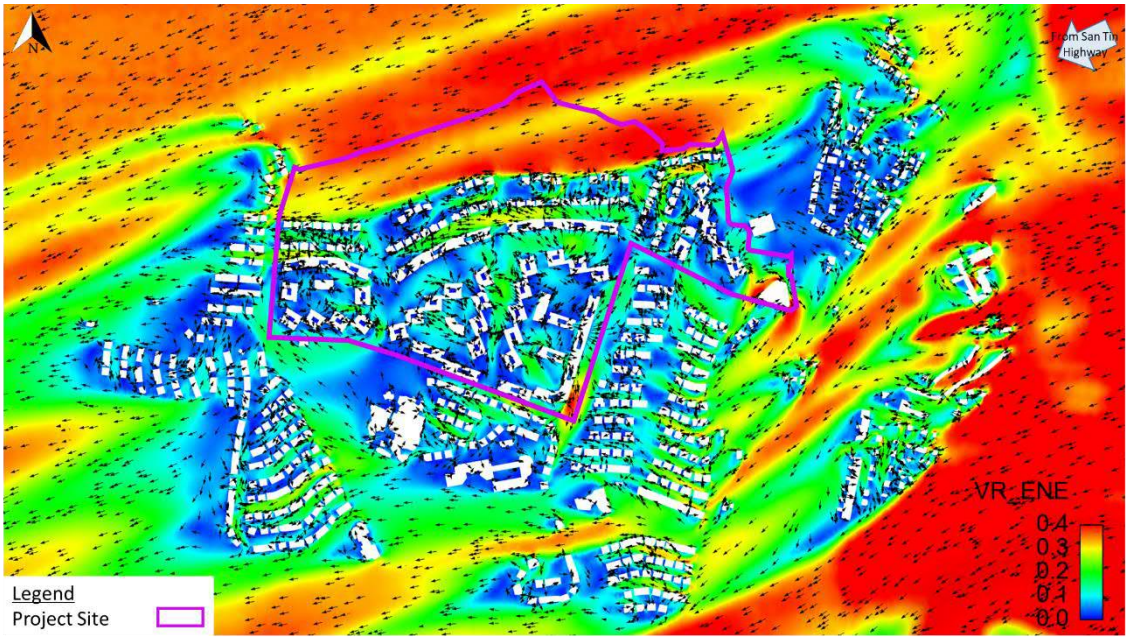


Figure 6.12: VR Vector Plot at Pedestrian Level under ENE Wind for Proposed Scheme



6.1.4 E Wind - Wind Frequency: 18.1% (Annual); 8.1% (Summer)

E wind mainly comes from the mountains to the east, namely Kam Kwai Leng.

In the Baseline Scheme, a portion of incoming E wind will be obstructed by Mai Po San Tsuen and the proposed low-rise houses at the eastern portion of the Project Site. Nonetheless, a portion of E wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site. This stream of E wind will ventilate the Wetland Restoration Area and then continue to flow towards Palm Springs – Westwood via Camelia Path.

In the Proposed Scheme, the proposed mid-rise residential towers at the eastern portion of the Project Site deflected the incoming E wind towards the north hence higher VRs are observed at the Wetland Restoration Area when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers and the RCHE at the eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern site boundary when compared to the Baseline Scheme. In addition, due to the less dense arrangement of these proposed residential developments when compared to the Baseline Scheme, E wind is able to penetrate through the building separation in the center of the Proposed Scheme which is also in alignment with Ventura Avenue to ventilate the downwind regions of Palm Springs Boulevard 2.

Figure 6.13 and **Figure 6.15** shows the VR contour plots of E wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.14** and **Figure 6.16** shows the VR vector plots of E wind for Baseline Scheme and Proposed Scheme respectively.

Figure 6.13: VR Contour Plot at Pedestrian Level under E Wind for Baseline Scheme

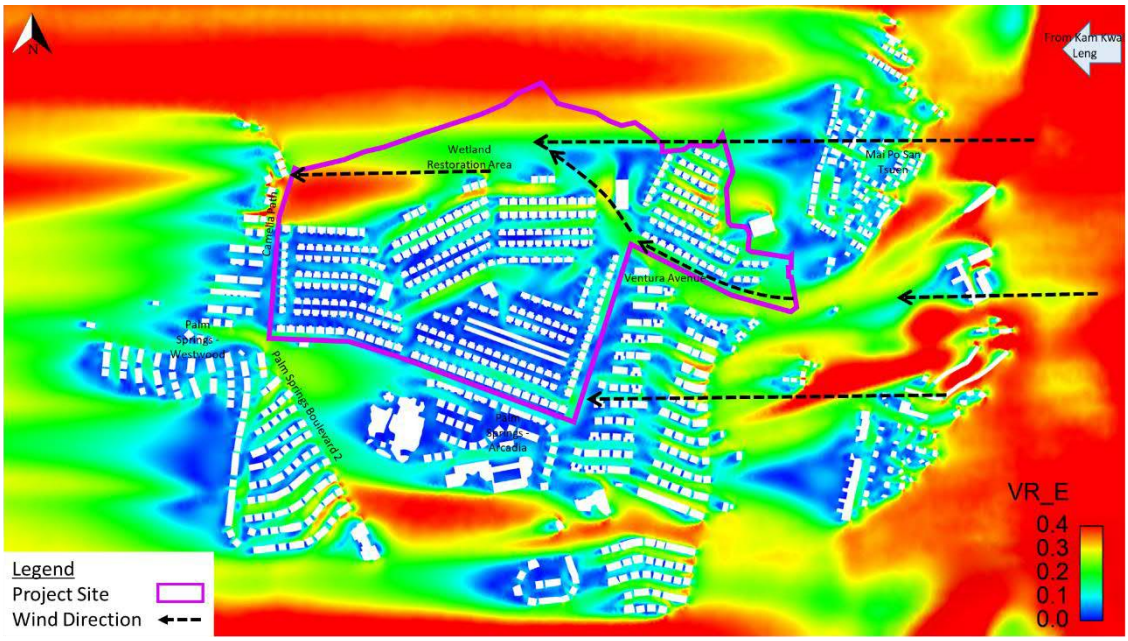


Figure 6.14: VR Vector Plot at Pedestrian Level under E Wind for Baseline Scheme

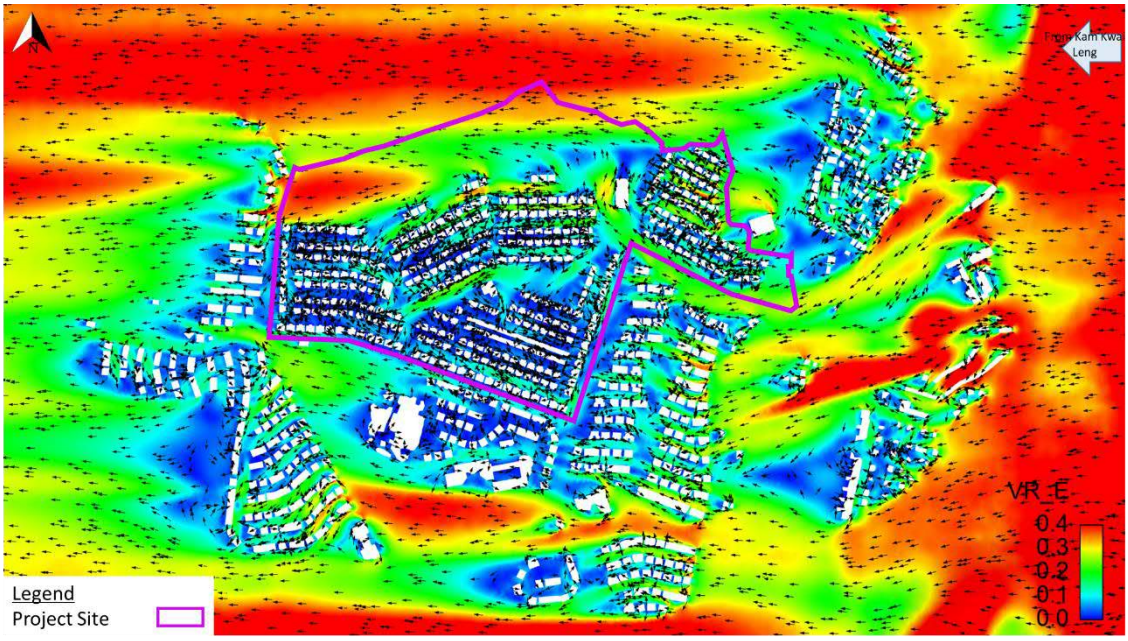


Figure 6.15: VR Contour Plot at Pedestrian Level under E Wind for Proposed Scheme

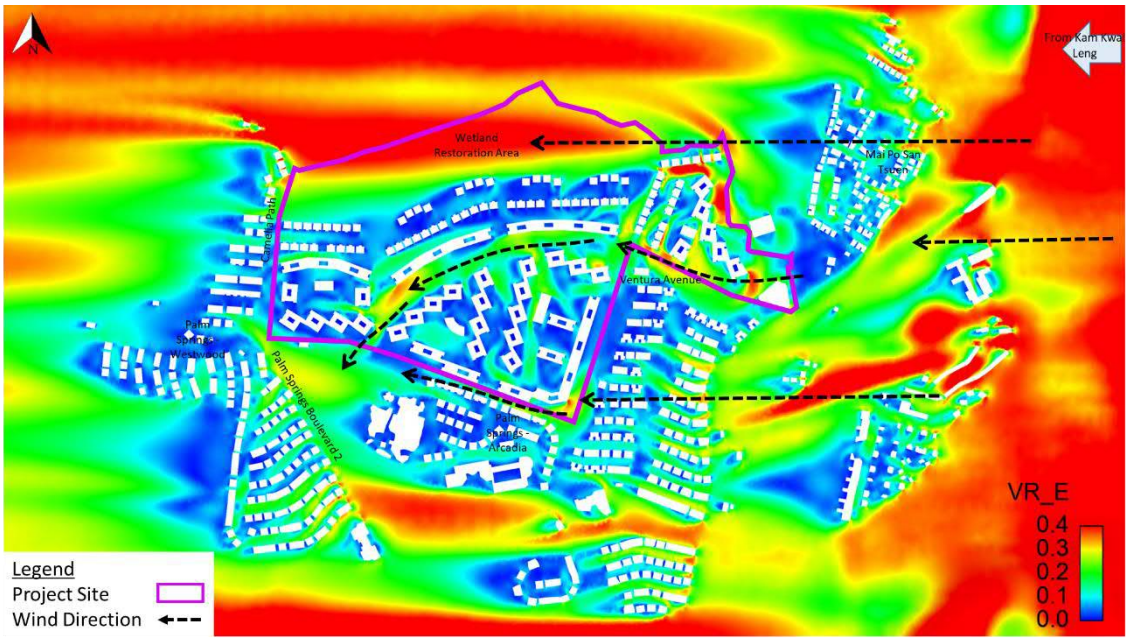
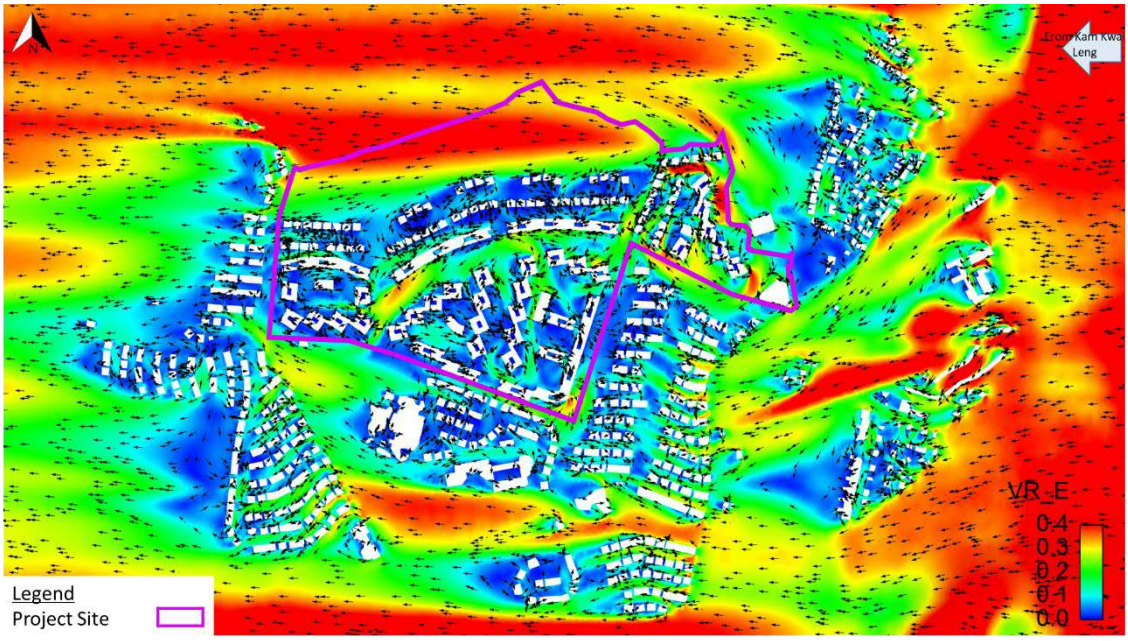


Figure 6.16: VR Vector Plot at Pedestrian Level under E Wind for Proposed Scheme



6.1.5 ESE Wind - Wind Frequency: 9.8% (Annual); 7.8% (Summer)
SE Wind - Wind Frequency: 6.7% (Annual); 6.6% (Summer)

ESE / SE wind to the Project Site comes from Tam Mei Hill. A portion of the ESE / SE wind to the Project Site will be obstructed by the upwind developments of Scenic Heights and Royal Palms.

In the Baseline Scheme, a significant portion of the ESE / SE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the eastern portion of the Project Site thus stagnant zones are observed within the Project Site and at Palm Springs – Westwood. Nonetheless, a portion of ESE / SE wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site.

In the Proposed Scheme, the proposed mid-rise residential towers at the eastern portion of the Project Site deflected the incoming ESE / SE wind towards the north hence higher VRs are observed at the Mai Po Ventilation Building and fishponds to the north of the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the south-eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern & southern site boundary as well as open spaces within the Project Site when compared to the Baseline Scheme.

Figure 6.17 and **Figure 6.19** shows the VR contour plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.18** and **Figure 6.20** shows the VR vector plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.21 and **Figure 6.23** shows the VR contour plots of SE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.22** and **Figure 6.24** shows the VR vector plots of SE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.17: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

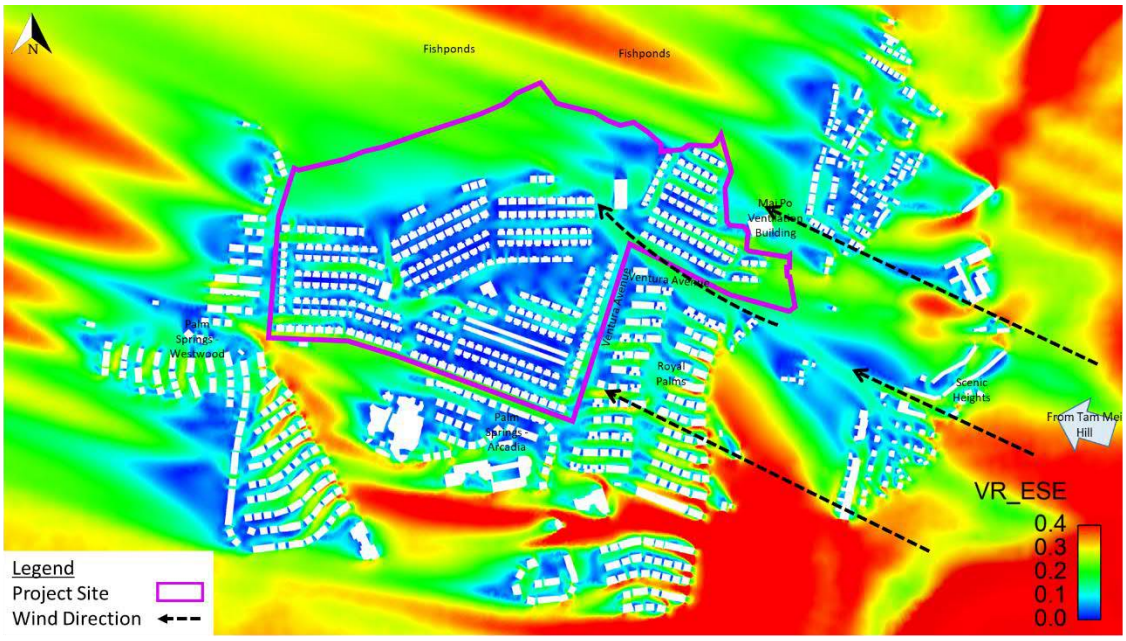


Figure 6.18: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

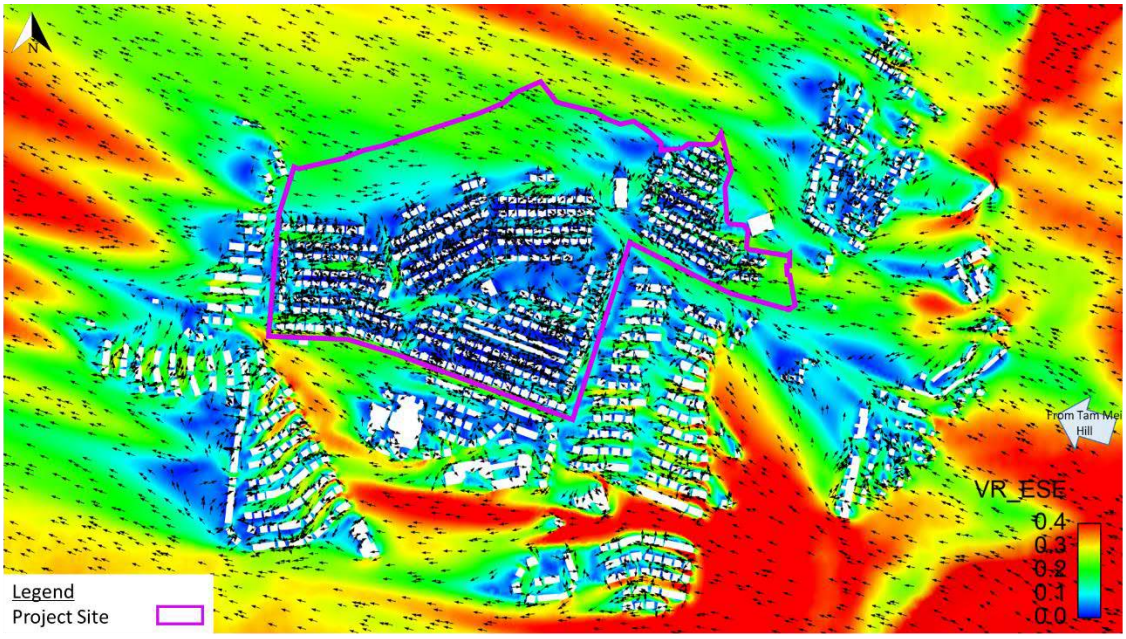


Figure 6.19: VR Contour Plot at Pedestrian Level under ESE Wind for Proposed Scheme

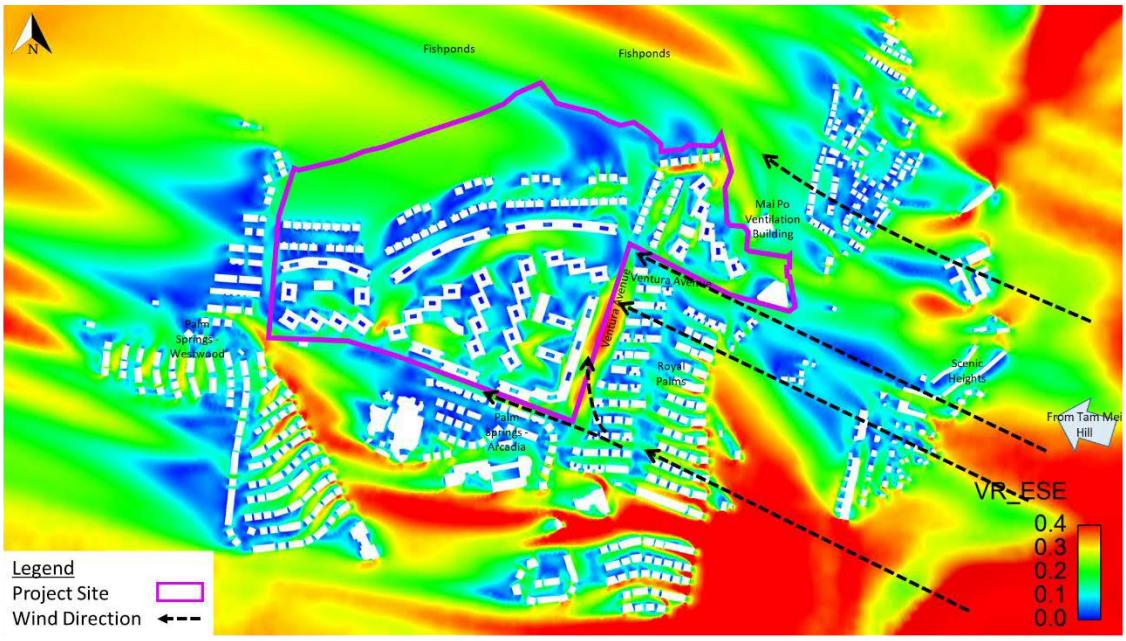


Figure 6.20: VR Vector Plot at Pedestrian Level under ESE Wind for Proposed Scheme

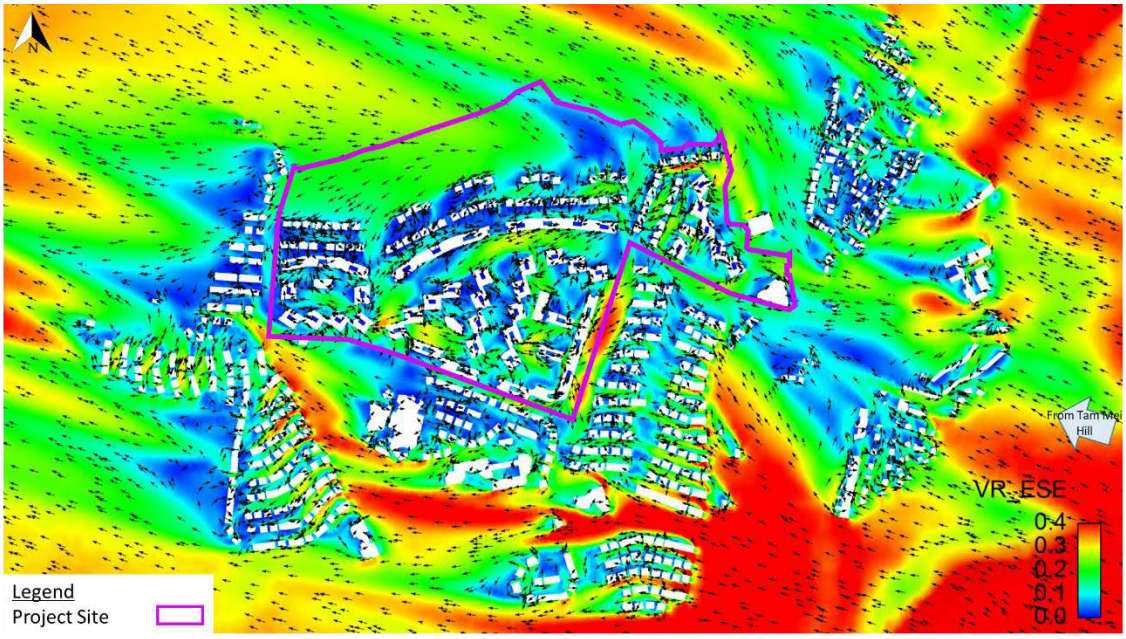


Figure 6.21: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

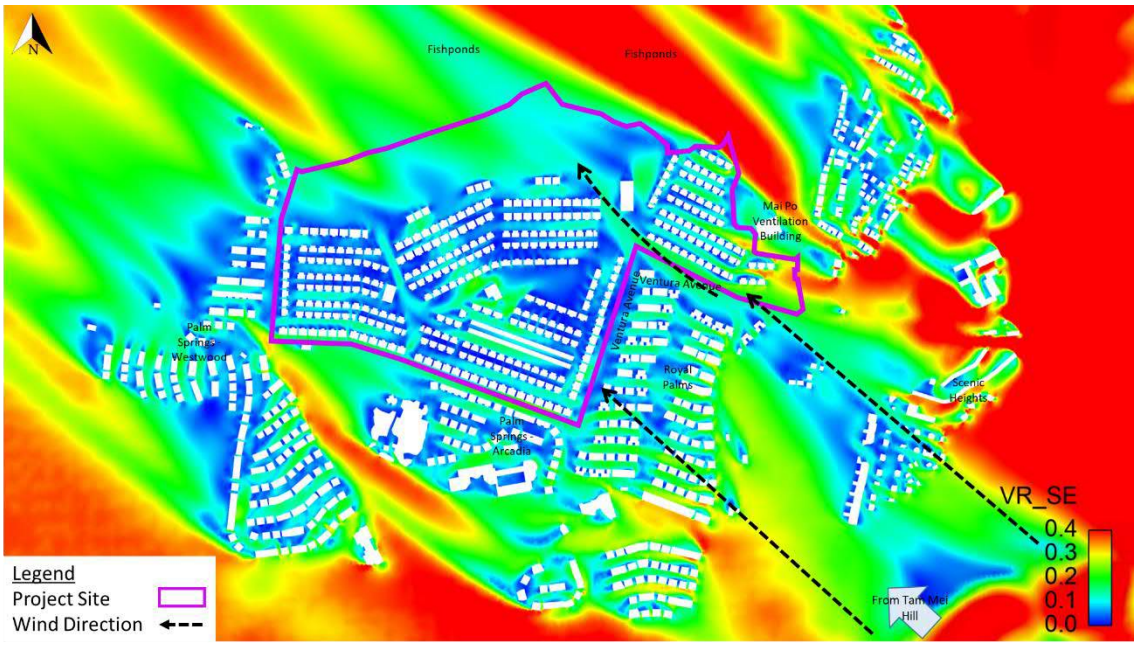


Figure 6.22: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

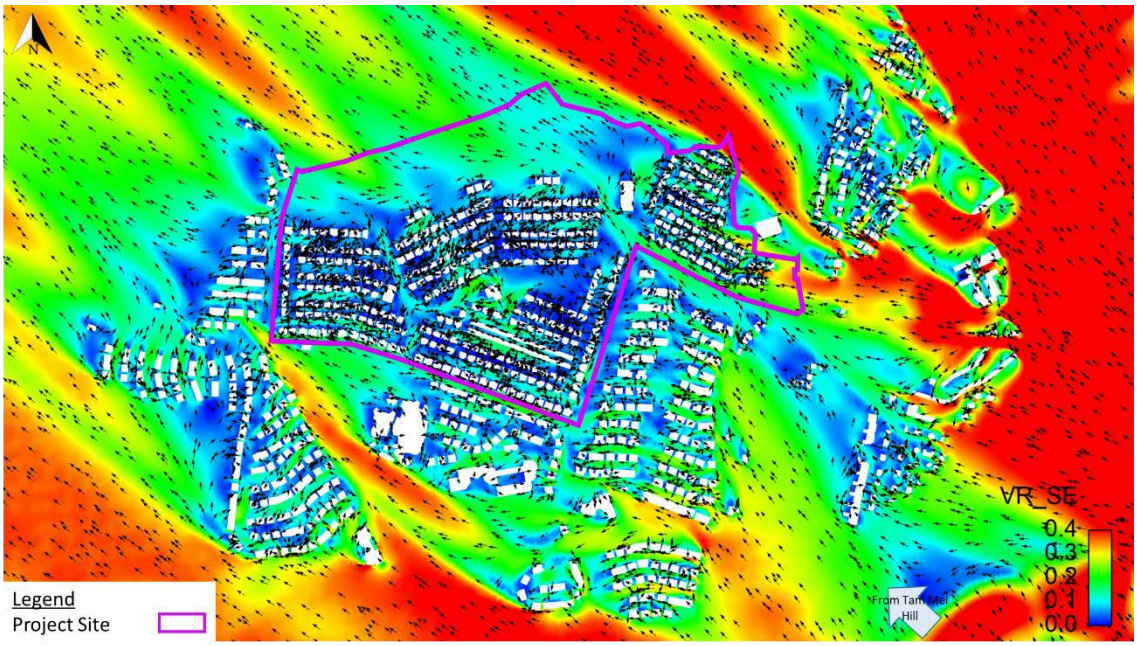


Figure 6.23: VR Contour Plot at Pedestrian Level under SE Wind for Proposed Scheme

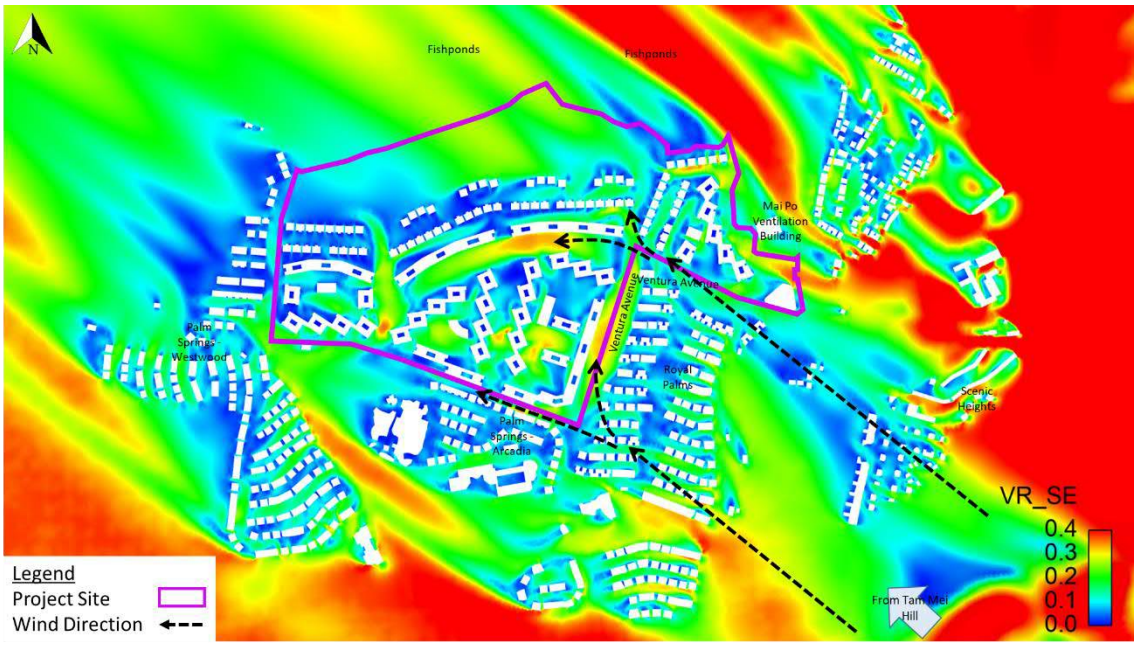
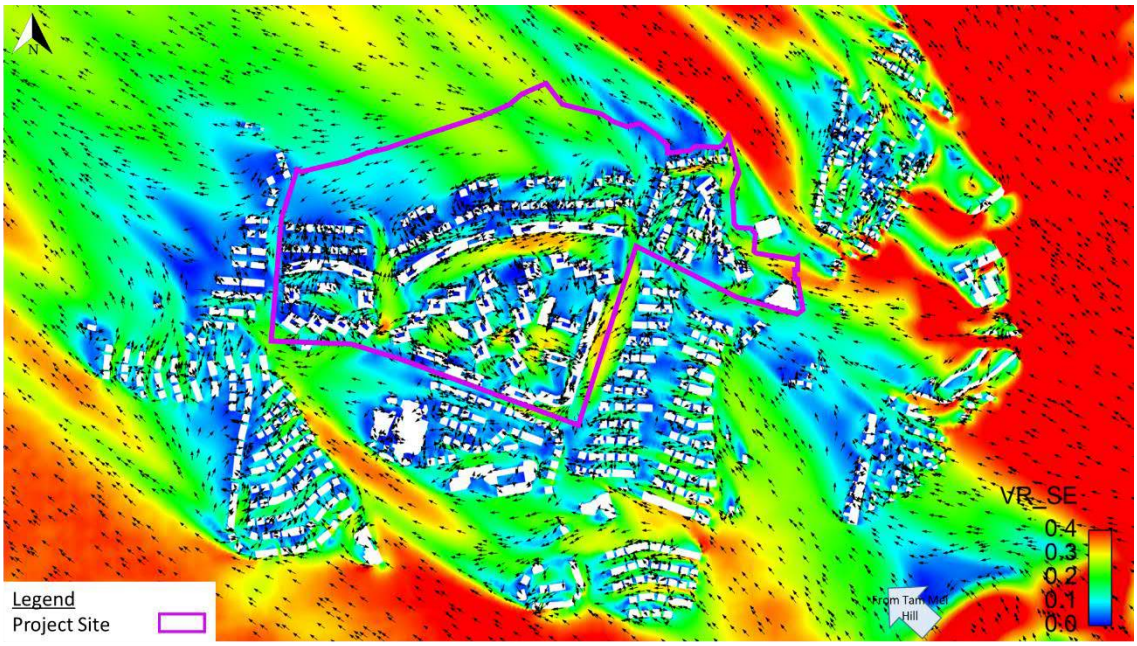


Figure 6.24: VR Vector Plot at Pedestrian Level under SE Wind for Proposed Scheme



6.1.6 SSE Wind – Wind Frequency: 8.2% (Summer)

SSE wind to the Project Site comes from Kai Kung Shan. Incoming SSE wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus stagnant zones are observed at the northern portion of the Project Site. Nonetheless, a portion of SSE wind travels along Palm Springs Boulevard 2 to ventilate Palm Springs – Westwood via Camelia Path. In addition, another portion of SSE wind is able to penetrate though the Project Site via the open spaces within the Project Site and Ventura Avenue to ventilate the downwind regions of the fishponds to the north of the Project Site.

In the Proposed Scheme, the number of buildings is reduced whilst more open spaces and building separations are introduced thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.25 and **Figure 6.27** shows the VR contour plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.26** and **Figure 6.28** shows the VR vector plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.25: VR Contour Plot at Pedestrian Level under SSE Wind for Baseline Scheme

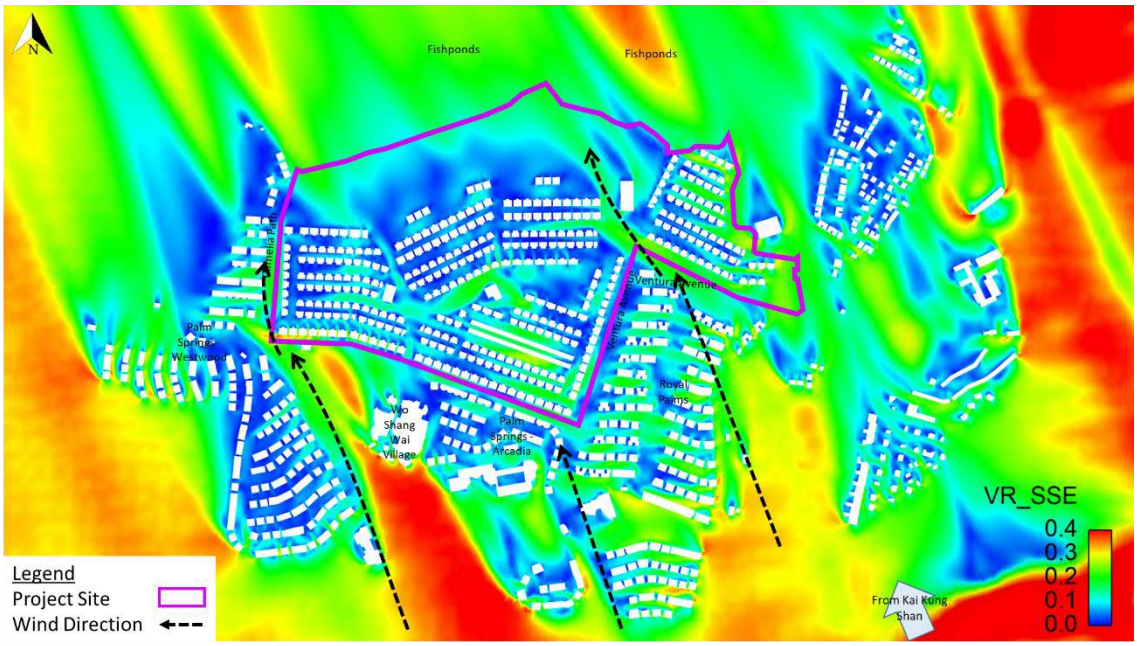


Figure 6.26: VR Vector Plot at Pedestrian Level under SSE Wind for Baseline Scheme

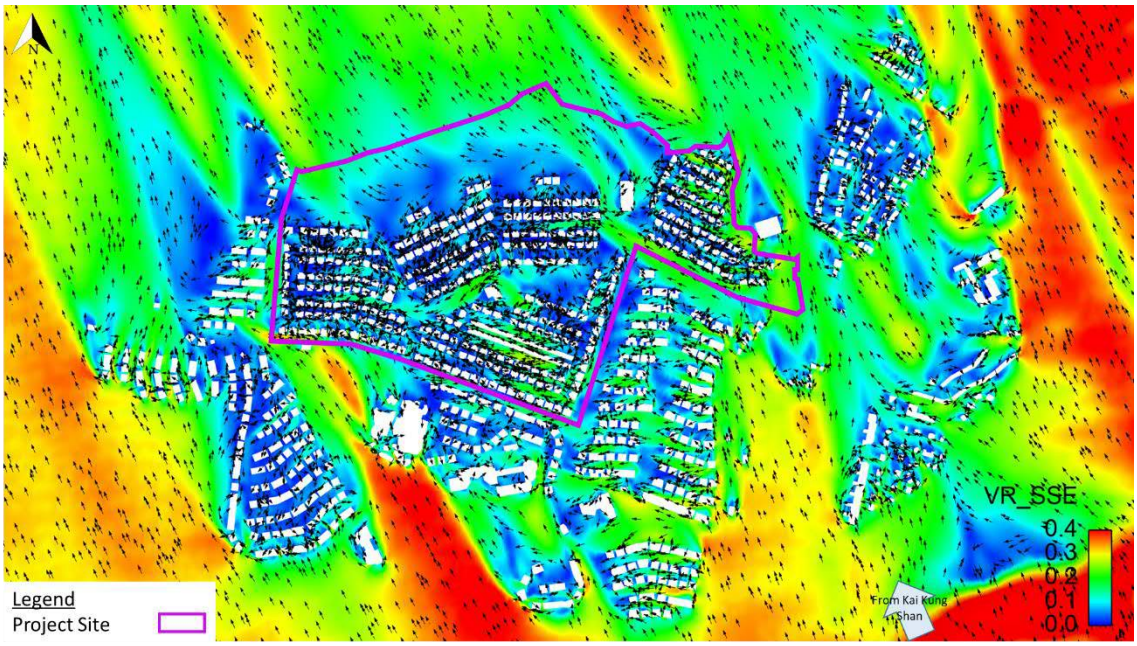


Figure 6.27: VR Contour Plot at Pedestrian Level under SSE Wind for Proposed Scheme

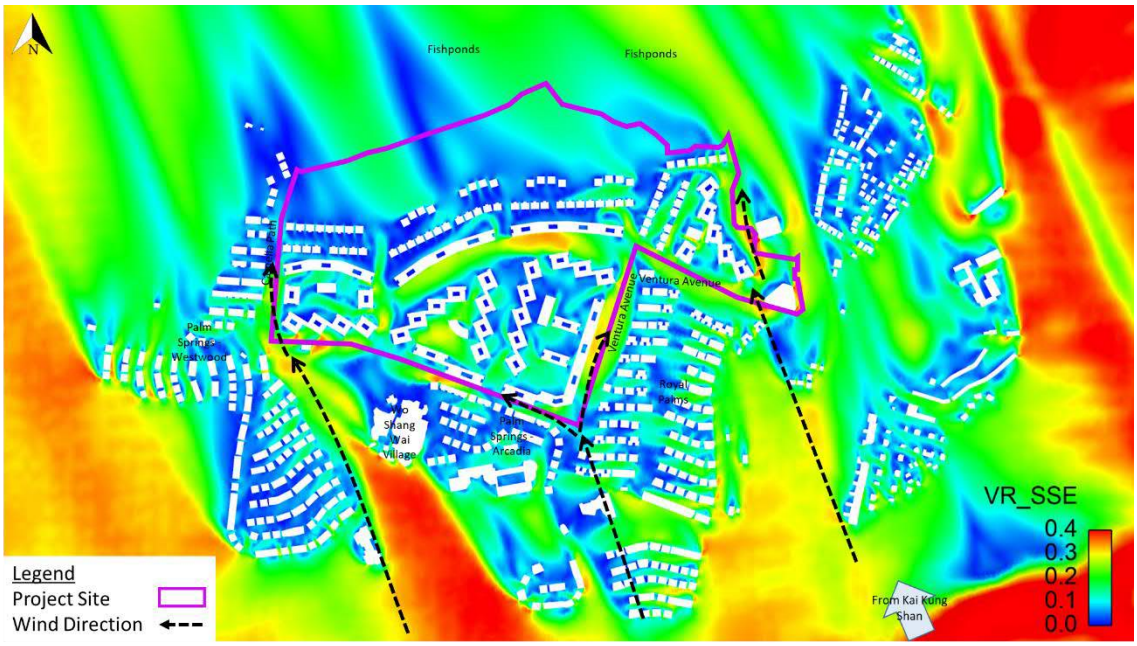
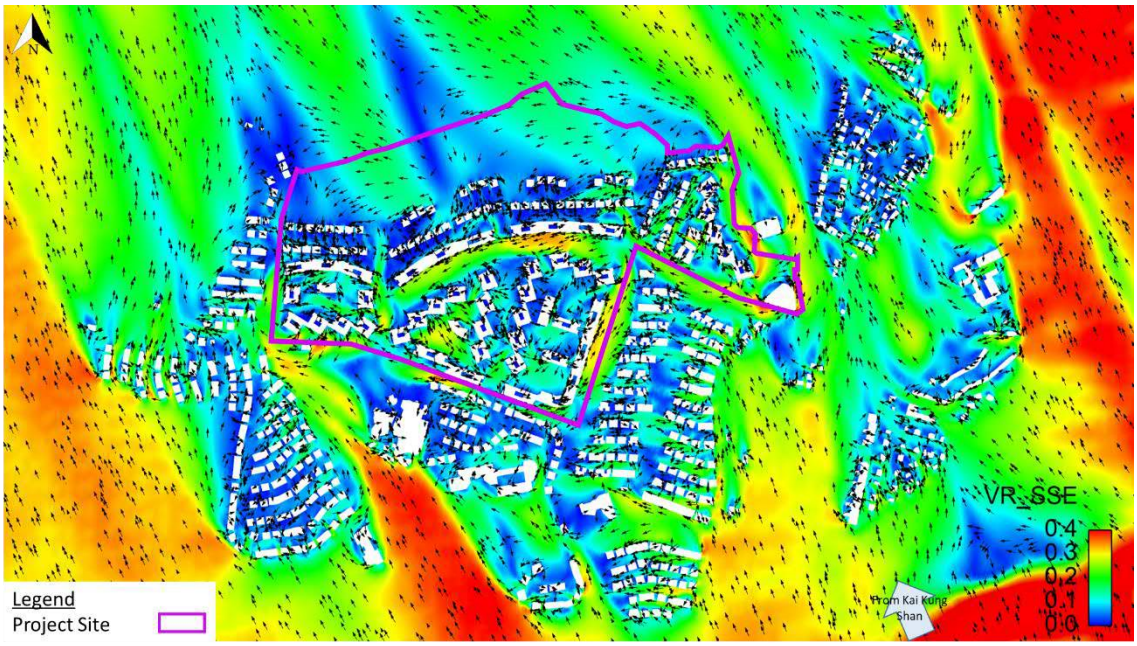


Figure 6.28: VR Vector Plot at Pedestrian Level under SSE Wind for Proposed Scheme



6.1.7 S Wind - Wind Frequency: 7.0% (Annual); 12.9% (Summer)

S wind to the Project Site comes from Kam Tin River. Incoming S wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the S wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus massive stagnant zones are observed at the northern portion of the Project Site. Nonetheless, a portion of S wind is able to skim over the low-rise houses in Wo Shang Wai Village to flow along the open spaces within the Project Site via the opening at the south. Besides, another portion of incoming S wind travels along Ventura Avenue to reach the fishponds to the north of the Project Site.

In the Proposed Scheme, the number of buildings is reduced whilst more open spaces as well as building separations at the south and west are introduced thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.29 and **Figure 6.31** shows the VR contour plots of S wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.30** and **Figure 6.32** shows the VR vector plots of S wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.29: VR Contour Plot at Pedestrian Level under S Wind for Baseline Scheme

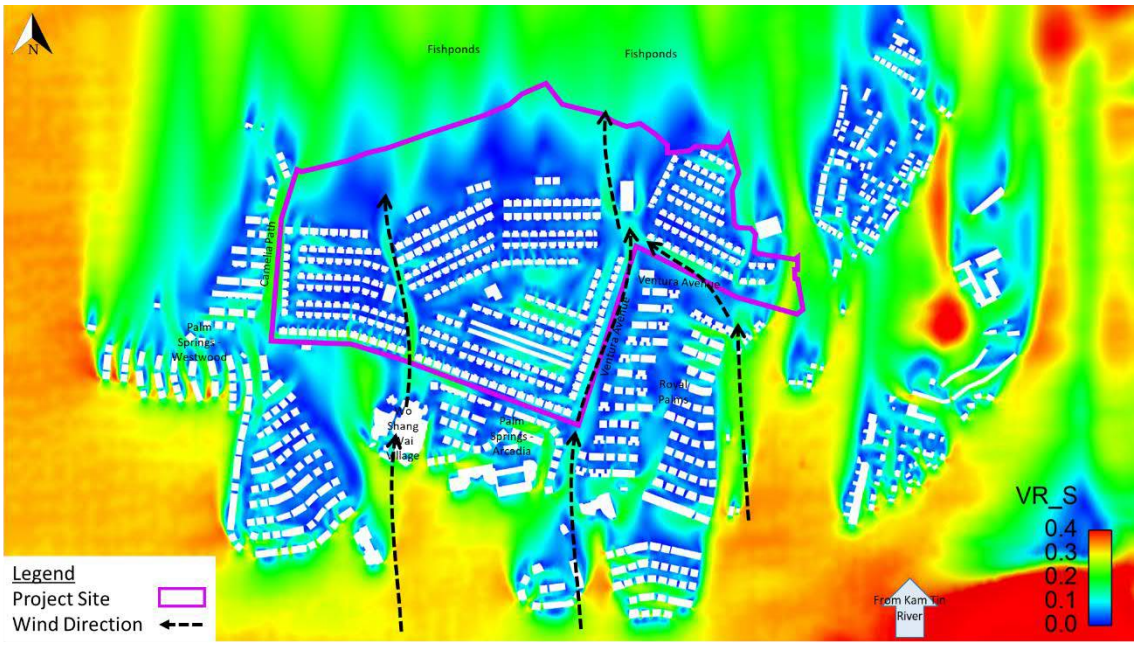


Figure 6.30: VR Vector Plot at Pedestrian Level under S Wind for Baseline Scheme

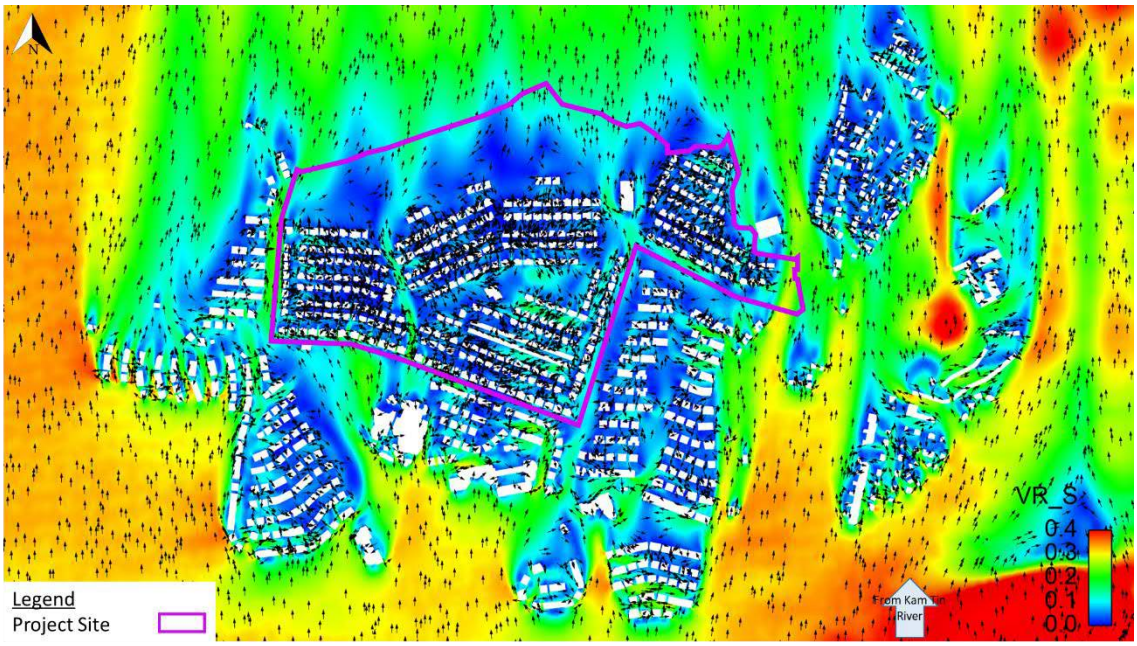


Figure 6.31: VR Contour Plot at Pedestrian Level under S Wind for Proposed Scheme

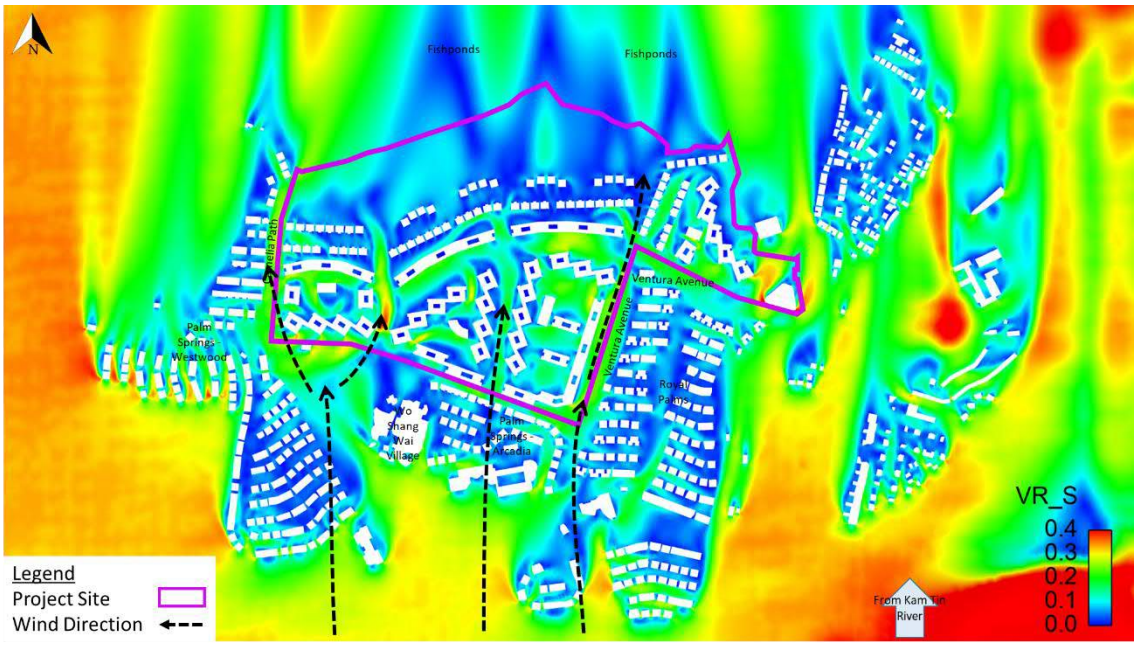
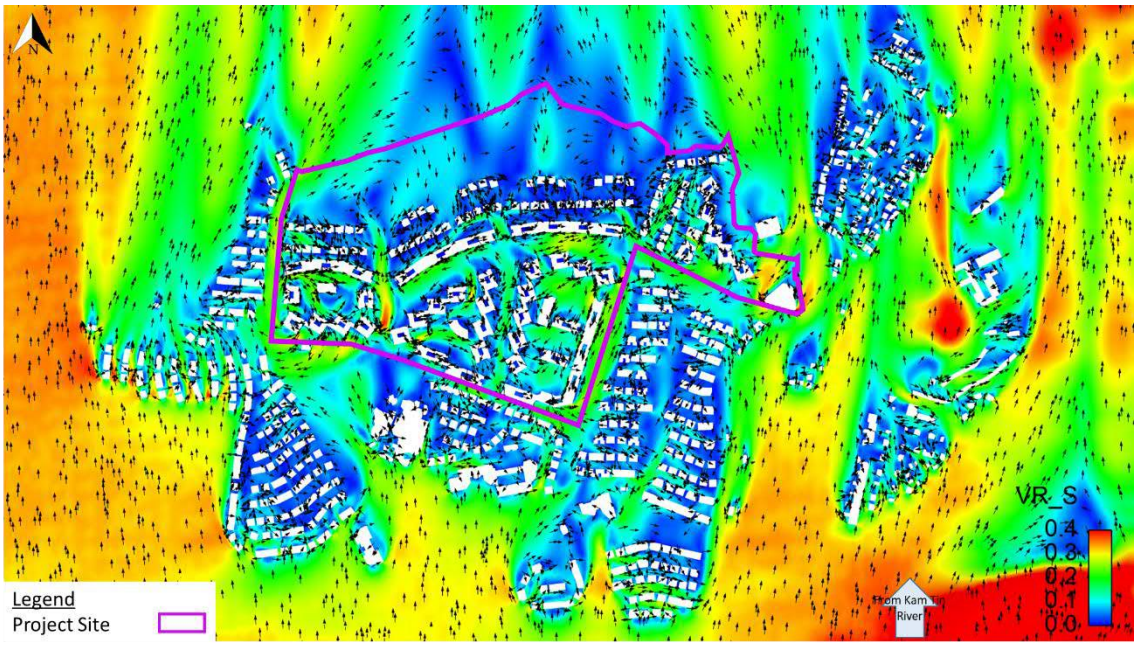


Figure 6.32: VR Vector Plot at Pedestrian Level under S Wind for Proposed Scheme



6.1.8 SSW Wind - Wind Frequency: 7.7% (Annual); 16.5% (Summer)

SSW wind to the Project Site comes from Fairview Park. Incoming SSW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus stagnant zones are observed at the northern portion of the Project Site. A portion of SSW wind is directed by the proposed low-rise houses along the western site boundary to flow along Camelia Path to reach the downwind regions of the fishponds to the north. Another portion of SSW travels freely along Ventura Avenue then penetrates through the Project Site to reach the downwind regions of the fishponds to the north.

In the Proposed Scheme, the number of buildings is reduced whilst more open spaces and building separations at the south, westand center are introduced thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. The building separations at the southern, western and center of the Proposed Scheme provides passages for incoming SSW wind to ventilate the western portion and central portion of the Project Site. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.33 and **Figure 6.35** shows the VR contour plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.34** and **Figure 6.36** shows the VR vector plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.33: VR Contour Plot at Pedestrian Level under SSW Wind for Baseline Scheme

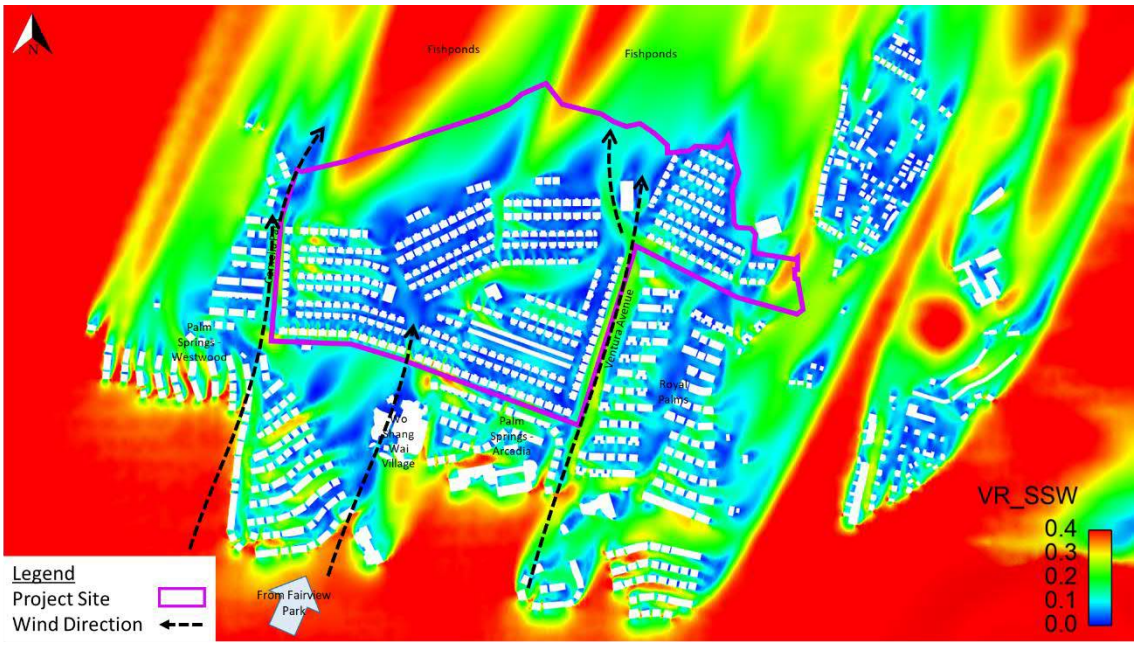


Figure 6.34: VR Vector Plot at Pedestrian Level under SSW Wind for Baseline Scheme

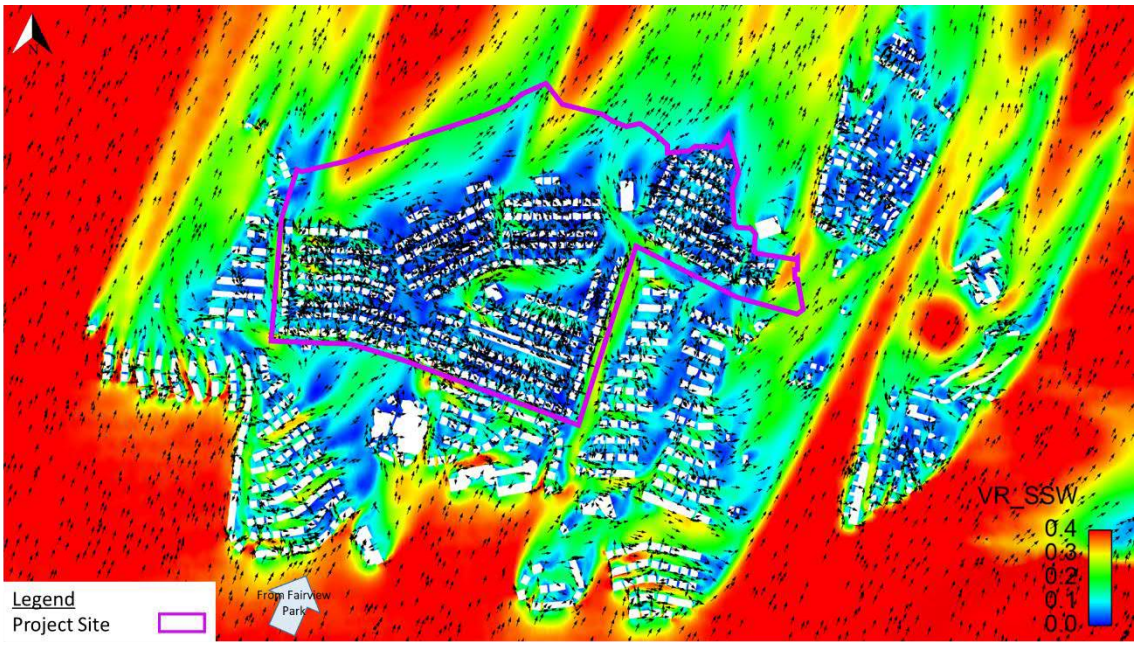


Figure 6.35: VR Vector Plot at Pedestrian Level under SSW Wind for Proposed Scheme

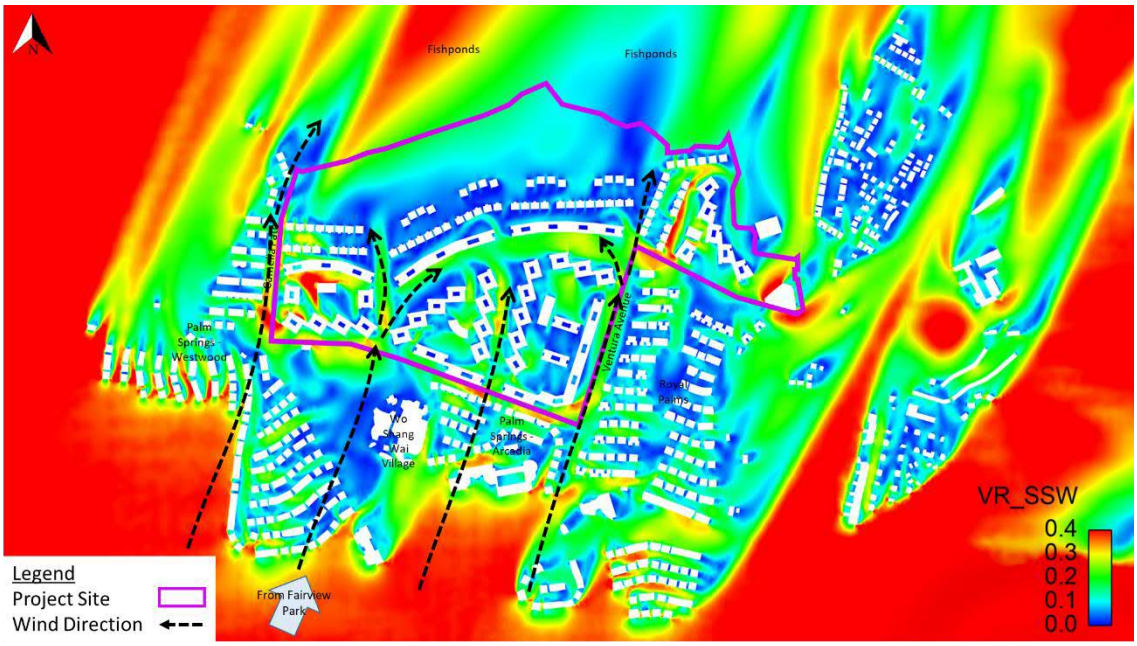
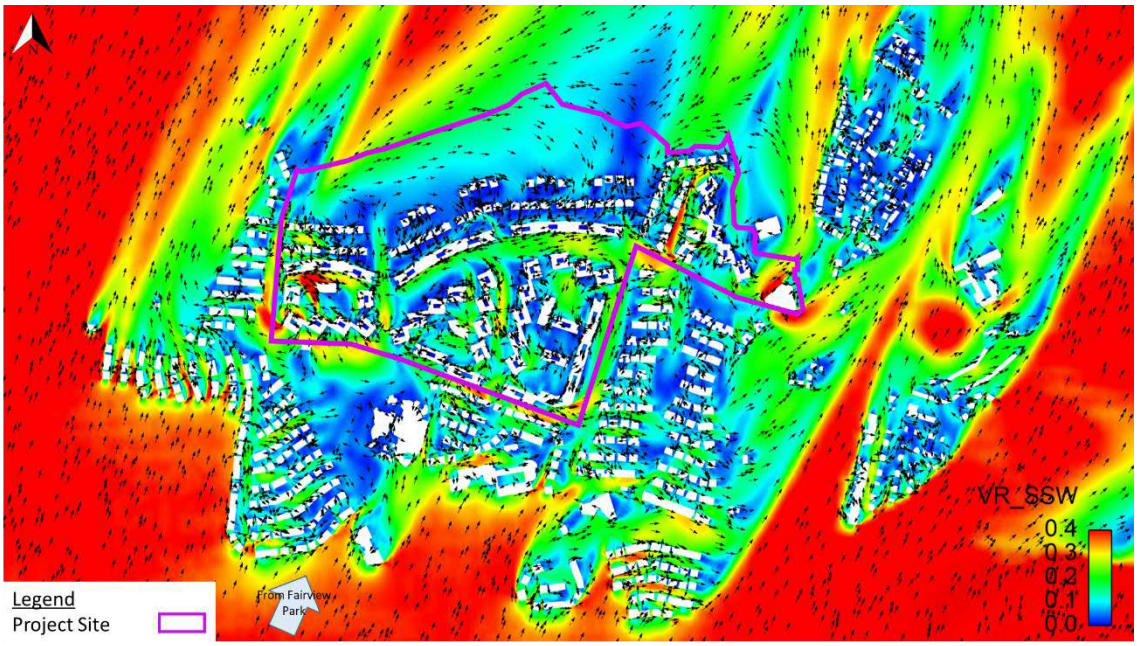


Figure 6.36: VR Contour Plot at Pedestrian Level under SSW Wind for Proposed Scheme



6.1.9 SW Wind - Wind Frequency: 6.7% (Annual); 16.3% (Summer)

SW wind to the Project Site comes from Fairview Park. Incoming SW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus stagnant zones are observed within the Project Site.

A portion of SW wind skims over Palm Springs – Westwood and is then diverted towards Camelia Path by the proposed low-rise houses at the western portion of the Project Site. The SW wind would travel along Camelia Path to ventilate the downwind regions of the fishponds to the north of the Project Site. Another portion of SW wind would enter the Project Site via the opening at the southern portion of the Project Site and ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the eastern portion of the Project Site.

In the Proposed Scheme, the number of buildings is reduced whilst more open spaces and building separations at the south, west and center are introduced thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the western portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Camelia Path and Palm Springs - Westwood when compared to the Baseline Scheme. Another portion of SW wind would penetrate through the Project Site via building separations at the southern and western portion of the Project Site to ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the central portion of the Project Site. However, the conversion from low-rise houses in the Baseline Scheme to mid-rise residential towers in the Proposed Scheme blocks SW wind from reaching Mai Po San Tsuen.

Figure 6.37 and **Figure 6.39** shows the VR contour plots of SW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.38** and **Figure 6.40** shows the VR vector plots of SW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.37: VR Contour Plot at Pedestrian Level under SW Wind for Baseline Scheme

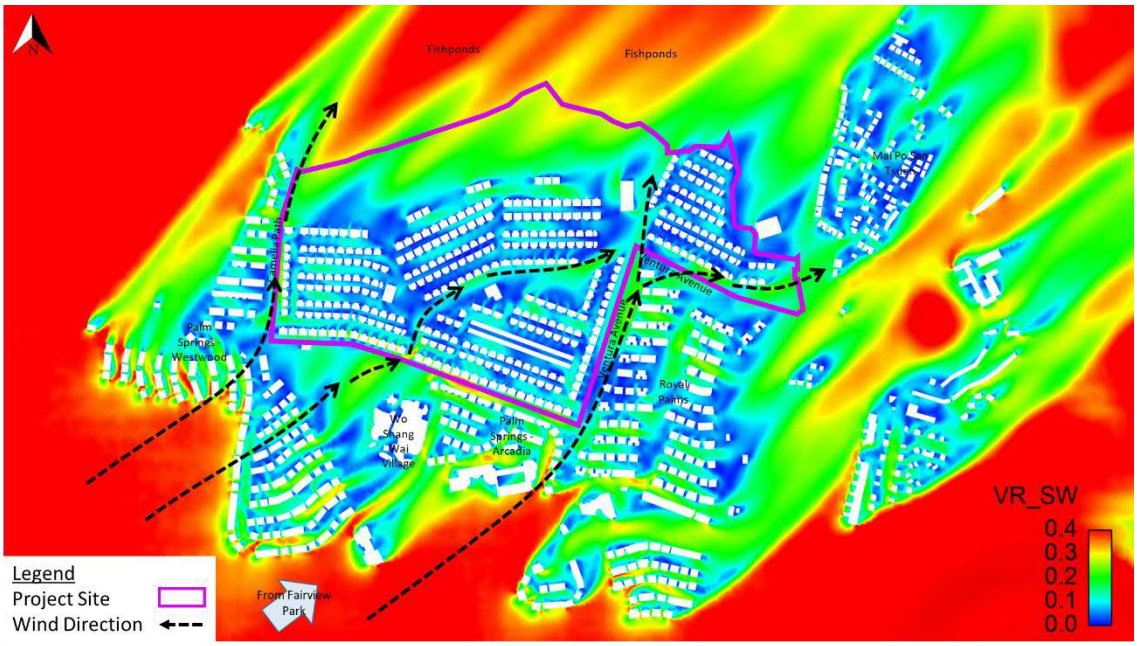


Figure 6.38: VR Vector Plot at Pedestrian Level under SW Wind for Baseline Scheme

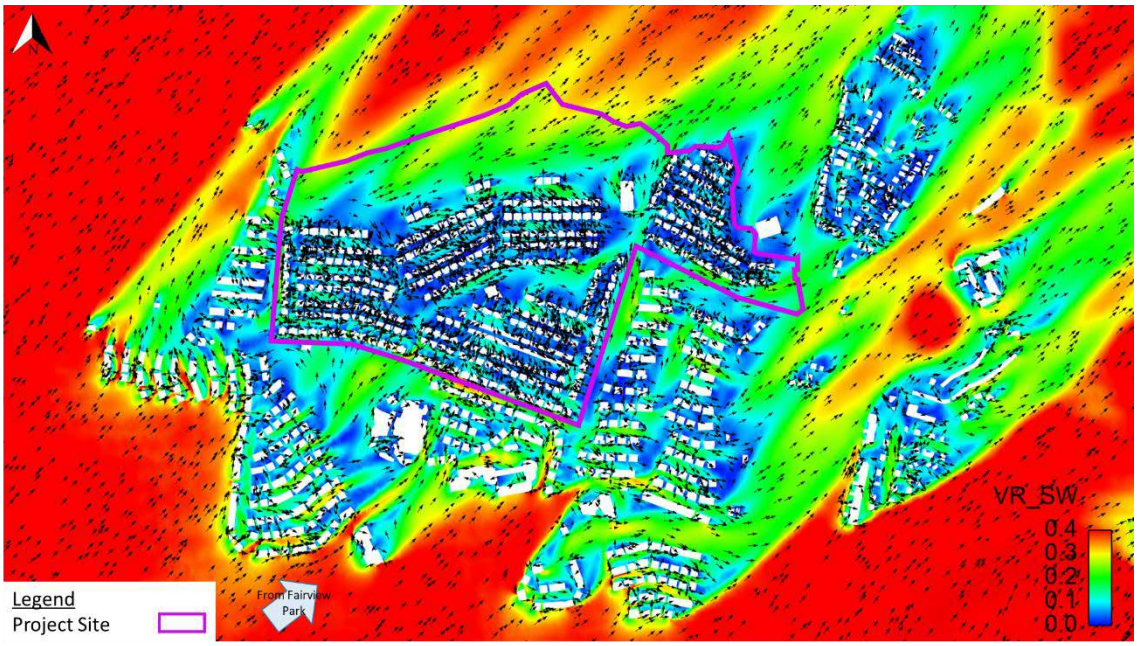


Figure 6.39: VR Contour Plot at Pedestrian Level under SW Wind for Proposed Scheme

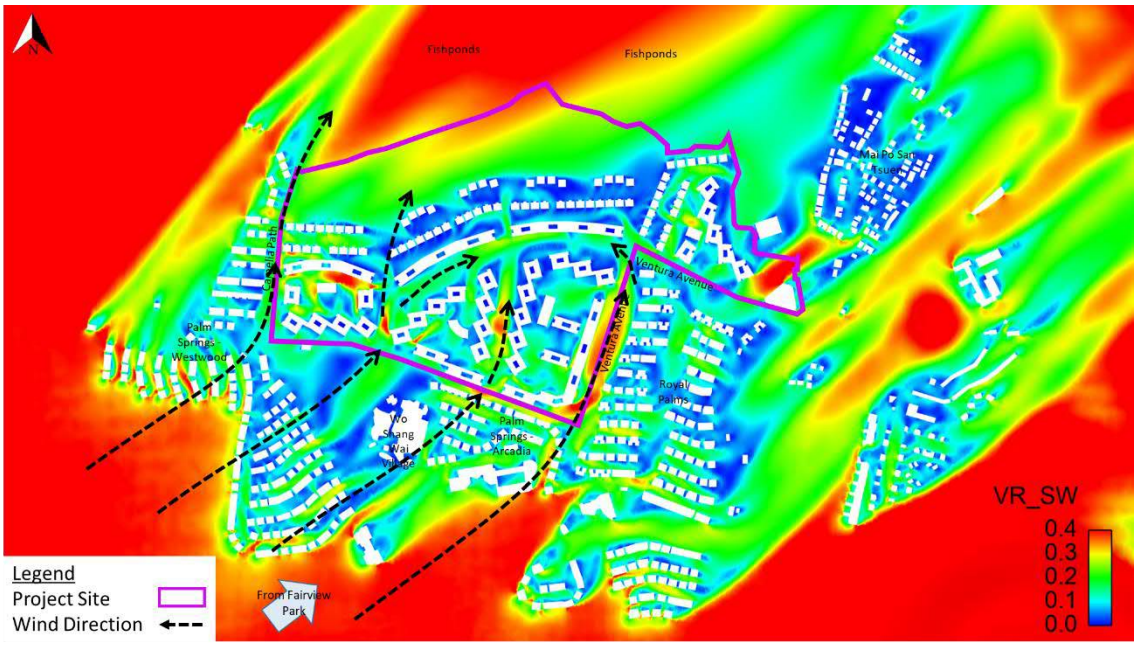
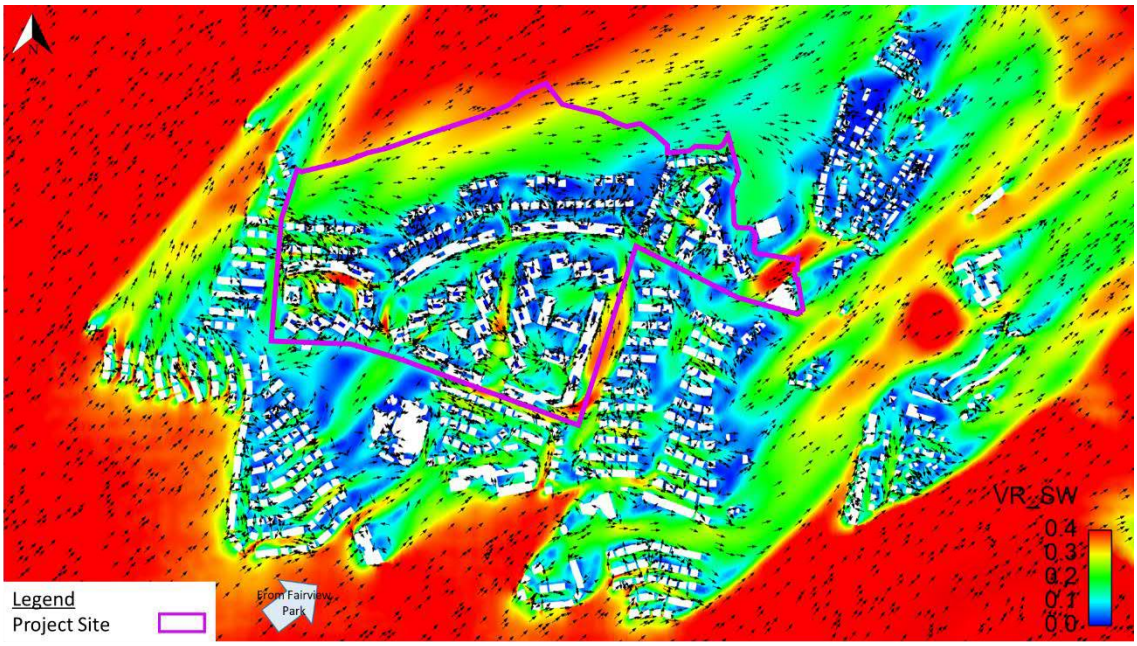


Figure 6.40: VR Vector Plot at Pedestrian Level under SW Wind for Proposed Scheme



6.2 Summary Of Velocity Ratio (VR) Results Under Annual Wind Condition

According to the average Velocity Ratio (VR) simulation results under annual wind condition in **Table 6.1**, the SVR of the Baseline Scheme is lower (i.e. 0.18) than the Proposed Scheme (i.e. 0.20). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.19.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Ventura Avenue (Baseline 0.11 vs Proposed 0.16), Marin Avenue (Baseline 0.11 vs Proposed 0.12), Carmel Avenue (Baseline 0.14 vs Proposed 0.15), Coronado Avenue (Baseline 0.11 vs Proposed 0.12), Santa Clara Avenue (Baseline 0.12 vs Proposed 0.15), San Diego Avenue (Baseline 0.11 vs Proposed 0.12), Tennis Court (Baseline 0.16 vs Proposed 0.17), Palm Springs Boulevard 1 (Baseline 0.22 vs Proposed 0.23), Sunflower Path (Baseline 0.13 vs Proposed 0.14), Basketball Court (Baseline 0.15 vs Proposed 0.17), Palm Spring Playground (Baseline 0.15 vs Proposed 0.17), Michelia Path (Baseline 0.16 vs Proposed 0.18), Lotus path (Baseline 0.08 vs Proposed 0.13), Cedar path (Baseline 0.18 vs Proposed 0.20) and Camelia Path (Baseline 0.12 vs Proposed 0.15).

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 32mPD to 76.1mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 30.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 17mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Ventura Avenue (Baseline 0.11 vs Proposed 0.16), Marin Avenue (Baseline 0.11 vs Proposed 0.12), Carmel Avenue (Baseline 0.14 vs Proposed 0.15), Coronado Avenue (Baseline 0.11 vs Proposed 0.12), Santa Clara Avenue (Baseline 0.12 vs Proposed 0.15), San Diego Avenue (Baseline 0.11 vs Proposed 0.12), Tennis Court (Baseline 0.16 vs Proposed 0.17), Palm Springs Boulevard 1 (Baseline 0.22 vs Proposed 0.23), Sunflower Path (Baseline 0.13 vs Proposed 0.14), Basketball Court (Baseline 0.15 vs Proposed 0.17), Palm Spring Playground (Baseline 0.15 vs Proposed 0.17), Michelia Path (Baseline 0.16 vs Proposed 0.18), Lotus path (Baseline 0.08 vs Proposed 0.13), Cedar path (Baseline 0.18 vs Proposed 0.20) and Camelia Path (Baseline 0.12 vs Proposed 0.15).

For the remaining focus areas (i.e. Road 4, Royal Palms Playground 2, Narcissus Path, Banyan Path, Wo Shang Wai Village, Palm Springs Boulevard 2, Laurel Path, Gmelina Path and Cherry Path), the wind performance is comparable for both Baseline Scheme and Proposed Scheme.

The annual weighted average VR contour plots for the Baseline Scheme and Proposed Scheme are shown in **Figure 6.41** to **Figure 6.42** respectively.

Table 6.1: Summary of SVR, LVR and SAVR Results under Annual Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.18	0.20
LVR		P1-P50, O1-O177	0.19	0.19
A	San Tam Road	O1-O3	0.27	0.28
B	San Tin Highway	O4-O12	0.28	0.27
C	Castle Peak Road - Mai Po	O13-O17	0.28	0.27
D	Road 1	O18-O19	0.27	0.25
E	Road 2	O20-O23	0.26	0.23
F	Road 3	O24-O25	0.22	0.23
G	Mai Po South Road	O26-O29	0.21	0.20
H	Road 4	O30-O32	0.14	0.14
I	Mai Po San Tsuen	O33-O38	0.10	0.09
J	Palm Canyon Drive	O39-O41	0.15	0.14
K	Royal Palms Playground 1	O42-O43	0.15	0.14
L	Ventura Avenue	O44-O48	0.11	0.16
M	Santa Monica Avenue	O49-O52	0.12	0.11
N	Monterey Avenue	O53-O54	0.19	0.17
O	Marin Avenue	O55-O56	0.11	0.12
P	Victoriana Avenue	O57-O58	0.18	0.17
Q	Napa Avenue	O59-O60	0.11	0.09
R	Royal Palms Playground 2	O61-O62	0.09	0.09
S	Carmel Avenue	O63-O64	0.14	0.15
T	Coronado Avenue	O65-O66	0.11	0.12
U	Santa Clara Avenue	O67-O72	0.12	0.15
V	San Diego Avenue	O73-O74	0.11	0.12
W	Tennis Court	O75-O76	0.16	0.17
X	Palm Springs Boulevard 1	O77-O80	0.22	0.23
Y	Narcissus Path	O81-O85	0.11	0.11

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
Z	Banyan Path	O86-O88	0.07	0.07
AA	Sunflower Path	O89-O92	0.13	0.14
AB	Wo Shang Wai Village	O93-O94	0.10	0.10
AC	Basketball Court	O95	0.15	0.17
AD	Palm Springs Boulevard 2	O96-O101	0.16	0.16
AE	Palm Spring Playground	O102-O103	0.15	0.17
AF	Laurel Path	O104-O105	0.16	0.16
AG	Gmelina Path	O106-O107	0.17	0.17
AH	Pinaceae Drive	O108-O110	0.10	0.09
AI	Hibiscus Path	O111-O112	0.13	0.12
AJ	Michelia Path	O113-O114	0.16	0.18
AK	Kapok Path	O115-O119	0.10	0.09
AL	Lotus Path	O120-O121	0.08	0.13
AM	Cherry Path	O122-O123	0.12	0.12
AN	Cedar Path	O123-O125	0.18	0.20
AO	Camelia Path	O126-O131	0.12	0.15
AP	Fishponds 1	O132-O142	0.20	0.19
AR	Fishponds 2	O143-O177	0.31	0.30
			Special Test Points	
	VR within Project Site	S1-S32	0.12	0.14

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.41: Annual Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

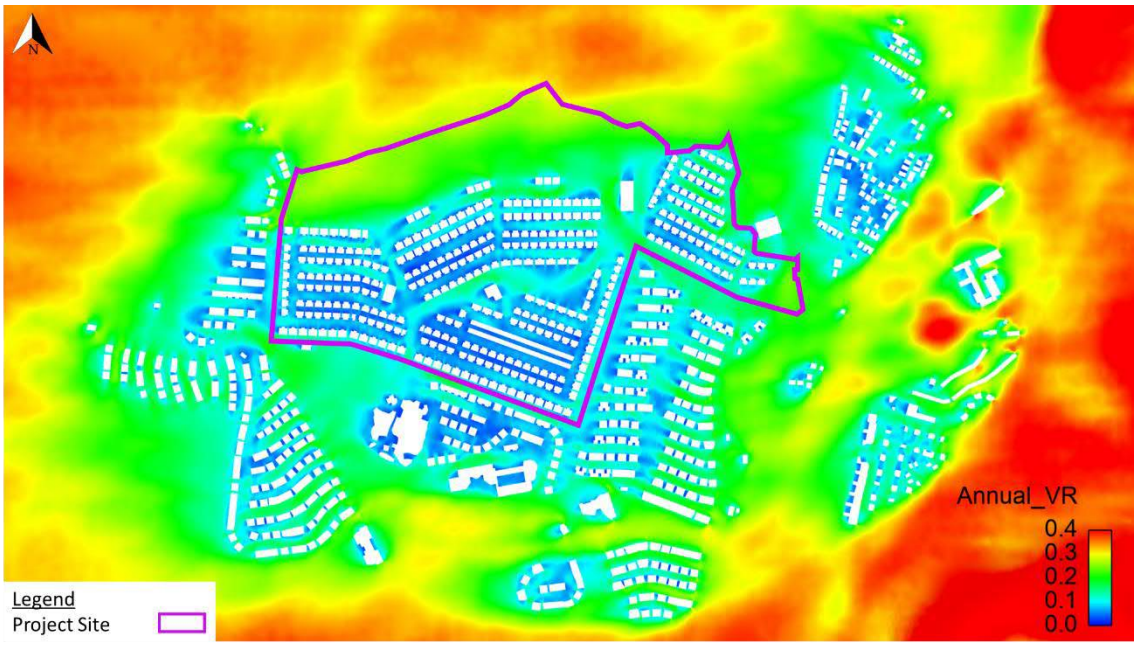
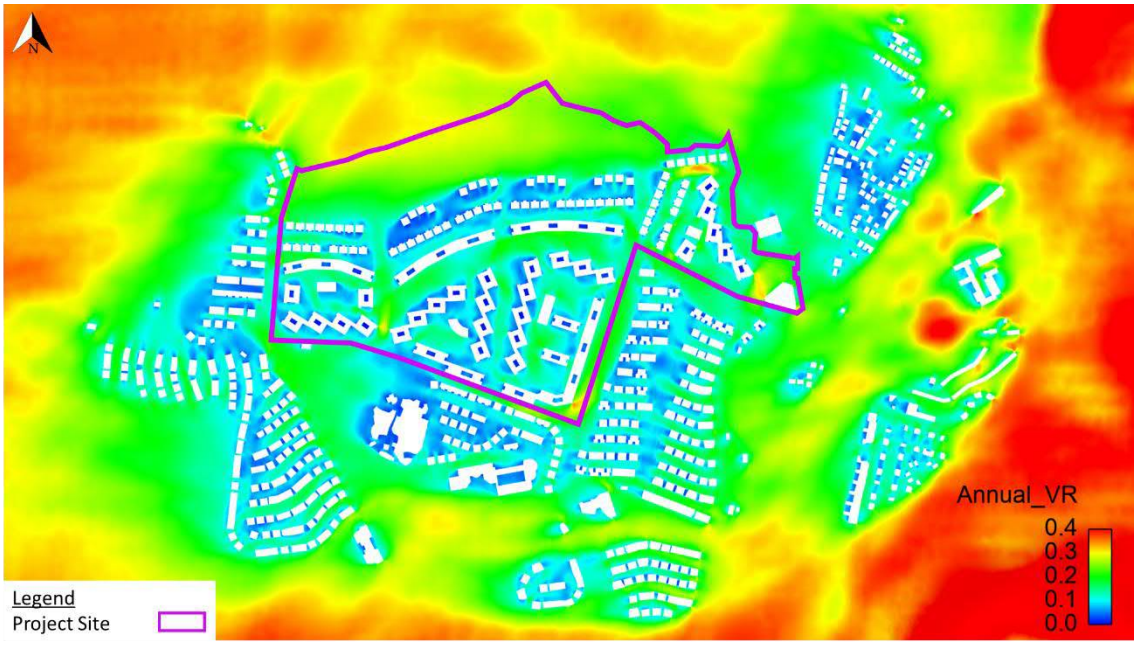


Figure 6.42: Annual Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



6.3 Summary of Velocity Ratio (VR) Results under summer wind condition

According to the average Velocity Ratio (VR) simulation results under summer wind condition in Table 9, the SVR of the Baseline Scheme is lower (i.e. 0.15) than the Proposed Scheme (i.e. 0.18). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.18.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as Road 3 (Baseline 0.21 vs Proposed 0.22), Road 4 (Baseline 0.15 vs Proposed 0.16), Ventura Avenue (Baseline 0.11 vs Proposed 0.17), Marin Avenue (Baseline 0.10 vs Proposed 0.14), Carmel Avenue (Baseline 0.10 vs Proposed 0.11), Coronado Avenue (Baseline 0.13 vs Proposed 0.14), Santa Clara Avenue (Baseline 0.16 vs Proposed 0.17), San Diego Avenue (Baseline 0.10 vs Proposed 0.11), Basketball Court (Baseline 0.16 vs Proposed 0.18), Palm Spring Playground (Baseline 0.14 vs Proposed 0.15), Gmelina Path (Baseline 0.14 vs Proposed 0.15), Hibiscus Path (Baseline 0.16 vs Proposed 0.17), Michelia Path (Baseline 0.22 vs Proposed 0.24), Kapok Path (Baseline 0.09 vs Proposed 0.11), Lotus path (Baseline 0.09 vs Proposed 0.12), Cherry Path (Baseline 0.12 vs Proposed 0.14), Cedar path (Baseline 0.16 vs Proposed 0.17), Camelia Path (Baseline 0.12 vs Proposed 0.16) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21).

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 32mPD to 76.1mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 30.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 17mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such as Road 3 (Baseline 0.21 vs Proposed 0.22), Road 4 (Baseline 0.15 vs Proposed 0.16), Ventura Avenue (Baseline 0.11 vs Proposed 0.17), Marin Avenue (Baseline 0.10 vs Proposed 0.14), Carmel Avenue (Baseline 0.10 vs Proposed 0.11), Coronado Avenue (Baseline 0.13 vs Proposed 0.14), Santa Clara Avenue (Baseline 0.16 vs Proposed 0.17), San Diego Avenue (Baseline 0.10 vs Proposed 0.11), Basketball Court (Baseline 0.16 vs Proposed 0.18), Palm Spring Playground (Baseline 0.14 vs Proposed 0.15), Gmelina Path (Baseline 0.14 vs Proposed 0.15), Hibiscus Path (Baseline 0.16 vs Proposed 0.17), Michelia Path (Baseline 0.22 vs Proposed 0.24), Kapok Path (Baseline 0.09 vs Proposed 0.11), Lotus path (Baseline 0.09 vs Proposed 0.12), Cherry Path (Baseline 0.12 vs Proposed 0.14), Cedar path (Baseline 0.16 vs Proposed 0.17), Camelia Path (Baseline 0.12 vs Proposed 0.16) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21).

For the remaining focus areas (i.e. San Tam Road, Road 1, Road 2, Royal Palms Playground 1, Palm Springs Boulevard 1 and Palm Springs Boulevard 2), the wind performance is comparable for the Baseline Scheme and the Proposed Scheme.

The summer weighted average VR contour plots for the Baseline Scheme and the Proposed Scheme are shown in **Figure 6.43** to **Figure 6.44** respectively.

Table 6.2: Summary of SVR, LVR and SAVR Results under Summer Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.15	0.18
LVR		P1-P50, O1-O177	0.18	0.18
A	San Tam Road	O1-O3	0.25	0.25
B	San Tin Highway	O4-O12	0.26	0.24
C	Castle Peak Road - Mai Po	O13-O17	0.24	0.23
D	Road 1	O18-O19	0.21	0.21
E	Road 2	O20-O23	0.21	0.21
F	Road 3	O24-O25	0.21	0.22
G	Mai Po South Road	O26-O29	0.21	0.20
H	Road 4	O30-O32	0.15	0.16
I	Mai Po San Tsuen	O33-O38	0.11	0.10
J	Palm Canyon Drive	O39-O41	0.15	0.13
K	Royal Palms Playground 1	O42-O43	0.12	0.12
L	Ventura Avenue	O44-O48	0.11	0.17
M	Santa Monica Avenue	O49-O52	0.14	0.11
N	Monterey Avenue	O53-O54	0.17	0.14
O	Marin Avenue	O55-O56	0.10	0.14
P	Victoriana Avenue	O57-O58	0.13	0.12
Q	Napa Avenue	O59-O60	0.09	0.07
R	Royal Palms Playground 2	O61-O62	0.10	0.09
S	Carmel Avenue	O63-O64	0.10	0.11
T	Coronado Avenue	O65-O66	0.13	0.14
U	Santa Clara Avenue	O67-O72	0.16	0.17
V	San Diego Avenue	O73-O74	0.10	0.11
W	Tennis Court	O75-O76	0.19	0.18
X	Palm Springs Boulevard 1	O77-O80	0.27	0.27
Y	Narcissus Path	O81-O85	0.15	0.14

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
Z	Banyan Path	O86-O88	0.10	0.08
AA	Sunflower Path	O89-O92	0.19	0.18
AB	Wo Shang Wai Village	O93-O94	0.13	0.11
AC	Basketball Court	O95	0.16	0.18
AD	Palm Springs Boulevard 2	O96-O101	0.16	0.16
AE	Palm Spring Playground	O102-O103	0.14	0.15
AF	Laurel Path	O104-O105	0.18	0.16
AG	Gmelina Path	O106-O107	0.14	0.15
AH	Pinaceae Drive	O108-O110	0.12	0.09
AI	Hibiscus Path	O111-O112	0.16	0.17
AJ	Michelia Path	O113-O114	0.22	0.24
AK	Kapok Path	O115-O119	0.09	0.11
AL	Lotus Path	O120-O121	0.09	0.12
AM	Cherry Path	O122-O123	0.13	0.14
AN	Cedar Path	O123-O125	0.16	0.17
AO	Camelia Path	O126-O131	0.12	0.16
AP	Fishponds 1	O132-O142	0.20	0.21
AR	Fishponds 2	O143-O177	0.27	0.25
			Special Test Points	
	VR within Project Site	S1-S32	0.10	0.15

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.43: Summer Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

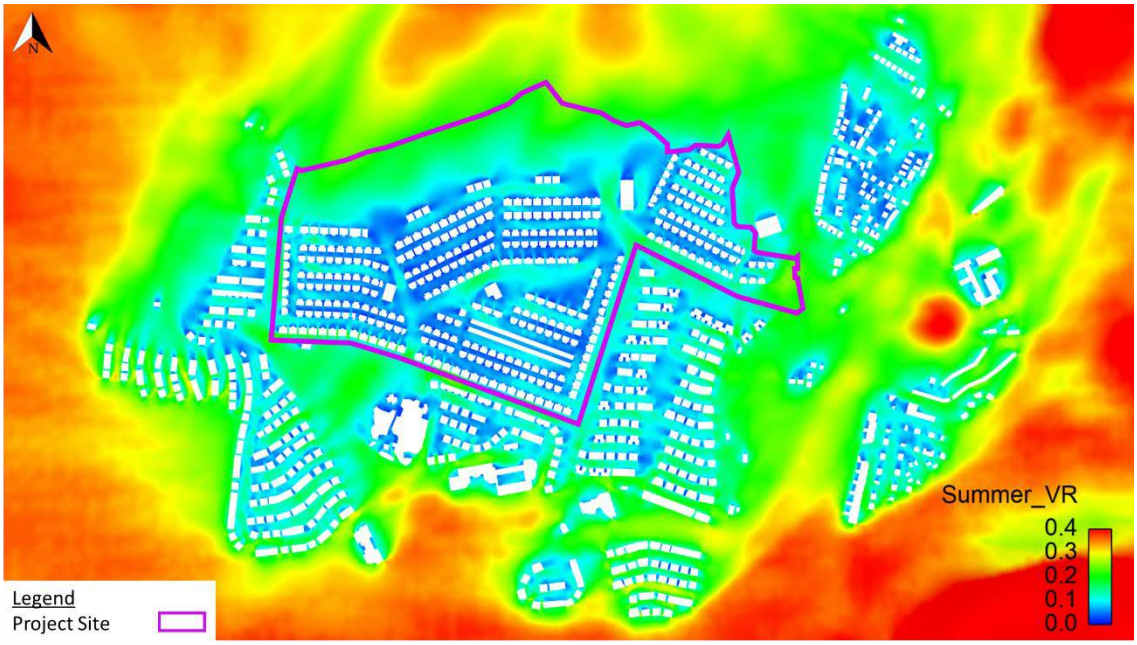
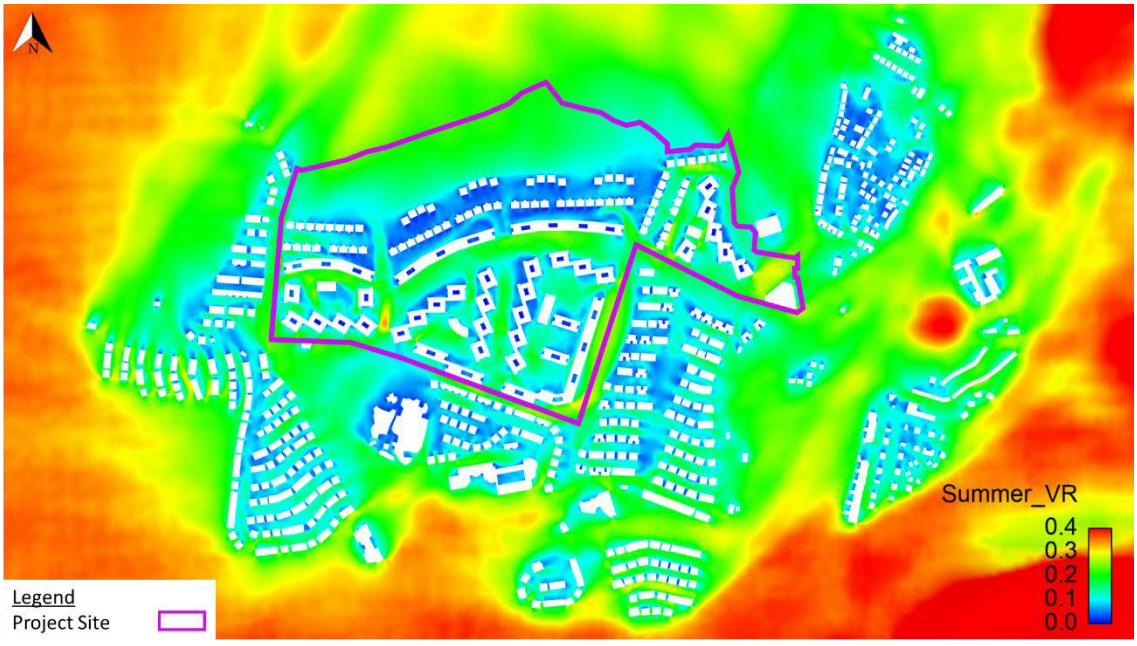


Figure 6.44: Summer Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



7 Conclusion

An Air Ventilation Assessment - Initial Study (AVA-IS) was conducted to assess the ventilation performance of the area within the Project Site and the local environment.

The major findings of this study could be summarized as follows:

AVA Study

A series of CFD simulations using realizable k- ε turbulence model was performed based on the Air Ventilation Assessment (AVA) methodology for the Initial Study as stipulated in the Technical Circular No. 1/06 on Air Ventilation Assessment (2006). Eleven (11) wind directions covering about 83.2% occurrence of annual wind and about 76.4% occurrence of summer wind were studied. The ventilation performance for the proposed development at the Project Site and all focus areas within the assessment area were assessed.

According to the Technical Circular No. 1/06 on Air Ventilation Assessment (2006), the Velocity Ratio of each test point was assessed in terms of SVR, LVR and SAVR of various focus areas within the Assessment Area. A total of 50 perimeter test points, 177 overall test points and 32 special test points were selected to assess the ventilation performance.

Reduction of building density and change in building design are introduced to enhance the wind permeability through the Project Site to ventilate the downwind regions as shown below:

- The annual weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are 0.18 and 0.20 respectively. The summer weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are both 0.19.
- The annual weighted Local Spatial Average Velocity Ratio (LVR) for the Baseline Scheme and Proposed Scheme are 0.15 and 0.18 respectively. The summer weighted LVR for the Baseline Scheme and Proposed Scheme are both 0.18.

All improvements and mitigation measures should consider the following design principles at the detailed design stage:

- Adopt building permeability equivalent to 20% to 25% with reference to PNAP APP-152;
- Adopt building setback with reference to PNAP APP-152;
- Avoid long continuous façades; and
- Make reference to the recommendations of design measures in the Hong Kong Planning Standards and Guidelines.

Appendices

Appendix A - Architectural Layout of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

- APPLICATION SITE BOUNDARY
- WETLAND RESTORATION AREA
- CLUBHOUSE AMENITY AREA / WATER BODY
- POOL AREA
- E & M BUILDINGS
- PROPOSED NOISE BARRIER

- A1 A2 — 2 STOREY DETACHED HOUSE
- B — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- C1 — 3 STOREY DETACHED HOUSE
- C2 — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- D — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- E — 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

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DWG. No. : 3809-003

申請編號 Application No. : A / YL-MP / 344
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architects

Good Design Feature of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

>7.5m setback

22.77 m

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

WO SHANG WAI

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

APPLICATION SITE BOUNDARY	A1 A2 2 STOREY DETACHED HOUSE
WETLAND RESTORATION AREA	B 2 STOREY DETACHED / SEMI-DETACHED HOUSE
CLUBHOUSE AMENITY AREA / WATER BODY	C1 3 STOREY DETACHED HOUSE
POOL AREA	C2 2 STOREY DETACHED / SEMI-DETACHED HOUSE
E & M BUILDINGS	D 2 STOREY DETACHED / SEMI-DETACHED HOUSE
PROPOSED NOISE BARRIER	E 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

申請編號 Application No. : A / YL-MP / 344

此頁摘自申請人提交的文件。

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DWG. No. : 3809-003

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Appendix B – Architectural Layout of Proposed Scheme

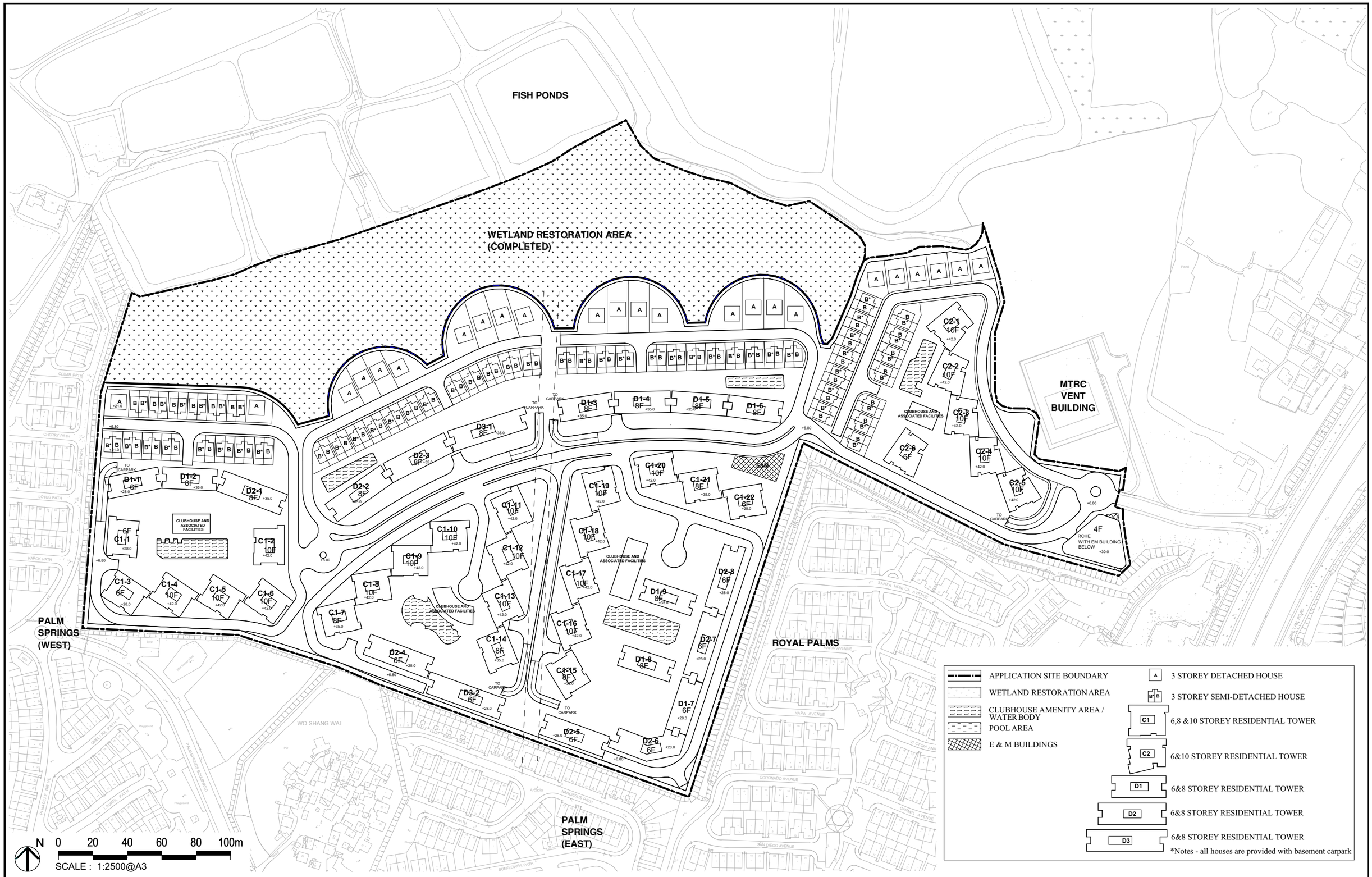

Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

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Good Design Feature of Proposed Scheme

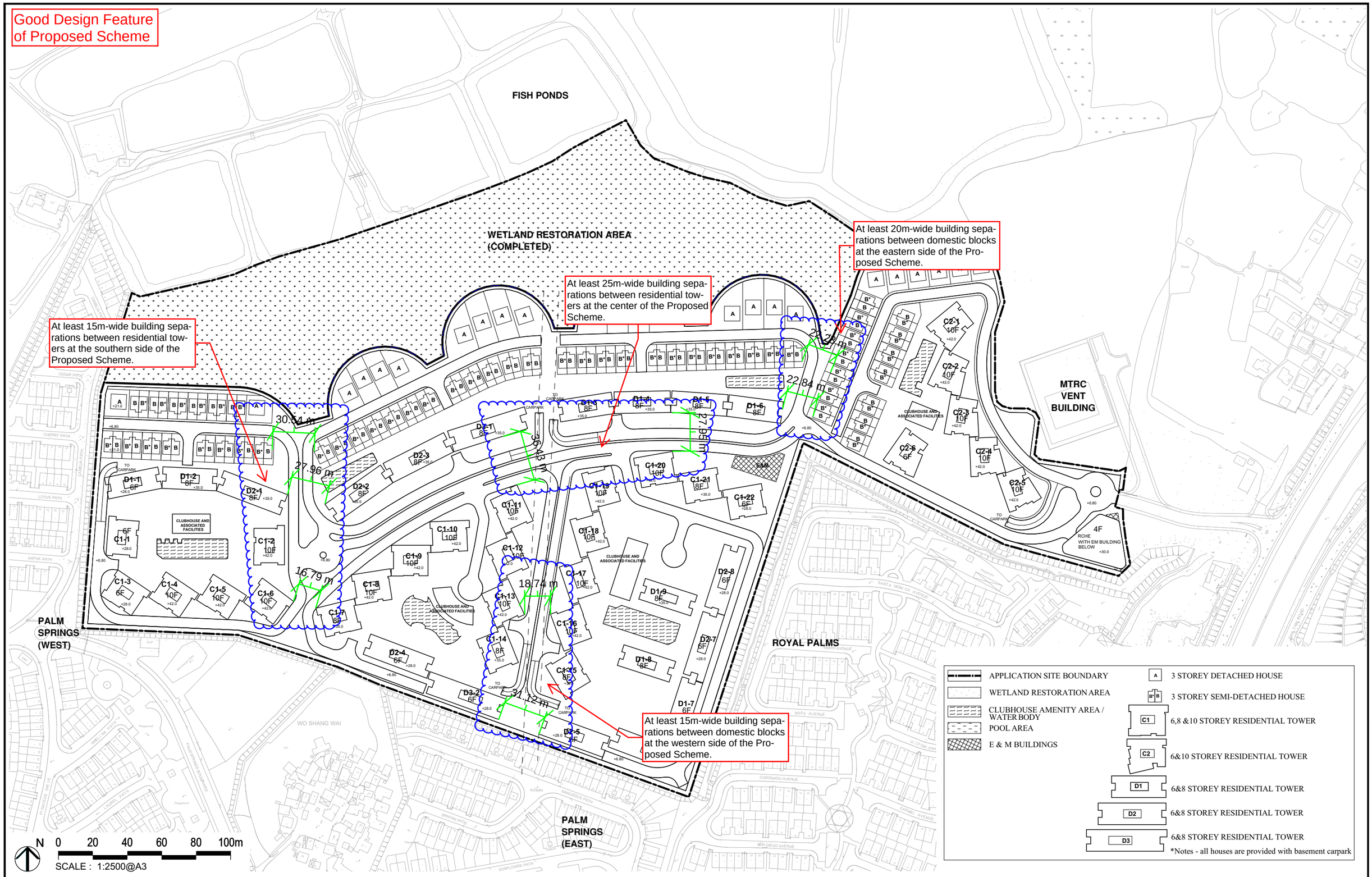

Figure 3: Revised Master Layout Plan in this Amendment Application

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Appendix C – Detailed Velocity Ratio for Each Test Point for Baseline Scheme

Baseline Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.34	0.40	0.37	0.21	0.24	0.30	0.22	0.22	0.34	0.29	0.29	0.27
O2	0.24	0.26	0.26	0.20	0.10	0.14	0.13	0.18	0.34	0.31	0.22	0.23
O3	0.35	0.30	0.32	0.44	0.13	0.16	0.09	0.14	0.37	0.31	0.30	0.25
O4	0.36	0.33	0.33	0.24	0.08	0.08	0.14	0.25	0.40	0.30	0.26	0.25
O5	0.25	0.30	0.26	0.32	0.02	0.12	0.15	0.17	0.39	0.32	0.25	0.24
O6	0.30	0.36	0.36	0.14	0.18	0.27	0.20	0.18	0.38	0.25	0.26	0.24
O7	0.37	0.39	0.36	0.30	0.18	0.36	0.17	0.20	0.36	0.29	0.31	0.27
O8	0.37	0.35	0.29	0.28	0.10	0.41	0.18	0.20	0.35	0.31	0.29	0.27
O9	0.37	0.37	0.38	0.23	0.22	0.29	0.25	0.17	0.37	0.26	0.29	0.26
O10	0.35	0.37	0.40	0.24	0.15	0.20	0.14	0.23	0.33	0.19	0.27	0.22
O11	0.28	0.33	0.27	0.41	0.12	0.16	0.16	0.27	0.37	0.31	0.29	0.28
O12	0.32	0.35	0.37	0.25	0.08	0.10	0.17	0.30	0.41	0.31	0.28	0.27
O13	0.32	0.37	0.38	0.24	0.07	0.08	0.26	0.31	0.37	0.31	0.27	0.27
O14	0.33	0.35	0.33	0.37	0.11	0.12	0.18	0.29	0.23	0.15	0.27	0.21
O15	0.35	0.34	0.41	0.20	0.17	0.22	0.15	0.27	0.22	0.20	0.26	0.21
O16	0.36	0.36	0.30	0.29	0.27	0.36	0.26	0.15	0.25	0.29	0.29	0.26
O17	0.34	0.39	0.37	0.30	0.21	0.38	0.12	0.21	0.28	0.34	0.31	0.27
O18	0.15	0.28	0.33	0.38	0.26	0.17	0.11	0.17	0.10	0.10	0.25	0.16
O19	0.22	0.34	0.36	0.31	0.22	0.41	0.26	0.17	0.19	0.31	0.29	0.25
O20	0.32	0.35	0.32	0.25	0.21	0.32	0.15	0.27	0.17	0.26	0.27	0.23
O21	0.31	0.34	0.42	0.24	0.14	0.18	0.15	0.30	0.13	0.21	0.26	0.20
O22	0.30	0.34	0.35	0.37	0.09	0.10	0.23	0.27	0.11	0.05	0.25	0.16
O23	0.28	0.35	0.35	0.32	0.15	0.11	0.32	0.30	0.14	0.27	0.27	0.23
O24	0.24	0.20	0.29	0.18	0.12	0.16	0.15	0.12	0.26	0.26	0.20	0.19
O25	0.13	0.22	0.30	0.28	0.21	0.31	0.03	0.20	0.23	0.30	0.25	0.23
O26	0.25	0.36	0.33	0.30	0.27	0.36	0.22	0.25	0.17	0.30	0.29	0.26
O27	0.25	0.13	0.22	0.06	0.28	0.37	0.20	0.21	0.23	0.17	0.19	0.21
O28	0.34	0.20	0.08	0.06	0.12	0.17	0.21	0.26	0.30	0.13	0.16	0.19
O29	0.30	0.24	0.06	0.19	0.20	0.40	0.25	0.19	0.08	0.10	0.19	0.17
O30	0.30	0.18	0.05	0.13	0.14	0.25	0.13	0.24	0.24	0.06	0.16	0.17
O31	0.29	0.19	0.07	0.06	0.07	0.14	0.04	0.07	0.25	0.18	0.13	0.13
O32	0.24	0.13	0.13	0.07	0.08	0.08	0.06	0.12	0.25	0.25	0.14	0.16
O33	0.04	0.02	0.05	0.13	0.09	0.18	0.07	0.04	0.02	0.09	0.08	0.08
O34	0.13	0.10	0.01	0.16	0.12	0.19	0.09	0.15	0.15	0.08	0.12	0.13
O35	0.06	0.11	0.15	0.13	0.06	0.44	0.19	0.13	0.11	0.11	0.14	0.15
O36	0.05	0.12	0.03	0.03	0.07	0.21	0.04	0.04	0.09	0.05	0.07	0.07
O37	0.07	0.05	0.03	0.11	0.06	0.08	0.13	0.15	0.19	0.18	0.10	0.14
O38	0.02	0.07	0.15	0.10	0.02	0.02	0.08	0.07	0.11	0.11	0.08	0.08
O39	0.15	0.21	0.18	0.04	0.10	0.12	0.13	0.13	0.17	0.01	0.12	0.10
O40	0.17	0.06	0.10	0.02	0.32	0.24	0.29	0.23	0.17	0.08	0.14	0.18
O41	0.17	0.16	0.30	0.20	0.33	0.22	0.19	0.14	0.12	0.06	0.20	0.16
O42	0.16	0.05	0.27	0.27	0.14	0.13	0.14	0.09	0.08	0.09	0.16	0.12
O43	0.01	0.14	0.22	0.24	0.14	0.13	0.16	0.07	0.06	0.08	0.14	0.11
O44	0.11	0.09	0.24	0.27	0.18	0.15	0.21	0.07	0.12	0.16	0.17	0.15
O45	0.11	0.08	0.16	0.25	0.08	0.10	0.10	0.08	0.18	0.12	0.14	0.13
O46	0.09	0.07	0.17	0.11	0.03	0.07	0.01	0.03	0.23	0.24	0.11	0.13

O47	0.06	0.15	0.09	0.05	0.05	0.06	0.04	0.03	0.20	0.21	0.09	0.11
O48	0.06	0.07	0.07	0.04	0.04	0.04	0.06	0.04	0.02	0.04	0.05	0.04
O49	0.06	0.03	0.12	0.06	0.33	0.25	0.26	0.22	0.16	0.11	0.14	0.18
O50	0.06	0.04	0.20	0.09	0.18	0.18	0.23	0.19	0.06	0.11	0.12	0.14
O51	0.08	0.13	0.13	0.08	0.15	0.16	0.16	0.08	0.07	0.21	0.12	0.13
O52	0.06	0.15	0.15	0.02	0.13	0.14	0.15	0.05	0.11	0.22	0.11	0.12
O53	0.11	0.12	0.19	0.35	0.37	0.28	0.22	0.13	0.07	0.24	0.22	0.21
O54	0.06	0.08	0.18	0.26	0.14	0.14	0.16	0.10	0.04	0.17	0.15	0.13
O55	0.05	0.06	0.09	0.19	0.08	0.11	0.14	0.04	0.10	0.07	0.10	0.10
O56	0.07	0.15	0.09	0.08	0.18	0.11	0.04	0.06	0.13	0.14	0.11	0.11
O57	0.24	0.18	0.27	0.21	0.25	0.19	0.24	0.05	0.10	0.10	0.19	0.14
O58	0.13	0.15	0.32	0.26	0.24	0.19	0.14	0.04	0.05	0.06	0.18	0.11
O59	0.10	0.12	0.15	0.12	0.13	0.15	0.11	0.01	0.08	0.06	0.11	0.08
O60	0.11	0.19	0.08	0.14	0.05	0.12	0.18	0.05	0.12	0.06	0.11	0.10
O61	0.08	0.15	0.10	0.08	0.14	0.07	0.10	0.05	0.06	0.16	0.10	0.09
O62	0.07	0.07	0.08	0.12	0.09	0.09	0.18	0.08	0.06	0.12	0.09	0.10
O63	0.20	0.18	0.23	0.17	0.24	0.07	0.05	0.06	0.09	0.05	0.15	0.09
O64	0.11	0.09	0.15	0.16	0.23	0.02	0.19	0.05	0.09	0.09	0.12	0.11
O65	0.07	0.12	0.11	0.09	0.20	0.04	0.17	0.06	0.09	0.17	0.11	0.12
O66	0.12	0.08	0.09	0.06	0.22	0.20	0.11	0.04	0.18	0.16	0.12	0.14
O67	0.05	0.02	0.02	0.01	0.01	0.04	0.06	0.07	0.21	0.12	0.05	0.09
O68	0.07	0.05	0.07	0.04	0.05	0.07	0.10	0.13	0.29	0.18	0.09	0.15
O69	0.07	0.03	0.05	0.04	0.05	0.08	0.01	0.15	0.26	0.06	0.08	0.11
O70	0.03	0.11	0.14	0.18	0.33	0.22	0.21	0.13	0.19	0.24	0.18	0.21
O71	0.05	0.11	0.10	0.16	0.17	0.15	0.09	0.08	0.29	0.28	0.15	0.19
O72	0.08	0.07	0.17	0.25	0.32	0.26	0.15	0.04	0.20	0.25	0.19	0.20
O73	0.05	0.08	0.18	0.09	0.14	0.17	0.06	0.04	0.06	0.03	0.10	0.07
O74	0.09	0.09	0.14	0.13	0.19	0.17	0.19	0.05	0.12	0.14	0.13	0.13
O75	0.05	0.13	0.01	0.01	0.14	0.10	0.11	0.12	0.31	0.37	0.12	0.20
O76	0.03	0.11	0.20	0.27	0.44	0.22	0.06	0.12	0.11	0.12	0.20	0.17
O77	0.12	0.13	0.15	0.25	0.32	0.21	0.22	0.13	0.26	0.38	0.22	0.26
O78	0.03	0.08	0.06	0.28	0.26	0.17	0.24	0.21	0.35	0.38	0.20	0.29
O79	0.07	0.15	0.06	0.29	0.29	0.19	0.18	0.16	0.27	0.35	0.21	0.26
O80	0.05	0.16	0.11	0.34	0.38	0.20	0.18	0.21	0.27	0.29	0.24	0.27
O81	0.02	0.09	0.06	0.05	0.11	0.18	0.19	0.28	0.41	0.41	0.15	0.27
O82	0.05	0.15	0.07	0.07	0.07	0.06	0.05	0.14	0.09	0.25	0.10	0.12
O83	0.07	0.12	0.04	0.02	0.07	0.08	0.07	0.16	0.21	0.12	0.09	0.12
O84	0.07	0.09	0.08	0.10	0.15	0.16	0.15	0.05	0.13	0.21	0.11	0.14
O85	0.04	0.07	0.16	0.09	0.13	0.04	0.02	0.06	0.10	0.15	0.10	0.09
O86	0.03	0.03	0.02	0.03	0.10	0.09	0.09	0.13	0.19	0.09	0.07	0.11
O87	0.13	0.04	0.03	0.01	0.05	0.10	0.08	0.05	0.18	0.16	0.07	0.11
O88	0.04	0.03	0.04	0.04	0.06	0.15	0.08	0.02	0.02	0.17	0.06	0.08
O89	0.01	0.02	0.08	0.08	0.14	0.11	0.19	0.16	0.02	0.22	0.09	0.13
O90	0.07	0.06	0.05	0.13	0.17	0.17	0.13	0.06	0.26	0.28	0.13	0.18
O91	0.02	0.07	0.08	0.12	0.22	0.18	0.03	0.29	0.38	0.29	0.17	0.25
O92	0.04	0.04	0.04	0.13	0.36	0.13	0.30	0.25	0.21	0.15	0.15	0.21
O93	0.03	0.10	0.06	0.01	0.06	0.03	0.13	0.09	0.07	0.09	0.06	0.07
O94	0.09	0.12	0.06	0.12	0.32	0.36	0.34	0.25	0.06	0.07	0.15	0.18
O95	0.08	0.05	0.18	0.21	0.23	0.18	0.33	0.10	0.08	0.16	0.15	0.16
O96	0.17	0.16	0.16	0.14	0.34	0.37	0.22	0.07	0.08	0.07	0.17	0.15

O97	0.09	0.04	0.10	0.17	0.33	0.30	0.26	0.07	0.19	0.11	0.16	0.18
O98	0.04	0.12	0.21	0.24	0.32	0.24	0.23	0.09	0.13	0.14	0.18	0.18
O99	0.05	0.11	0.21	0.29	0.34	0.27	0.20	0.07	0.23	0.06	0.20	0.18
O100	0.05	0.17	0.19	0.10	0.11	0.06	0.02	0.04	0.11	0.22	0.12	0.11
O101	0.24	0.10	0.15	0.15	0.13	0.15	0.21	0.13	0.16	0.13	0.15	0.15
O102	0.11	0.08	0.15	0.12	0.33	0.36	0.20	0.02	0.02	0.04	0.14	0.11
O103	0.04	0.06	0.10	0.23	0.34	0.33	0.22	0.03	0.09	0.12	0.16	0.16
O104	0.05	0.07	0.15	0.14	0.36	0.36	0.18	0.04	0.29	0.18	0.18	0.21
O105	0.08	0.08	0.14	0.14	0.20	0.03	0.04	0.12	0.25	0.11	0.13	0.14
O106	0.06	0.11	0.16	0.25	0.39	0.34	0.11	0.11	0.08	0.07	0.19	0.16
O107	0.13	0.14	0.18	0.22	0.22	0.04	0.02	0.15	0.09	0.11	0.16	0.12
O108	0.03	0.07	0.03	0.06	0.11	0.08	0.05	0.07	0.17	0.15	0.08	0.11
O109	0.03	0.07	0.07	0.14	0.15	0.08	0.03	0.15	0.17	0.10	0.11	0.12
O110	0.02	0.06	0.08	0.13	0.14	0.16	0.08	0.20	0.09	0.06	0.11	0.12
O111	0.07	0.09	0.10	0.07	0.07	0.03	0.09	0.28	0.32	0.28	0.13	0.20
O112	0.14	0.17	0.16	0.10	0.18	0.09	0.04	0.05	0.11	0.21	0.13	0.12
O113	0.22	0.11	0.05	0.15	0.14	0.09	0.21	0.25	0.30	0.34	0.17	0.24
O114	0.12	0.05	0.12	0.06	0.26	0.13	0.16	0.15	0.30	0.23	0.14	0.20
O115	0.18	0.14	0.18	0.25	0.19	0.06	0.08	0.07	0.06	0.05	0.15	0.09
O116	0.13	0.02	0.12	0.16	0.05	0.11	0.06	0.10	0.11	0.03	0.10	0.08
O117	0.16	0.07	0.07	0.07	0.04	0.06	0.06	0.06	0.06	0.05	0.07	0.06
O118	0.06	0.07	0.13	0.11	0.24	0.10	0.16	0.12	0.08	0.16	0.12	0.13
O119	0.02	0.04	0.10	0.06	0.06	0.07	0.13	0.13	0.10	0.05	0.07	0.09
O120	0.04	0.07	0.15	0.11	0.19	0.08	0.03	0.02	0.12	0.16	0.11	0.10
O121	0.05	0.03	0.05	0.07	0.04	0.05	0.14	0.14	0.09	0.01	0.06	0.07
O122	0.11	0.11	0.06	0.16	0.06	0.08	0.07	0.04	0.14	0.20	0.11	0.12
O123	0.18	0.12	0.09	0.13	0.14	0.10	0.13	0.20	0.12	0.12	0.13	0.14
O124	0.09	0.14	0.04	0.06	0.24	0.15	0.04	0.06	0.14	0.23	0.12	0.14
O125	0.04	0.29	0.33	0.38	0.16	0.12	0.04	0.18	0.10	0.25	0.23	0.18
O126	0.06	0.05	0.06	0.05	0.13	0.09	0.14	0.13	0.15	0.18	0.09	0.13
O127	0.09	0.06	0.09	0.09	0.12	0.09	0.18	0.21	0.13	0.05	0.10	0.12
O128	0.16	0.07	0.03	0.08	0.06	0.08	0.18	0.22	0.19	0.08	0.10	0.14
O129	0.20	0.04	0.04	0.03	0.10	0.09	0.10	0.22	0.17	0.06	0.09	0.12
O130	0.08	0.26	0.29	0.31	0.15	0.11	0.06	0.19	0.01	0.07	0.19	0.11
O131	0.12	0.07	0.25	0.07	0.11	0.09	0.02	0.08	0.09	0.27	0.12	0.12
O132	0.31	0.19	0.13	0.13	0.13	0.11	0.07	0.08	0.15	0.22	0.16	0.14
O133	0.31	0.13	0.04	0.10	0.16	0.09	0.03	0.12	0.16	0.26	0.14	0.15
O134	0.29	0.16	0.06	0.12	0.06	0.06	0.00	0.13	0.20	0.31	0.14	0.16
O135	0.35	0.30	0.22	0.14	0.17	0.17	0.18	0.14	0.26	0.35	0.22	0.22
O136	0.29	0.34	0.17	0.23	0.15	0.20	0.22	0.20	0.24	0.39	0.24	0.25
O137	0.32	0.15	0.02	0.15	0.07	0.07	0.01	0.14	0.18	0.30	0.15	0.16
O138	0.32	0.33	0.18	0.18	0.19	0.13	0.07	0.12	0.21	0.27	0.21	0.18
O139	0.32	0.27	0.18	0.13	0.16	0.09	0.02	0.16	0.22	0.33	0.20	0.18
O140	0.35	0.34	0.27	0.21	0.22	0.14	0.06	0.13	0.28	0.40	0.26	0.23
O141	0.26	0.09	0.07	0.16	0.15	0.14	0.11	0.18	0.25	0.37	0.17	0.22
O142	0.35	0.36	0.33	0.29	0.16	0.17	0.21	0.22	0.34	0.41	0.29	0.28
O143	0.29	0.28	0.27	0.29	0.18	0.14	0.20	0.19	0.09	0.22	0.23	0.18
O144	0.32	0.34	0.32	0.35	0.22	0.29	0.26	0.11	0.27	0.24	0.29	0.24
O145	0.34	0.35	0.34	0.42	0.23	0.36	0.28	0.16	0.27	0.41	0.33	0.30
O146	0.32	0.34	0.29	0.37	0.21	0.32	0.24	0.16	0.15	0.30	0.29	0.24

O147	0.33	0.34	0.30	0.39	0.25	0.19	0.17	0.14	0.17	0.30	0.29	0.23
O148	0.33	0.33	0.30	0.40	0.26	0.25	0.19	0.17	0.41	0.40	0.33	0.31
O149	0.32	0.34	0.35	0.35	0.22	0.18	0.16	0.11	0.27	0.34	0.29	0.24
O150	0.34	0.35	0.38	0.26	0.17	0.22	0.14	0.07	0.38	0.30	0.28	0.24
O151	0.35	0.35	0.30	0.42	0.26	0.22	0.16	0.14	0.22	0.31	0.31	0.25
O152	0.35	0.36	0.35	0.41	0.29	0.27	0.18	0.18	0.24	0.23	0.32	0.25
O153	0.31	0.33	0.35	0.37	0.24	0.23	0.18	0.18	0.38	0.38	0.32	0.30
O154	0.31	0.33	0.36	0.28	0.22	0.17	0.13	0.13	0.25	0.20	0.26	0.20
O155	0.33	0.34	0.28	0.40	0.26	0.24	0.21	0.21	0.42	0.41	0.33	0.32
O156	0.35	0.35	0.33	0.37	0.28	0.21	0.23	0.22	0.43	0.37	0.33	0.32
O157	0.32	0.33	0.31	0.40	0.25	0.21	0.19	0.19	0.40	0.41	0.33	0.31
O158	0.36	0.38	0.33	0.41	0.29	0.15	0.22	0.19	0.32	0.38	0.33	0.29
O159	0.34	0.36	0.29	0.36	0.31	0.35	0.23	0.19	0.28	0.34	0.32	0.29
O160	0.33	0.35	0.35	0.41	0.25	0.12	0.21	0.19	0.32	0.36	0.32	0.28
O161	0.31	0.34	0.37	0.34	0.24	0.14	0.16	0.11	0.20	0.32	0.28	0.22
O162	0.36	0.37	0.31	0.40	0.30	0.15	0.24	0.22	0.39	0.45	0.34	0.33
O163	0.36	0.37	0.35	0.33	0.30	0.25	0.25	0.23	0.45	0.47	0.34	0.35
O164	0.34	0.36	0.31	0.31	0.38	0.41	0.23	0.19	0.30	0.39	0.33	0.31
O165	0.36	0.37	0.35	0.40	0.39	0.45	0.25	0.18	0.36	0.47	0.37	0.36
O166	0.34	0.36	0.36	0.38	0.28	0.33	0.21	0.20	0.23	0.35	0.33	0.28
O167	0.34	0.36	0.39	0.42	0.28	0.21	0.18	0.16	0.25	0.29	0.32	0.25
O168	0.35	0.37	0.35	0.42	0.37	0.47	0.25	0.22	0.34	0.46	0.38	0.36
O169	0.34	0.35	0.38	0.39	0.28	0.37	0.20	0.18	0.22	0.34	0.33	0.27
O170	0.34	0.34	0.33	0.33	0.26	0.19	0.10	0.14	0.19	0.30	0.28	0.22
O171	0.32	0.33	0.37	0.25	0.19	0.16	0.16	0.02	0.11	0.19	0.23	0.15
O172	0.31	0.32	0.26	0.29	0.29	0.32	0.16	0.17	0.18	0.22	0.27	0.22
O173	0.34	0.33	0.40	0.29	0.21	0.35	0.19	0.21	0.30	0.32	0.31	0.27
O174	0.35	0.37	0.31	0.34	0.38	0.44	0.22	0.21	0.23	0.35	0.33	0.30
O175	0.34	0.35	0.34	0.29	0.30	0.44	0.35	0.20	0.40	0.32	0.33	0.33
O176	0.33	0.29	0.28	0.31	0.25	0.37	0.22	0.11	0.16	0.31	0.27	0.23
O177	0.35	0.36	0.38	0.31	0.28	0.39	0.33	0.17	0.25	0.37	0.32	0.29
P1	0.25	0.24	0.31	0.21	0.23	0.43	0.15	0.08	0.04	0.12	0.22	0.15
P2	0.06	0.23	0.37	0.11	0.11	0.19	0.22	0.09	0.05	0.03	0.15	0.10
P3	0.11	0.26	0.23	0.23	0.11	0.07	0.21	0.07	0.03	0.06	0.15	0.10
P4	0.36	0.34	0.14	0.18	0.08	0.06	0.23	0.08	0.10	0.02	0.16	0.10
P5	0.22	0.23	0.08	0.21	0.25	0.31	0.25	0.07	0.05	0.07	0.17	0.14
P6	0.13	0.04	0.07	0.11	0.25	0.30	0.29	0.05	0.06	0.05	0.12	0.13
P7	0.35	0.25	0.21	0.14	0.26	0.35	0.21	0.28	0.33	0.20	0.24	0.25
P8	0.33	0.19	0.25	0.22	0.21	0.28	0.19	0.20	0.22	0.16	0.23	0.21
P9	0.33	0.21	0.22	0.26	0.16	0.18	0.25	0.30	0.23	0.12	0.23	0.21
P10	0.03	0.13	0.32	0.27	0.18	0.15	0.06	0.09	0.09	0.15	0.18	0.13
P11	0.03	0.13	0.15	0.20	0.21	0.15	0.12	0.06	0.05	0.09	0.13	0.11
P12	0.14	0.06	0.16	0.18	0.16	0.16	0.19	0.12	0.04	0.17	0.14	0.13
P13	0.22	0.11	0.16	0.21	0.18	0.17	0.21	0.08	0.07	0.03	0.15	0.11
P14	0.22	0.20	0.11	0.21	0.16	0.11	0.22	0.11	0.16	0.14	0.17	0.16
P15	0.06	0.04	0.07	0.09	0.10	0.04	0.05	0.11	0.23	0.12	0.09	0.12
P16	0.10	0.08	0.08	0.12	0.10	0.02	0.04	0.08	0.25	0.14	0.11	0.13
P17	0.13	0.11	0.11	0.09	0.07	0.03	0.03	0.09	0.26	0.12	0.11	0.12
P18	0.08	0.12	0.19	0.07	0.18	0.13	0.14	0.10	0.27	0.04	0.13	0.13
P19	0.07	0.07	0.13	0.11	0.12	0.05	0.10	0.10	0.20	0.05	0.10	0.11

P20	0.09	0.20	0.09	0.12	0.14	0.15	0.12	0.07	0.13	0.16	0.13	0.13
P21	0.08	0.19	0.13	0.09	0.20	0.21	0.19	0.10	0.14	0.24	0.14	0.17
P22	0.08	0.04	0.10	0.10	0.23	0.22	0.15	0.06	0.19	0.21	0.13	0.16
P23	0.11	0.07	0.11	0.09	0.24	0.19	0.08	0.02	0.03	0.26	0.12	0.12
P24	0.06	0.13	0.16	0.08	0.26	0.16	0.16	0.15	0.19	0.35	0.16	0.21
P25	0.05	0.19	0.07	0.13	0.26	0.15	0.13	0.15	0.21	0.19	0.15	0.18
P26	0.05	0.05	0.03	0.07	0.23	0.13	0.07	0.04	0.12	0.20	0.10	0.13
P27	0.04	0.04	0.10	0.07	0.24	0.15	0.12	0.09	0.10	0.11	0.10	0.12
P28	0.07	0.07	0.13	0.12	0.23	0.15	0.14	0.13	0.16	0.09	0.13	0.14
P29	0.08	0.04	0.05	0.14	0.22	0.13	0.17	0.07	0.09	0.08	0.10	0.11
P30	0.06	0.07	0.16	0.21	0.29	0.27	0.29	0.13	0.29	0.09	0.18	0.21
P31	0.09	0.07	0.11	0.06	0.04	0.03	0.12	0.17	0.11	0.17	0.09	0.11
P32	0.17	0.04	0.06	0.04	0.05	0.02	0.18	0.21	0.26	0.21	0.10	0.17
P33	0.06	0.03	0.07	0.03	0.06	0.05	0.16	0.22	0.26	0.08	0.08	0.14
P34	0.30	0.32	0.31	0.35	0.10	0.08	0.07	0.18	0.23	0.20	0.25	0.19
P35	0.24	0.37	0.37	0.37	0.17	0.13	0.10	0.14	0.08	0.15	0.25	0.15
P36	0.31	0.31	0.33	0.33	0.19	0.14	0.21	0.16	0.04	0.25	0.25	0.18
P37	0.33	0.34	0.36	0.28	0.17	0.26	0.13	0.07	0.33	0.27	0.27	0.22
P38	0.33	0.35	0.37	0.25	0.17	0.18	0.12	0.08	0.36	0.23	0.26	0.21
P39	0.34	0.36	0.39	0.24	0.17	0.13	0.10	0.15	0.28	0.18	0.25	0.19
P40	0.31	0.33	0.36	0.25	0.22	0.17	0.14	0.09	0.19	0.25	0.25	0.19
P41	0.31	0.33	0.37	0.30	0.22	0.21	0.12	0.13	0.18	0.30	0.27	0.21
P42	0.31	0.34	0.38	0.33	0.23	0.13	0.15	0.06	0.18	0.30	0.27	0.20
P43	0.33	0.35	0.39	0.36	0.20	0.11	0.16	0.12	0.15	0.29	0.28	0.20
P44	0.34	0.36	0.39	0.40	0.25	0.15	0.19	0.14	0.19	0.28	0.30	0.23
P45	0.33	0.35	0.35	0.33	0.18	0.12	0.16	0.13	0.33	0.31	0.28	0.24
P46	0.33	0.33	0.30	0.32	0.16	0.10	0.14	0.12	0.17	0.27	0.25	0.19
P47	0.33	0.34	0.35	0.25	0.12	0.06	0.07	0.10	0.13	0.25	0.23	0.15
P48	0.34	0.36	0.38	0.21	0.10	0.07	0.09	0.07	0.12	0.14	0.21	0.12
P49	0.28	0.28	0.10	0.11	0.03	0.05	0.01	0.04	0.07	0.14	0.12	0.07
P50	0.11	0.10	0.26	0.18	0.12	0.04	0.13	0.03	0.04	0.03	0.12	0.07
S1	0.27	0.25	0.21	0.15	0.24	0.33	0.23	0.22	0.35	0.17	0.23	0.24
S2	0.05	0.19	0.30	0.24	0.20	0.23	0.16	0.12	0.20	0.21	0.20	0.19
S3	0.03	0.10	0.12	0.17	0.22	0.22	0.18	0.05	0.08	0.14	0.13	0.13
S4	0.04	0.12	0.15	0.10	0.04	0.14	0.10	0.04	0.04	0.05	0.09	0.06
S5	0.18	0.08	0.15	0.18	0.14	0.17	0.20	0.15	0.15	0.10	0.15	0.14
S6	0.02	0.06	0.08	0.08	0.08	0.11	0.04	0.03	0.14	0.01	0.07	0.07
S7	0.19	0.27	0.15	0.24	0.05	0.12	0.06	0.05	0.07	0.08	0.15	0.09
S8	0.12	0.26	0.23	0.28	0.17	0.16	0.21	0.06	0.12	0.08	0.19	0.14
S9	0.22	0.22	0.11	0.19	0.17	0.15	0.24	0.14	0.20	0.10	0.17	0.17
S10	0.32	0.21	0.09	0.32	0.16	0.12	0.13	0.13	0.15	0.13	0.20	0.16
S11	0.26	0.29	0.23	0.25	0.17	0.11	0.10	0.08	0.04	0.12	0.19	0.11
S12	0.29	0.34	0.04	0.25	0.07	0.09	0.11	0.06	0.04	0.11	0.16	0.10
S13	0.33	0.26	0.07	0.20	0.06	0.13	0.07	0.03	0.05	0.10	0.14	0.08
S14	0.16	0.08	0.05	0.16	0.08	0.11	0.06	0.14	0.01	0.07	0.10	0.08
S15	0.02	0.06	0.04	0.03	0.05	0.07	0.09	0.05	0.13	0.11	0.06	0.09
S16	0.27	0.23	0.09	0.10	0.18	0.11	0.09	0.08	0.09	0.07	0.13	0.09
S17	0.07	0.03	0.10	0.05	0.10	0.13	0.01	0.09	0.19	0.12	0.09	0.11
S18	0.08	0.16	0.09	0.03	0.08	0.10	0.15	0.01	0.09	0.06	0.07	0.07
S19	0.09	0.06	0.09	0.11	0.14	0.03	0.13	0.04	0.03	0.07	0.08	0.07

S20	0.21	0.05	0.02	0.11	0.03	0.01	0.03	0.03	0.02	0.04	0.06	0.04
S21	0.10	0.07	0.06	0.09	0.04	0.09	0.04	0.03	0.06	0.05	0.06	0.05
S22	0.14	0.02	0.18	0.04	0.08	0.05	0.15	0.05	0.11	0.05	0.08	0.08
S23	0.28	0.06	0.16	0.07	0.07	0.07	0.05	0.03	0.16	0.05	0.10	0.08
S24	0.06	0.28	0.18	0.13	0.04	0.05	0.01	0.04	0.04	0.05	0.11	0.05
S25	0.34	0.30	0.08	0.09	0.07	0.04	0.01	0.04	0.09	0.10	0.13	0.07
S26	0.26	0.11	0.09	0.06	0.09	0.03	0.02	0.05	0.08	0.03	0.09	0.05
S27	0.07	0.06	0.17	0.05	0.01	0.08	0.16	0.09	0.11	0.06	0.08	0.08
S28	0.02	0.04	0.14	0.02	0.01	0.07	0.22	0.12	0.10	0.07	0.06	0.09
S29	0.06	0.07	0.04	0.03	0.05	0.16	0.15	0.07	0.07	0.12	0.07	0.09
S30	0.04	0.05	0.04	0.05	0.03	0.15	0.15	0.03	0.06	0.09	0.06	0.07
S31	0.26	0.26	0.09	0.10	0.07	0.12	0.19	0.05	0.09	0.04	0.12	0.09
S32	0.06	0.13	0.11	0.21	0.08	0.23	0.21	0.09	0.19	0.13	0.14	0.16

Appendix D – Detailed Velocity Ratio for Each Test Point for Proposed Scheme

Proposed Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.33	0.41	0.36	0.18	0.21	0.27	0.23	0.22	0.38	0.29	0.29	0.27
O2	0.26	0.34	0.33	0.21	0.09	0.14	0.12	0.16	0.37	0.29	0.24	0.23
O3	0.34	0.33	0.30	0.44	0.12	0.14	0.10	0.19	0.38	0.33	0.30	0.27
O4	0.35	0.36	0.34	0.29	0.08	0.08	0.15	0.26	0.39	0.32	0.28	0.26
O5	0.30	0.37	0.34	0.28	0.01	0.11	0.13	0.25	0.33	0.30	0.26	0.23
O6	0.34	0.38	0.36	0.11	0.17	0.26	0.14	0.17	0.33	0.24	0.25	0.22
O7	0.37	0.37	0.32	0.28	0.20	0.35	0.22	0.20	0.32	0.30	0.30	0.27
O8	0.35	0.34	0.28	0.25	0.08	0.41	0.20	0.20	0.25	0.32	0.27	0.25
O9	0.37	0.36	0.32	0.23	0.21	0.29	0.20	0.18	0.25	0.29	0.27	0.24
O10	0.35	0.37	0.38	0.21	0.11	0.15	0.16	0.27	0.20	0.20	0.25	0.20
O11	0.33	0.38	0.34	0.35	0.10	0.15	0.17	0.28	0.27	0.30	0.29	0.25
O12	0.33	0.39	0.36	0.26	0.08	0.09	0.20	0.30	0.36	0.33	0.28	0.26
O13	0.33	0.42	0.33	0.32	0.05	0.06	0.28	0.31	0.20	0.32	0.27	0.24
O14	0.31	0.38	0.38	0.33	0.11	0.12	0.19	0.29	0.17	0.20	0.27	0.20
O15	0.28	0.34	0.36	0.16	0.15	0.20	0.16	0.30	0.20	0.25	0.24	0.21
O16	0.32	0.36	0.28	0.27	0.25	0.35	0.20	0.22	0.24	0.31	0.28	0.26
O17	0.30	0.38	0.36	0.28	0.19	0.40	0.17	0.21	0.24	0.28	0.29	0.25
O18	0.14	0.25	0.31	0.36	0.24	0.30	0.17	0.16	0.04	0.09	0.24	0.16
O19	0.13	0.25	0.33	0.27	0.24	0.40	0.22	0.25	0.25	0.24	0.26	0.26
O20	0.22	0.33	0.28	0.24	0.19	0.30	0.18	0.31	0.24	0.30	0.26	0.26
O21	0.17	0.29	0.34	0.18	0.10	0.13	0.21	0.29	0.26	0.29	0.22	0.23
O22	0.11	0.26	0.33	0.28	0.09	0.10	0.23	0.24	0.05	0.07	0.19	0.14
O23	0.25	0.41	0.33	0.26	0.15	0.10	0.32	0.30	0.13	0.29	0.25	0.22
O24	0.32	0.31	0.32	0.26	0.10	0.11	0.17	0.17	0.29	0.22	0.24	0.20
O25	0.14	0.15	0.23	0.25	0.19	0.29	0.11	0.22	0.28	0.25	0.22	0.23
O26	0.14	0.24	0.31	0.27	0.25	0.34	0.16	0.28	0.24	0.26	0.26	0.25
O27	0.34	0.24	0.12	0.01	0.25	0.36	0.24	0.30	0.09	0.12	0.18	0.18
O28	0.30	0.21	0.06	0.15	0.14	0.13	0.27	0.24	0.26	0.17	0.18	0.20
O29	0.26	0.18	0.04	0.19	0.16	0.37	0.28	0.13	0.16	0.08	0.17	0.17
O30	0.28	0.15	0.02	0.12	0.12	0.26	0.26	0.28	0.29	0.12	0.17	0.21
O31	0.27	0.15	0.05	0.06	0.14	0.19	0.03	0.09	0.32	0.04	0.13	0.13
O32	0.24	0.11	0.02	0.10	0.15	0.08	0.06	0.05	0.32	0.13	0.13	0.15
O33	0.07	0.04	0.03	0.13	0.12	0.26	0.11	0.02	0.04	0.06	0.09	0.08
O34	0.11	0.11	0.05	0.12	0.07	0.18	0.08	0.12	0.02	0.06	0.10	0.08
O35	0.05	0.06	0.12	0.09	0.04	0.43	0.21	0.16	0.16	0.14	0.12	0.16
O36	0.08	0.11	0.02	0.03	0.08	0.22	0.07	0.03	0.07	0.05	0.07	0.07
O37	0.07	0.02	0.05	0.06	0.06	0.11	0.13	0.18	0.17	0.12	0.09	0.13
O38	0.12	0.10	0.08	0.06	0.08	0.07	0.07	0.06	0.11	0.16	0.09	0.10
O39	0.39	0.33	0.23	0.05	0.13	0.12	0.14	0.12	0.22	0.05	0.17	0.12
O40	0.06	0.03	0.05	0.04	0.28	0.23	0.25	0.16	0.13	0.10	0.11	0.16
O41	0.14	0.16	0.22	0.16	0.30	0.19	0.18	0.03	0.04	0.06	0.16	0.11
O42	0.13	0.13	0.13	0.17	0.14	0.11	0.14	0.12	0.06	0.14	0.13	0.12
O43	0.29	0.15	0.19	0.18	0.15	0.15	0.20	0.12	0.03	0.10	0.16	0.12
O44	0.17	0.07	0.07	0.25	0.10	0.11	0.26	0.18	0.18	0.07	0.14	0.16
O45	0.20	0.20	0.12	0.16	0.18	0.10	0.07	0.16	0.16	0.08	0.16	0.13
O46	0.12	0.26	0.15	0.04	0.26	0.25	0.19	0.09	0.08	0.23	0.15	0.15

O47	0.20	0.28	0.08	0.05	0.32	0.26	0.23	0.17	0.12	0.33	0.18	0.21
O48	0.11	0.26	0.12	0.07	0.22	0.25	0.22	0.19	0.18	0.30	0.17	0.21
O49	0.05	0.09	0.14	0.07	0.31	0.24	0.24	0.14	0.13	0.11	0.13	0.16
O50	0.01	0.12	0.15	0.10	0.15	0.16	0.21	0.14	0.09	0.18	0.12	0.14
O51	0.18	0.17	0.09	0.02	0.09	0.12	0.14	0.08	0.18	0.05	0.10	0.10
O52	0.07	0.20	0.05	0.06	0.13	0.04	0.08	0.05	0.03	0.03	0.08	0.05
O53	0.08	0.12	0.18	0.33	0.35	0.27	0.21	0.05	0.05	0.20	0.20	0.18
O54	0.12	0.11	0.17	0.24	0.12	0.14	0.15	0.02	0.04	0.08	0.14	0.10
O55	0.07	0.04	0.11	0.18	0.08	0.09	0.12	0.06	0.04	0.12	0.10	0.09
O56	0.10	0.27	0.06	0.02	0.27	0.24	0.21	0.15	0.11	0.30	0.15	0.19
O57	0.08	0.16	0.15	0.24	0.27	0.19	0.22	0.04	0.08	0.07	0.16	0.13
O58	0.20	0.15	0.21	0.28	0.25	0.16	0.12	0.04	0.03	0.05	0.17	0.10
O59	0.07	0.10	0.12	0.16	0.09	0.11	0.06	0.03	0.06	0.05	0.10	0.07
O60	0.09	0.09	0.10	0.10	0.03	0.07	0.09	0.04	0.06	0.05	0.07	0.06
O61	0.17	0.06	0.05	0.04	0.09	0.06	0.08	0.07	0.08	0.13	0.08	0.08
O62	0.10	0.06	0.13	0.14	0.08	0.08	0.12	0.05	0.12	0.14	0.10	0.11
O63	0.15	0.15	0.29	0.18	0.22	0.05	0.05	0.09	0.09	0.05	0.16	0.10
O64	0.10	0.07	0.24	0.15	0.21	0.06	0.18	0.06	0.12	0.15	0.14	0.13
O65	0.17	0.12	0.20	0.07	0.18	0.05	0.14	0.03	0.17	0.20	0.13	0.13
O66	0.16	0.13	0.12	0.03	0.09	0.13	0.07	0.14	0.19	0.22	0.12	0.14
O67	0.19	0.07	0.07	0.13	0.21	0.10	0.05	0.11	0.15	0.26	0.14	0.15
O68	0.16	0.11	0.09	0.10	0.16	0.09	0.09	0.13	0.18	0.28	0.14	0.17
O69	0.03	0.03	0.04	0.06	0.20	0.17	0.10	0.06	0.15	0.05	0.08	0.11
O70	0.09	0.14	0.18	0.18	0.33	0.21	0.20	0.09	0.21	0.23	0.19	0.20
O71	0.24	0.13	0.15	0.18	0.17	0.14	0.08	0.10	0.31	0.27	0.18	0.20
O72	0.03	0.06	0.19	0.24	0.30	0.24	0.11	0.10	0.21	0.25	0.19	0.20
O73	0.23	0.08	0.10	0.09	0.14	0.14	0.03	0.05	0.04	0.09	0.10	0.07
O74	0.15	0.13	0.10	0.12	0.17	0.12	0.15	0.09	0.17	0.18	0.13	0.15
O75	0.14	0.15	0.09	0.02	0.15	0.11	0.08	0.08	0.32	0.36	0.14	0.20
O76	0.14	0.11	0.20	0.28	0.44	0.23	0.01	0.07	0.11	0.14	0.21	0.16
O77	0.13	0.12	0.14	0.25	0.33	0.23	0.20	0.14	0.27	0.38	0.22	0.26
O78	0.07	0.13	0.16	0.27	0.28	0.18	0.22	0.21	0.33	0.38	0.23	0.28
O79	0.14	0.08	0.15	0.29	0.32	0.20	0.19	0.15	0.27	0.35	0.22	0.26
O80	0.13	0.08	0.14	0.32	0.40	0.21	0.20	0.18	0.24	0.28	0.23	0.26
O81	0.08	0.05	0.06	0.02	0.11	0.15	0.22	0.26	0.34	0.34	0.13	0.24
O82	0.06	0.04	0.12	0.09	0.04	0.04	0.05	0.08	0.04	0.24	0.08	0.09
O83	0.20	0.29	0.11	0.09	0.11	0.11	0.06	0.09	0.20	0.18	0.15	0.13
O84	0.03	0.01	0.16	0.10	0.09	0.11	0.16	0.12	0.18	0.28	0.11	0.17
O85	0.05	0.07	0.03	0.13	0.06	0.07	0.06	0.06	0.05	0.16	0.08	0.09
O86	0.02	0.02	0.17	0.04	0.03	0.07	0.04	0.11	0.16	0.18	0.08	0.11
O87	0.02	0.09	0.15	0.02	0.03	0.03	0.03	0.02	0.09	0.19	0.06	0.07
O88	0.06	0.08	0.19	0.05	0.05	0.05	0.06	0.02	0.08	0.13	0.08	0.07
O89	0.07	0.04	0.08	0.11	0.14	0.06	0.16	0.13	0.01	0.26	0.10	0.13
O90	0.16	0.13	0.03	0.14	0.17	0.15	0.12	0.08	0.27	0.23	0.14	0.18
O91	0.07	0.21	0.04	0.08	0.21	0.18	0.06	0.26	0.32	0.18	0.16	0.21
O92	0.03	0.16	0.04	0.12	0.33	0.13	0.30	0.25	0.20	0.23	0.16	0.23
O93	0.08	0.01	0.06	0.03	0.06	0.01	0.07	0.06	0.04	0.08	0.05	0.05
O94	0.10	0.03	0.17	0.13	0.36	0.31	0.34	0.24	0.04	0.07	0.16	0.17
O95	0.13	0.13	0.13	0.20	0.19	0.21	0.10	0.22	0.26	0.07	0.17	0.18
O96	0.10	0.10	0.18	0.16	0.38	0.35	0.25	0.10	0.06	0.03	0.17	0.15

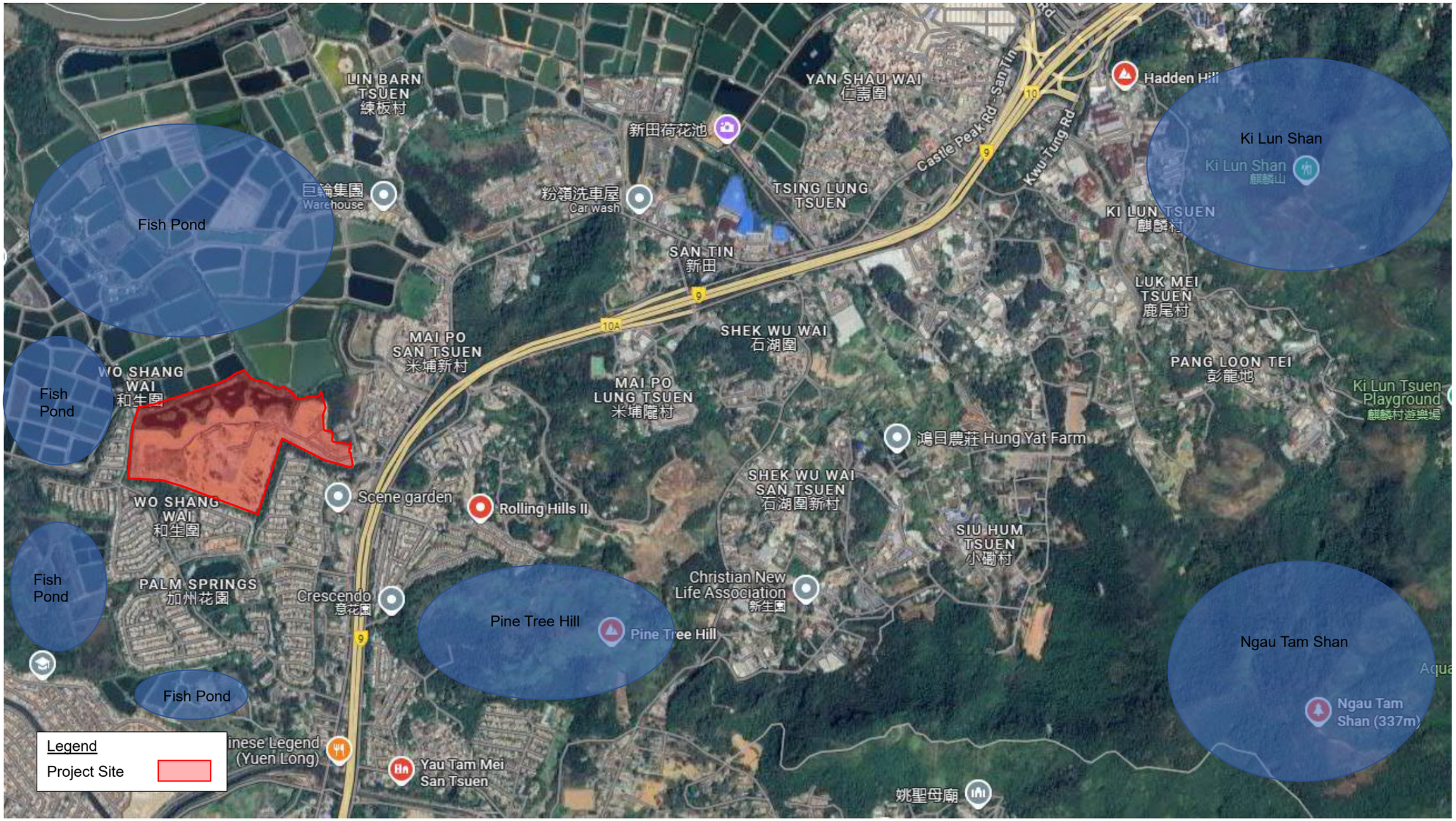
O97	0.14	0.19	0.09	0.21	0.33	0.20	0.23	0.11	0.09	0.04	0.17	0.15
O98	0.10	0.16	0.14	0.27	0.31	0.23	0.27	0.23	0.04	0.12	0.19	0.18
O99	0.13	0.09	0.16	0.29	0.36	0.25	0.31	0.21	0.24	0.12	0.22	0.24
O100	0.07	0.07	0.07	0.02	0.12	0.12	0.06	0.09	0.12	0.22	0.09	0.12
O101	0.21	0.08	0.03	0.05	0.16	0.16	0.17	0.10	0.14	0.12	0.10	0.12
O102	0.12	0.18	0.16	0.13	0.35	0.33	0.23	0.10	0.05	0.02	0.16	0.13
O103	0.10	0.15	0.08	0.27	0.36	0.24	0.24	0.13	0.09	0.09	0.18	0.17
O104	0.11	0.19	0.17	0.16	0.38	0.34	0.20	0.09	0.15	0.16	0.20	0.19
O105	0.07	0.04	0.09	0.14	0.24	0.08	0.06	0.03	0.23	0.10	0.12	0.13
O106	0.09	0.17	0.10	0.30	0.41	0.29	0.26	0.15	0.09	0.06	0.20	0.18
O107	0.08	0.04	0.09	0.23	0.28	0.14	0.13	0.12	0.05	0.04	0.14	0.12
O108	0.06	0.08	0.04	0.05	0.11	0.04	0.05	0.03	0.14	0.10	0.07	0.08
O109	0.08	0.10	0.06	0.15	0.14	0.07	0.03	0.01	0.15	0.09	0.10	0.09
O110	0.02	0.08	0.13	0.09	0.15	0.16	0.17	0.11	0.05	0.07	0.10	0.10
O111	0.05	0.07	0.05	0.07	0.07	0.03	0.07	0.27	0.31	0.27	0.12	0.20
O112	0.09	0.03	0.11	0.09	0.20	0.12	0.06	0.13	0.11	0.20	0.11	0.14
O113	0.26	0.07	0.17	0.15	0.19	0.13	0.16	0.25	0.30	0.32	0.19	0.24
O114	0.24	0.08	0.07	0.06	0.27	0.20	0.17	0.25	0.34	0.30	0.18	0.25
O115	0.20	0.07	0.04	0.10	0.03	0.09	0.06	0.05	0.05	0.04	0.08	0.06
O116	0.18	0.07	0.03	0.07	0.05	0.08	0.16	0.14	0.16	0.11	0.09	0.12
O117	0.23	0.06	0.02	0.03	0.05	0.03	0.04	0.05	0.03	0.10	0.06	0.05
O118	0.20	0.06	0.02	0.02	0.07	0.14	0.15	0.14	0.17	0.15	0.09	0.13
O119	0.01	0.06	0.13	0.08	0.10	0.17	0.19	0.19	0.35	0.16	0.13	0.20
O120	0.03	0.15	0.15	0.11	0.04	0.04	0.14	0.08	0.16	0.16	0.11	0.12
O121	0.26	0.33	0.20	0.07	0.09	0.02	0.03	0.19	0.25	0.11	0.16	0.13
O122	0.16	0.04	0.08	0.15	0.11	0.05	0.10	0.08	0.17	0.18	0.11	0.13
O123	0.15	0.10	0.10	0.13	0.09	0.11	0.02	0.24	0.16	0.19	0.14	0.15
O124	0.21	0.18	0.16	0.19	0.07	0.10	0.06	0.05	0.23	0.30	0.17	0.16
O125	0.29	0.32	0.33	0.24	0.17	0.09	0.06	0.22	0.12	0.28	0.23	0.18
O126	0.11	0.07	0.13	0.10	0.15	0.17	0.19	0.18	0.33	0.16	0.15	0.20
O127	0.16	0.06	0.13	0.07	0.05	0.11	0.25	0.24	0.36	0.18	0.14	0.21
O128	0.28	0.34	0.21	0.06	0.13	0.12	0.03	0.25	0.27	0.16	0.19	0.17
O129	0.14	0.05	0.07	0.03	0.09	0.10	0.09	0.25	0.14	0.15	0.10	0.13
O130	0.10	0.23	0.28	0.26	0.16	0.06	0.04	0.23	0.03	0.12	0.18	0.13
O131	0.07	0.08	0.24	0.22	0.08	0.02	0.01	0.14	0.08	0.26	0.15	0.13
O132	0.29	0.03	0.10	0.10	0.01	0.15	0.13	0.15	0.19	0.23	0.12	0.15
O133	0.23	0.15	0.11	0.12	0.12	0.03	0.15	0.17	0.17	0.26	0.14	0.16
O134	0.26	0.19	0.08	0.06	0.10	0.06	0.15	0.21	0.24	0.31	0.15	0.19
O135	0.35	0.25	0.22	0.07	0.06	0.11	0.14	0.22	0.29	0.36	0.19	0.21
O136	0.27	0.35	0.16	0.19	0.14	0.13	0.16	0.25	0.25	0.32	0.22	0.23
O137	0.30	0.19	0.02	0.15	0.17	0.02	0.19	0.19	0.19	0.30	0.16	0.19
O138	0.34	0.33	0.21	0.17	0.22	0.10	0.13	0.16	0.24	0.28	0.22	0.20
O139	0.32	0.18	0.14	0.14	0.04	0.10	0.13	0.22	0.25	0.34	0.18	0.20
O140	0.32	0.35	0.28	0.16	0.08	0.08	0.22	0.17	0.27	0.36	0.22	0.22
O141	0.25	0.03	0.07	0.19	0.13	0.07	0.07	0.24	0.27	0.36	0.17	0.22
O142	0.35	0.36	0.31	0.28	0.19	0.11	0.18	0.25	0.34	0.42	0.29	0.28
O143	0.28	0.28	0.29	0.32	0.17	0.09	0.03	0.25	0.10	0.22	0.24	0.17
O144	0.32	0.34	0.34	0.41	0.27	0.16	0.03	0.10	0.34	0.34	0.31	0.25
O145	0.33	0.35	0.34	0.33	0.29	0.18	0.10	0.24	0.28	0.42	0.31	0.28
O146	0.32	0.34	0.33	0.37	0.27	0.15	0.08	0.23	0.19	0.32	0.29	0.24

O147	0.32	0.34	0.32	0.31	0.29	0.21	0.19	0.22	0.13	0.27	0.28	0.23
O148	0.31	0.33	0.33	0.32	0.25	0.27	0.05	0.13	0.37	0.40	0.31	0.28
O149	0.31	0.33	0.37	0.37	0.27	0.16	0.17	0.18	0.25	0.35	0.31	0.26
O150	0.32	0.35	0.39	0.44	0.23	0.12	0.16	0.14	0.29	0.34	0.31	0.26
O151	0.34	0.35	0.30	0.34	0.28	0.25	0.18	0.22	0.16	0.29	0.29	0.24
O152	0.35	0.36	0.34	0.41	0.25	0.28	0.19	0.24	0.24	0.26	0.32	0.26
O153	0.30	0.32	0.36	0.30	0.26	0.26	0.01	0.08	0.32	0.40	0.29	0.25
O154	0.29	0.33	0.37	0.42	0.25	0.22	0.00	0.08	0.20	0.29	0.30	0.21
O155	0.32	0.33	0.29	0.37	0.19	0.27	0.02	0.10	0.37	0.41	0.30	0.27
O156	0.34	0.35	0.33	0.39	0.18	0.27	0.05	0.16	0.35	0.35	0.31	0.26
O157	0.31	0.33	0.34	0.34	0.19	0.27	0.05	0.05	0.34	0.42	0.29	0.25
O158	0.35	0.37	0.36	0.42	0.25	0.29	0.18	0.13	0.28	0.44	0.34	0.29
O159	0.33	0.36	0.31	0.39	0.23	0.20	0.19	0.15	0.24	0.42	0.31	0.27
O160	0.32	0.35	0.37	0.39	0.17	0.24	0.15	0.05	0.29	0.42	0.30	0.25
O161	0.29	0.33	0.38	0.32	0.20	0.23	0.11	0.09	0.18	0.36	0.28	0.22
O162	0.35	0.37	0.31	0.42	0.26	0.28	0.17	0.06	0.33	0.47	0.33	0.30
O163	0.35	0.37	0.35	0.37	0.27	0.29	0.18	0.04	0.39	0.47	0.33	0.30
O164	0.33	0.35	0.31	0.35	0.25	0.15	0.20	0.18	0.28	0.45	0.30	0.28
O165	0.34	0.36	0.35	0.37	0.32	0.18	0.22	0.20	0.33	0.48	0.34	0.32
O166	0.32	0.35	0.38	0.41	0.23	0.18	0.18	0.07	0.19	0.41	0.30	0.24
O167	0.33	0.35	0.40	0.34	0.23	0.22	0.16	0.04	0.12	0.38	0.28	0.21
O168	0.34	0.36	0.35	0.39	0.34	0.25	0.21	0.18	0.31	0.48	0.34	0.32
O169	0.32	0.35	0.39	0.41	0.22	0.12	0.16	0.03	0.15	0.41	0.29	0.22
O170	0.31	0.33	0.31	0.30	0.22	0.05	0.10	0.03	0.07	0.28	0.23	0.15
O171	0.28	0.33	0.40	0.22	0.09	0.09	0.07	0.07	0.18	0.13	0.21	0.13
O172	0.29	0.30	0.31	0.22	0.23	0.43	0.26	0.25	0.18	0.13	0.26	0.22
O173	0.33	0.32	0.39	0.31	0.21	0.29	0.16	0.29	0.28	0.29	0.30	0.27
O174	0.34	0.36	0.34	0.38	0.24	0.16	0.18	0.03	0.20	0.42	0.29	0.24
O175	0.33	0.35	0.37	0.33	0.36	0.47	0.26	0.13	0.13	0.42	0.32	0.28
O176	0.30	0.28	0.29	0.31	0.16	0.13	0.11	0.14	0.03	0.27	0.23	0.16
O177	0.33	0.35	0.39	0.36	0.37	0.47	0.28	0.16	0.10	0.38	0.33	0.28
P1	0.22	0.19	0.34	0.37	0.17	0.30	0.24	0.18	0.15	0.16	0.25	0.20
P2	0.21	0.12	0.11	0.20	0.28	0.24	0.19	0.15	0.12	0.08	0.17	0.16
P3	0.14	0.05	0.13	0.44	0.21	0.13	0.23	0.09	0.14	0.07	0.19	0.17
P4	0.18	0.18	0.05	0.27	0.06	0.15	0.25	0.10	0.14	0.14	0.15	0.15
P5	0.21	0.30	0.14	0.09	0.18	0.27	0.31	0.10	0.05	0.04	0.15	0.12
P6	0.24	0.29	0.03	0.12	0.21	0.30	0.16	0.28	0.27	0.34	0.21	0.26
P7	0.18	0.22	0.15	0.11	0.26	0.37	0.26	0.08	0.17	0.31	0.19	0.22
P8	0.27	0.22	0.23	0.09	0.05	0.11	0.33	0.11	0.14	0.13	0.14	0.14
P9	0.08	0.07	0.12	0.05	0.15	0.19	0.18	0.14	0.32	0.18	0.13	0.19
P10	0.37	0.35	0.28	0.30	0.10	0.11	0.31	0.21	0.13	0.22	0.24	0.19
P11	0.12	0.04	0.07	0.22	0.26	0.19	0.29	0.11	0.15	0.02	0.14	0.15
P12	0.30	0.13	0.16	0.28	0.18	0.09	0.21	0.20	0.05	0.14	0.18	0.15
P13	0.25	0.18	0.09	0.34	0.18	0.13	0.24	0.17	0.31	0.14	0.21	0.22
P14	0.20	0.16	0.07	0.19	0.13	0.21	0.15	0.17	0.29	0.16	0.17	0.19
P15	0.18	0.19	0.06	0.10	0.07	0.20	0.30	0.30	0.25	0.29	0.16	0.23
P16	0.10	0.21	0.14	0.03	0.33	0.28	0.28	0.23	0.24	0.30	0.19	0.25
P17	0.20	0.18	0.11	0.05	0.39	0.31	0.28	0.22	0.22	0.35	0.20	0.26
P18	0.21	0.27	0.20	0.10	0.31	0.31	0.29	0.22	0.15	0.35	0.22	0.24
P19	0.21	0.34	0.33	0.26	0.36	0.24	0.17	0.25	0.25	0.27	0.28	0.26

P20	0.18	0.09	0.30	0.20	0.14	0.05	0.08	0.17	0.15	0.16	0.17	0.14
P21	0.17	0.34	0.18	0.19	0.22	0.27	0.21	0.26	0.23	0.19	0.22	0.22
P22	0.15	0.33	0.26	0.21	0.15	0.04	0.03	0.12	0.28	0.26	0.21	0.18
P23	0.03	0.23	0.12	0.18	0.15	0.13	0.04	0.12	0.27	0.34	0.17	0.20
P24	0.07	0.19	0.03	0.16	0.17	0.12	0.28	0.17	0.28	0.22	0.15	0.21
P25	0.10	0.17	0.02	0.07	0.13	0.12	0.23	0.13	0.20	0.14	0.11	0.15
P26	0.02	0.09	0.01	0.03	0.10	0.08	0.13	0.03	0.09	0.14	0.06	0.09
P27	0.08	0.04	0.14	0.18	0.09	0.13	0.18	0.12	0.30	0.13	0.14	0.17
P28	0.09	0.09	0.12	0.02	0.12	0.18	0.23	0.18	0.24	0.11	0.11	0.16
P29	0.04	0.04	0.05	0.08	0.19	0.16	0.15	0.15	0.26	0.12	0.11	0.16
P30	0.12	0.13	0.17	0.23	0.33	0.23	0.26	0.23	0.26	0.11	0.21	0.23
P31	0.09	0.02	0.09	0.03	0.05	0.07	0.22	0.24	0.27	0.18	0.10	0.18
P32	0.10	0.04	0.08	0.09	0.09	0.06	0.24	0.23	0.24	0.22	0.12	0.19
P33	0.08	0.04	0.06	0.05	0.10	0.11	0.06	0.26	0.34	0.18	0.12	0.19
P34	0.35	0.35	0.33	0.18	0.13	0.09	0.09	0.27	0.28	0.21	0.24	0.20
P35	0.31	0.35	0.36	0.30	0.19	0.08	0.02	0.20	0.06	0.16	0.24	0.14
P36	0.29	0.30	0.34	0.35	0.19	0.10	0.07	0.22	0.05	0.27	0.25	0.18
P37	0.31	0.33	0.36	0.39	0.21	0.12	0.13	0.14	0.29	0.30	0.29	0.24
P38	0.32	0.34	0.38	0.42	0.23	0.11	0.17	0.12	0.23	0.30	0.30	0.23
P39	0.32	0.35	0.38	0.43	0.24	0.15	0.11	0.07	0.19	0.28	0.30	0.21
P40	0.28	0.32	0.36	0.42	0.25	0.22	0.05	0.09	0.17	0.30	0.29	0.21
P41	0.28	0.33	0.37	0.40	0.25	0.27	0.07	0.05	0.16	0.33	0.29	0.21
P42	0.29	0.33	0.38	0.35	0.20	0.23	0.11	0.10	0.16	0.35	0.28	0.22
P43	0.31	0.35	0.40	0.31	0.10	0.24	0.16	0.09	0.15	0.38	0.27	0.21
P44	0.32	0.35	0.40	0.31	0.16	0.27	0.16	0.07	0.12	0.37	0.27	0.21
P45	0.31	0.34	0.34	0.31	0.10	0.24	0.14	0.05	0.10	0.30	0.24	0.17
P46	0.30	0.29	0.32	0.32	0.07	0.19	0.11	0.04	0.08	0.25	0.22	0.15
P47	0.29	0.34	0.38	0.33	0.07	0.08	0.09	0.04	0.01	0.21	0.22	0.11
P48	0.29	0.34	0.41	0.29	0.06	0.05	0.09	0.07	0.08	0.14	0.21	0.11
P49	0.22	0.28	0.40	0.19	0.06	0.03	0.08	0.06	0.16	0.12	0.18	0.11
P50	0.15	0.21	0.36	0.13	0.12	0.05	0.04	0.04	0.14	0.18	0.16	0.11
S1	0.19	0.23	0.23	0.15	0.24	0.32	0.11	0.24	0.37	0.42	0.25	0.29
S2	0.27	0.32	0.39	0.28	0.05	0.09	0.05	0.30	0.42	0.36	0.28	0.27
S3	0.13	0.03	0.06	0.25	0.23	0.15	0.28	0.16	0.15	0.05	0.15	0.16
S4	0.27	0.05	0.01	0.28	0.15	0.11	0.13	0.16	0.15	0.07	0.15	0.14
S5	0.17	0.03	0.08	0.28	0.18	0.13	0.20	0.19	0.20	0.16	0.17	0.19
S6	0.24	0.06	0.06	0.05	0.21	0.09	0.15	0.10	0.35	0.20	0.14	0.19
S7	0.38	0.09	0.02	0.11	0.24	0.17	0.19	0.05	0.33	0.23	0.17	0.20
S8	0.38	0.30	0.16	0.18	0.15	0.09	0.18	0.14	0.34	0.23	0.21	0.21
S9	0.25	0.19	0.09	0.24	0.12	0.20	0.19	0.18	0.25	0.18	0.19	0.20
S10	0.14	0.06	0.05	0.01	0.23	0.18	0.18	0.05	0.06	0.05	0.08	0.09
S11	0.16	0.07	0.11	0.03	0.11	0.13	0.04	0.04	0.02	0.07	0.08	0.06
S12	0.12	0.07	0.20	0.07	0.06	0.03	0.06	0.07	0.02	0.03	0.08	0.04
S13	0.06	0.18	0.09	0.02	0.02	0.04	0.06	0.03	0.05	0.05	0.06	0.04
S14	0.03	0.05	0.05	0.06	0.05	0.03	0.03	0.02	0.02	0.04	0.04	0.03
S15	0.12	0.13	0.10	0.04	0.06	0.07	0.03	0.06	0.07	0.20	0.09	0.09
S16	0.21	0.23	0.17	0.13	0.04	0.07	0.04	0.20	0.26	0.19	0.16	0.16
S17	0.05	0.15	0.08	0.06	0.08	0.12	0.08	0.19	0.27	0.22	0.12	0.17
S18	0.05	0.09	0.07	0.06	0.02	0.10	0.11	0.04	0.10	0.09	0.07	0.08
S19	0.09	0.25	0.07	0.29	0.24	0.23	0.03	0.08	0.05	0.15	0.18	0.14

S20	0.16	0.15	0.10	0.26	0.13	0.14	0.19	0.12	0.08	0.16	0.16	0.15
S21	0.21	0.17	0.09	0.14	0.11	0.22	0.19	0.08	0.02	0.15	0.13	0.11
S22	0.30	0.21	0.13	0.17	0.26	0.28	0.15	0.13	0.14	0.14	0.19	0.17
S23	0.24	0.17	0.26	0.08	0.05	0.03	0.12	0.19	0.10	0.03	0.13	0.09
S24	0.04	0.11	0.15	0.19	0.14	0.26	0.24	0.19	0.18	0.07	0.15	0.17
S25	0.15	0.30	0.13	0.07	0.13	0.15	0.17	0.18	0.23	0.10	0.15	0.15
S26	0.19	0.36	0.07	0.15	0.14	0.06	0.08	0.23	0.22	0.16	0.17	0.17
S27	0.22	0.33	0.11	0.05	0.22	0.29	0.12	0.15	0.04	0.09	0.15	0.12
S28	0.14	0.08	0.03	0.03	0.27	0.14	0.16	0.16	0.08	0.16	0.11	0.14
S29	0.09	0.07	0.17	0.05	0.07	0.23	0.10	0.15	0.20	0.28	0.13	0.17
S30	0.05	0.09	0.15	0.03	0.09	0.13	0.14	0.19	0.30	0.36	0.13	0.21
S31	0.14	0.16	0.22	0.18	0.12	0.08	0.09	0.17	0.20	0.25	0.17	0.17
S32	0.13	0.10	0.09	0.03	0.05	0.08	0.15	0.26	0.20	0.18	0.11	0.16

Appendix E – Bird View of the Topography Surrounding Project Site


LIN BARN TSUEN
練板村
YAN SHAU WAI
仁壽圍
新田荷花池
Castle Peak Rd - San Tin
Kwu Tung Rd
Hadden Hill
Ki Lun Shan
Ki Lun Shan
麒麟山
巨輪集團
Warehouse
粉嶺洗車屋
Car wash
TSING LUNG TSUEN
KI LUN TSUEN
麒麟村
Fish Pond
SAN TIN
新田
LUK MEI TSUEN
鹿尾村
MAI PO SAN TSUEN
米埔新村
SHEK WU WAI
石湖圍
PANG LOON TEI
彭龍地
WO SHANG WAI
和生圍
Fish Pond
MAI PO LUNG TSUEN
米埔隴村
Ki Lun Tsuen Playground
麒麟村遊樂場
鴻日農莊 Hung Yat Farm
SHEK WU WAI SAN TSUEN
石湖圍新村
WO SHANG WAI
和生圍
Scene garden
Rolling Hills II
SIU HUM TSUEN
小磡村
Fish Pond
PALM SPRINGS
加州花園
Crescendo
意花園
Christian New Life Association
新生團
Pine Tree Hill
Pine Tree Hill
Ngau Tam Shan
Fish Pond
Ngau Tam Shan (337m)
Legend
Project Site
Yau Tam Mei San Tsuen
姚聖母廟

Appendix F – VR Contour and Vector plots of the Whole Computational Domain (Baseline Scheme & Proposed Scheme)

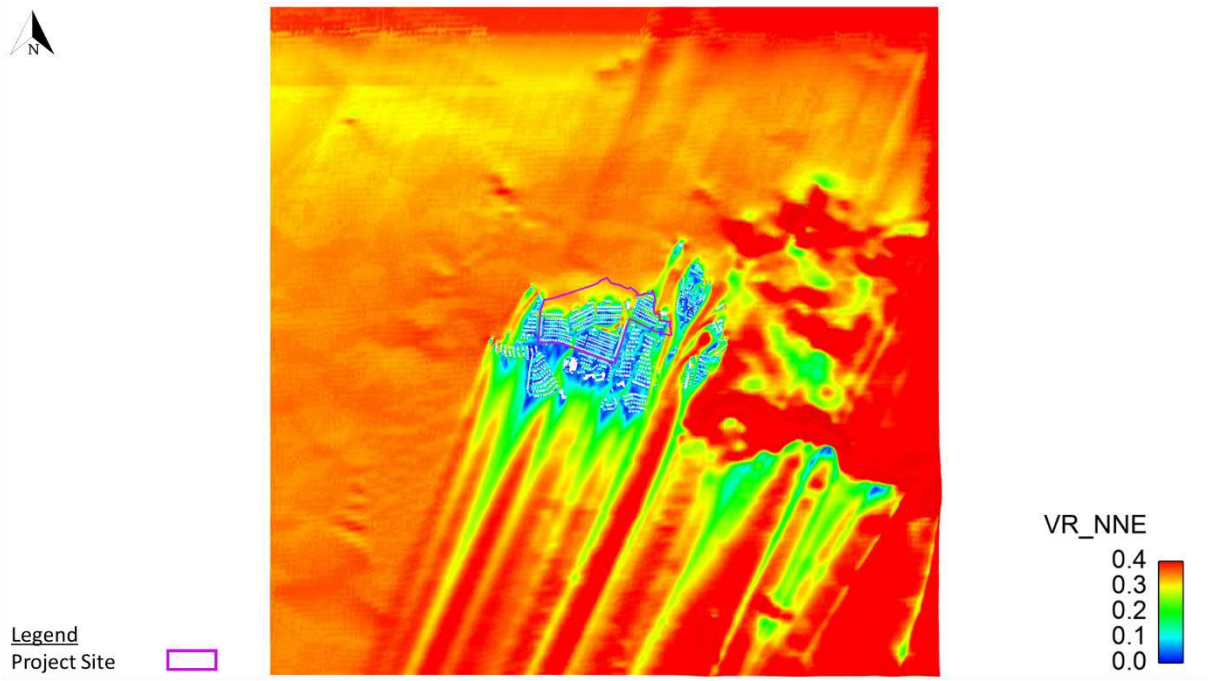


Figure 1 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

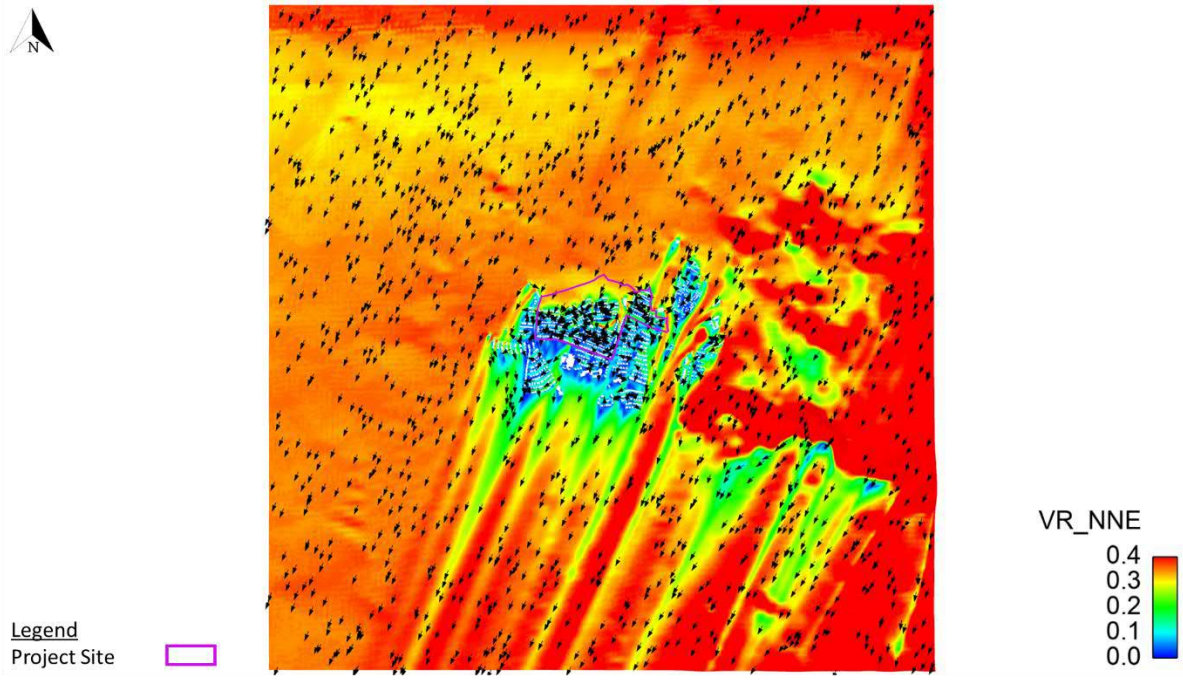


Figure 2 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

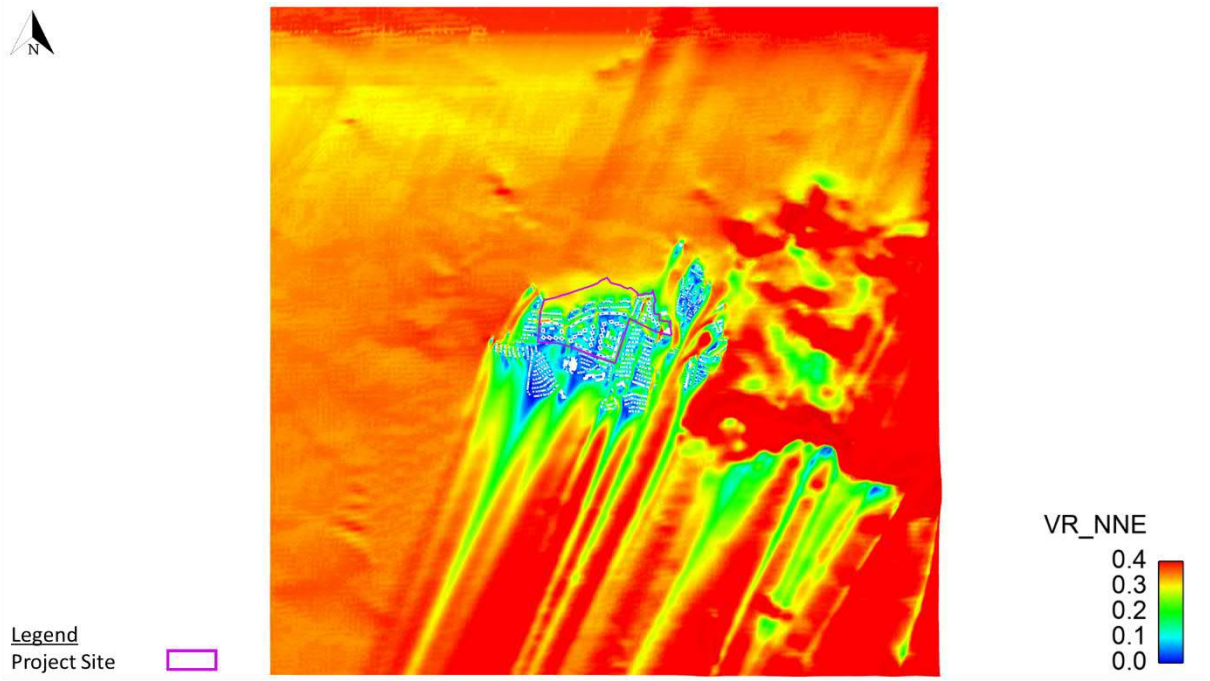


Figure 3 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

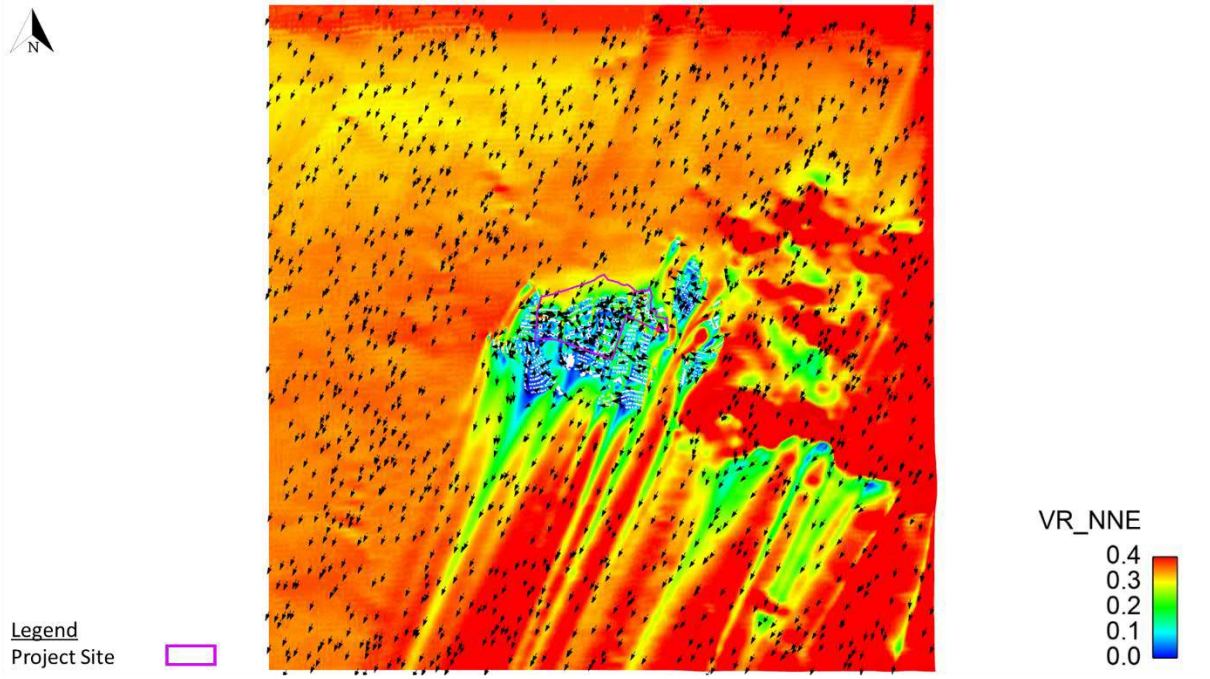


Figure 4 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

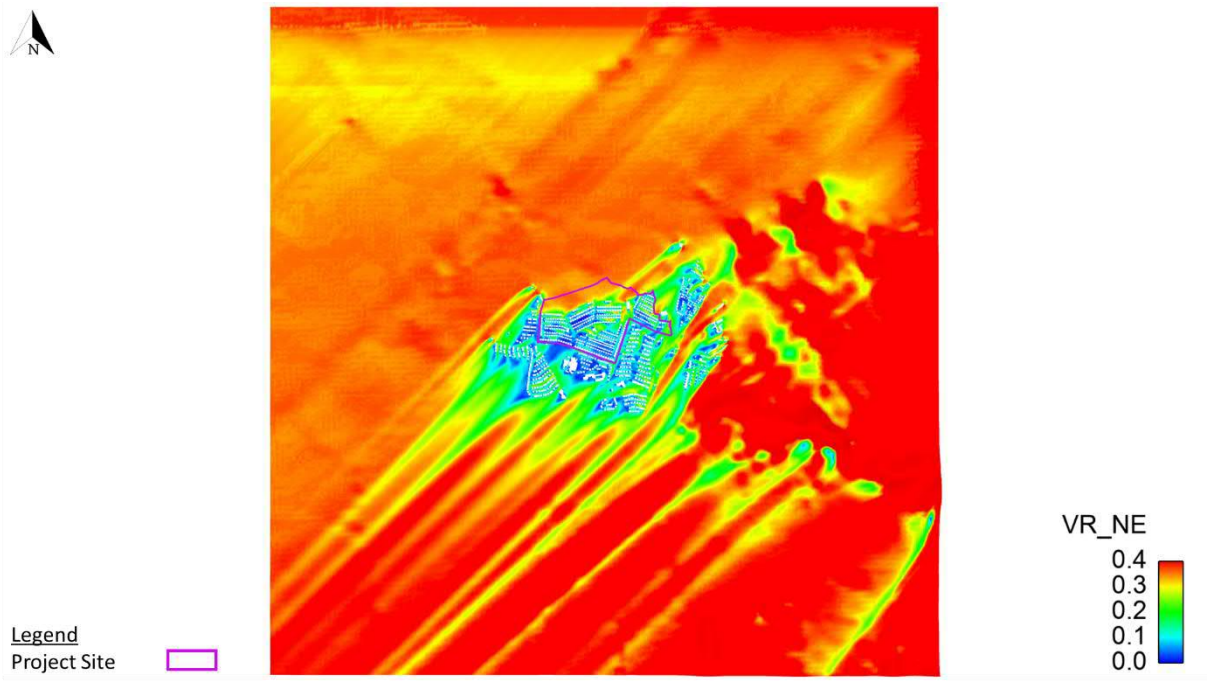


Figure 5 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

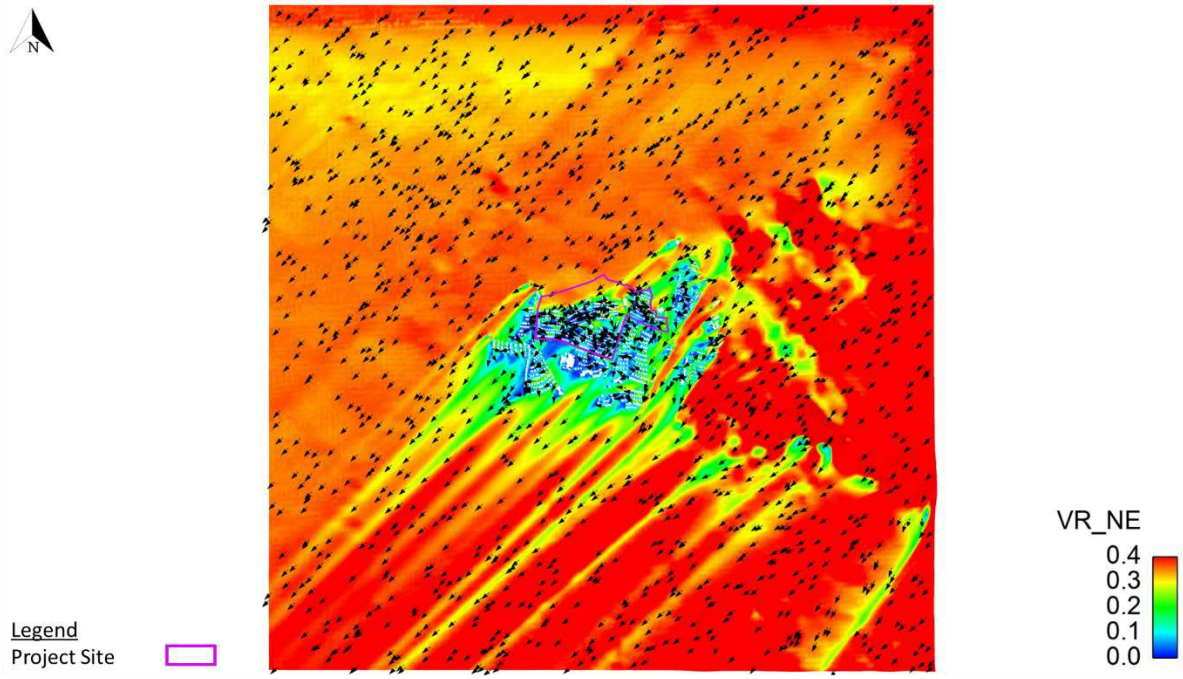


Figure 6 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

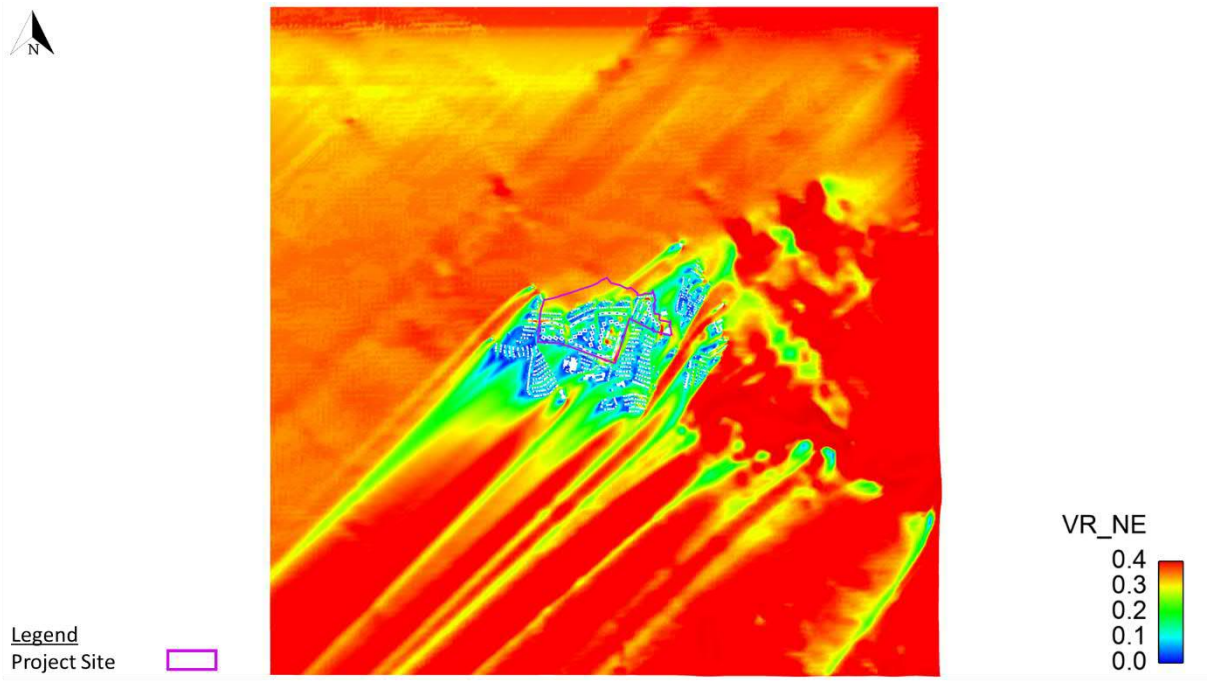


Figure 7 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

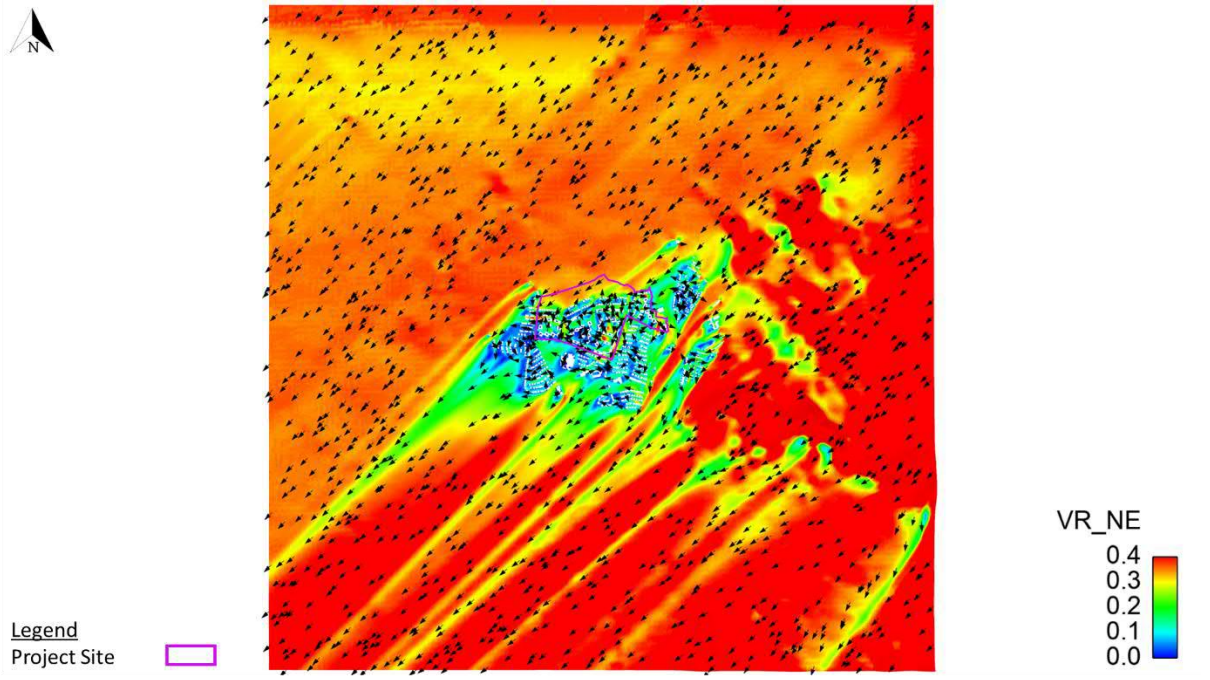


Figure 8 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

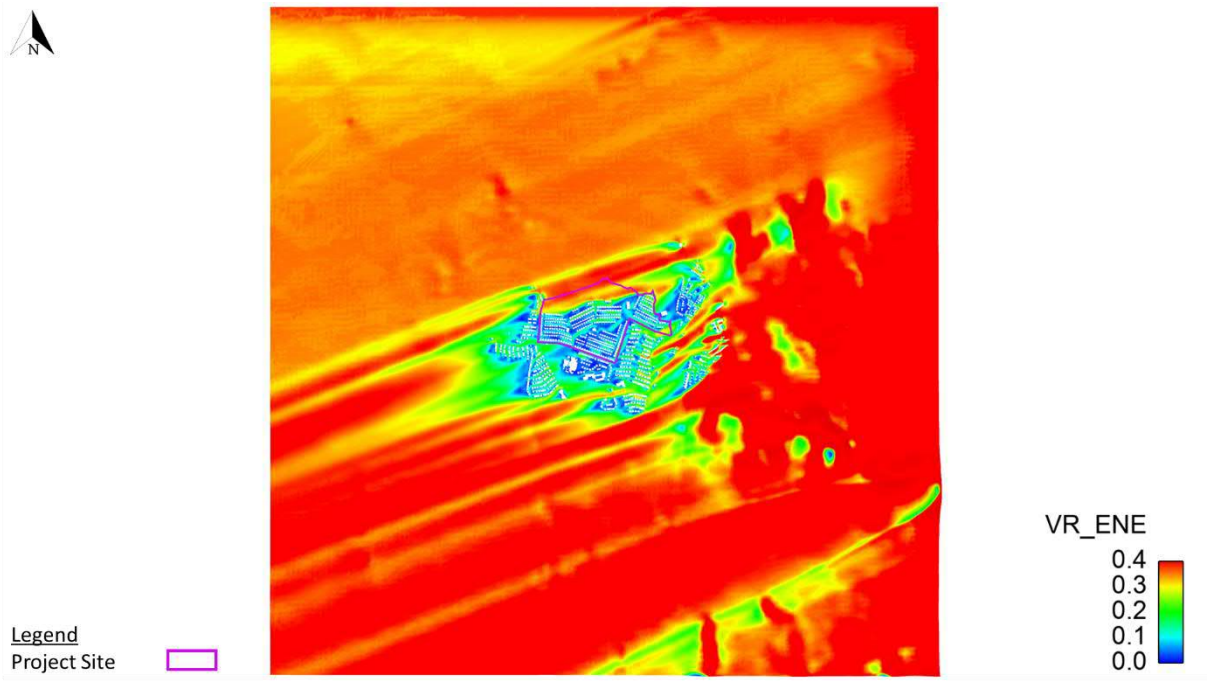


Figure 9 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

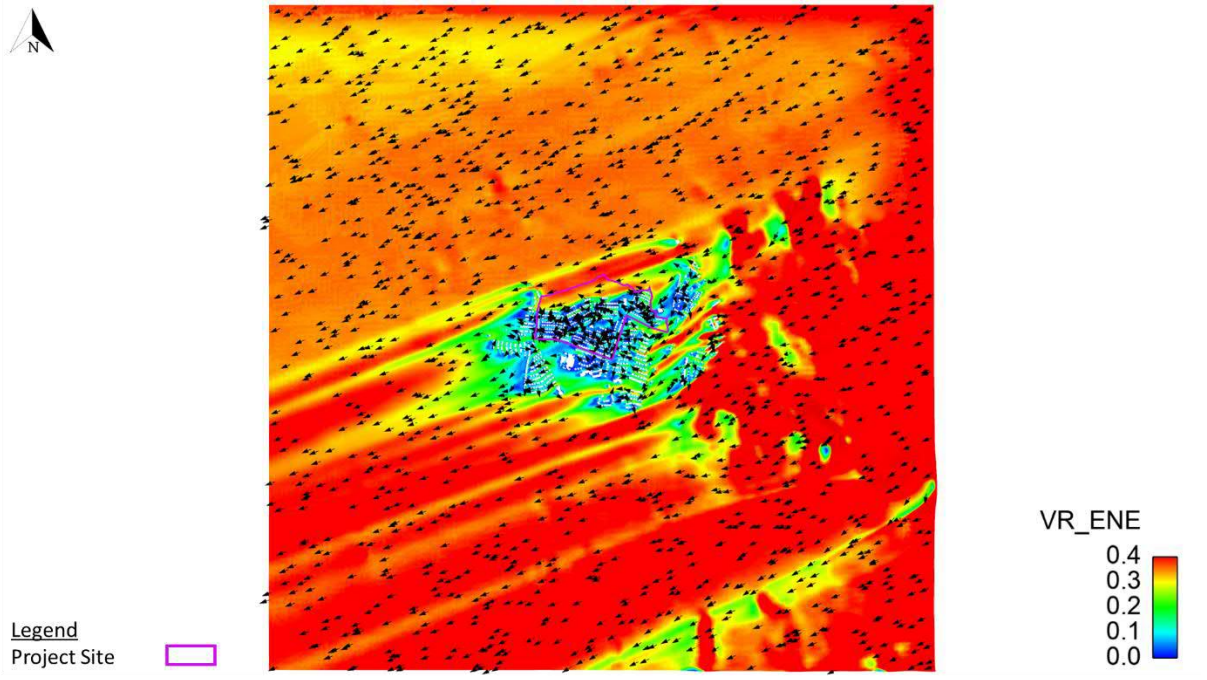


Figure 10 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

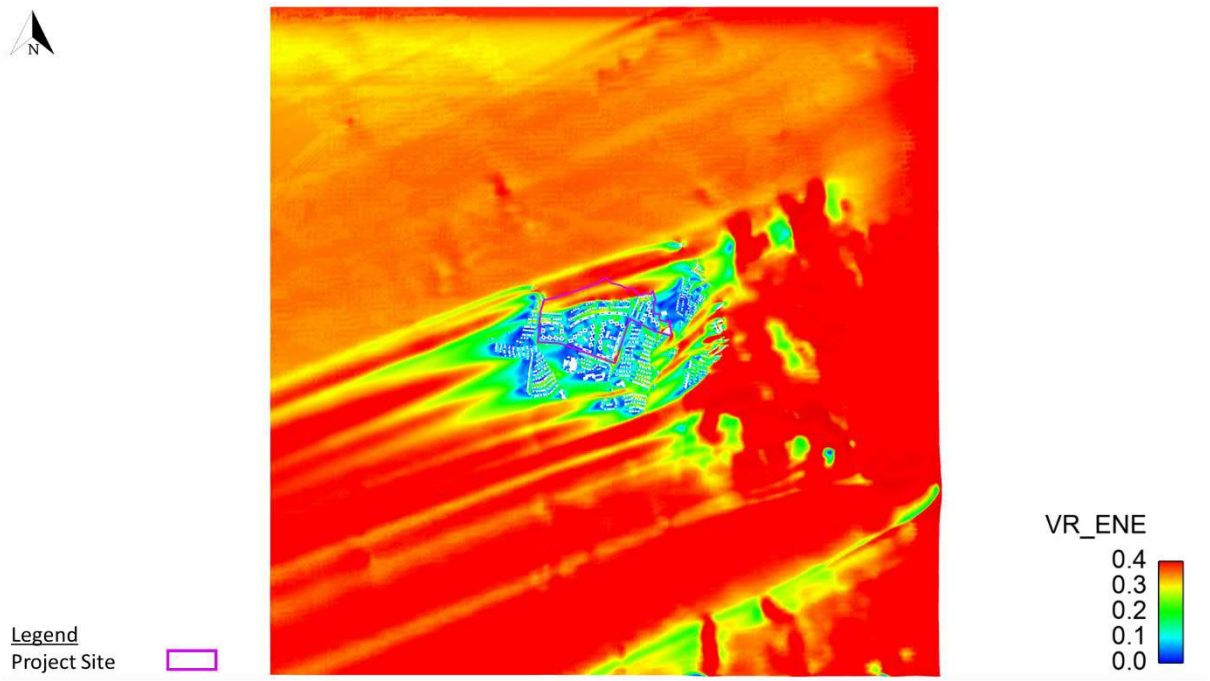


Figure 11 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

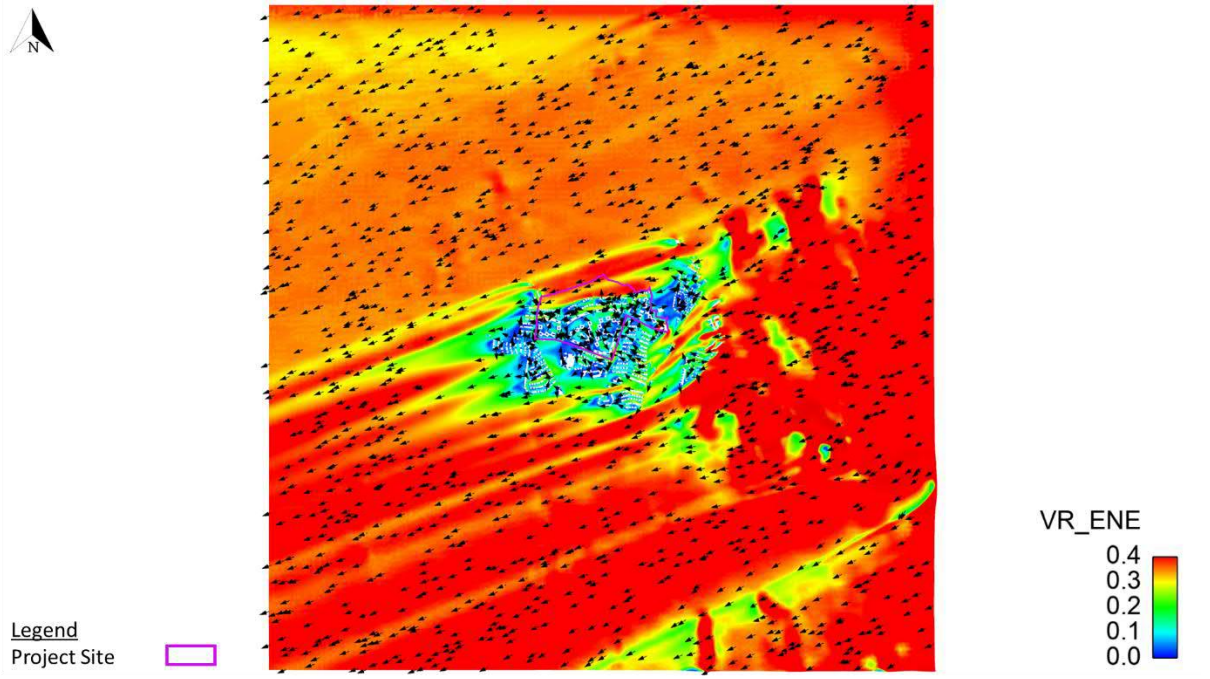


Figure 12 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

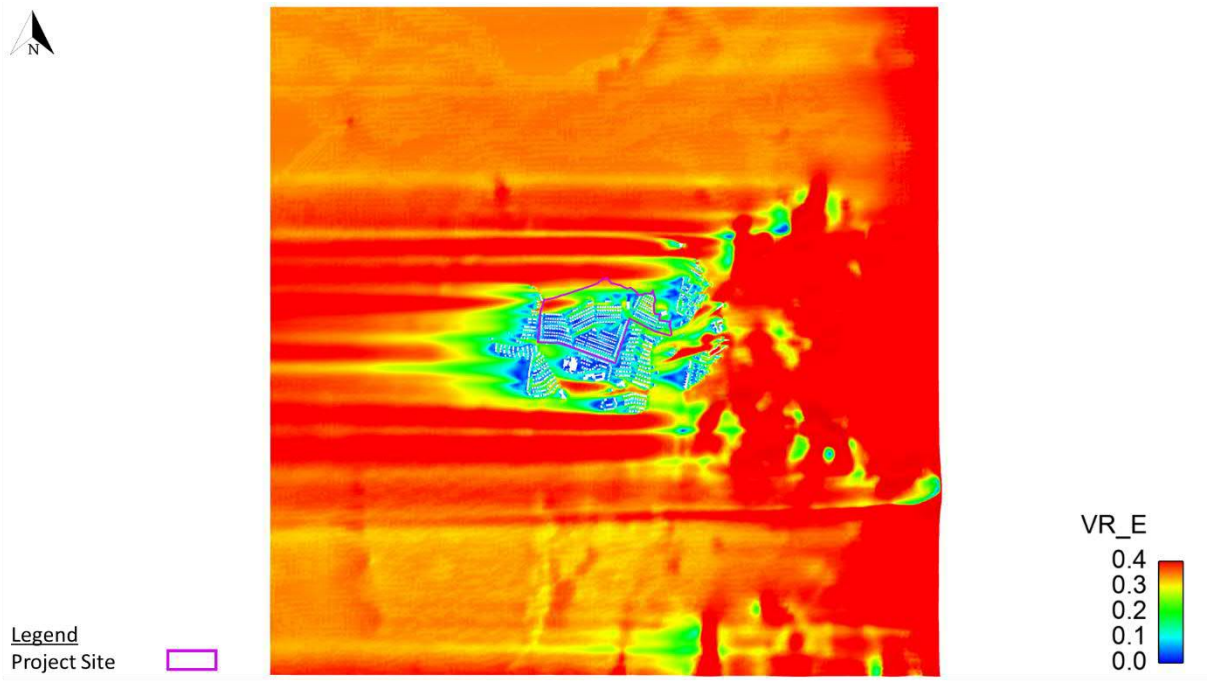


Figure 13 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

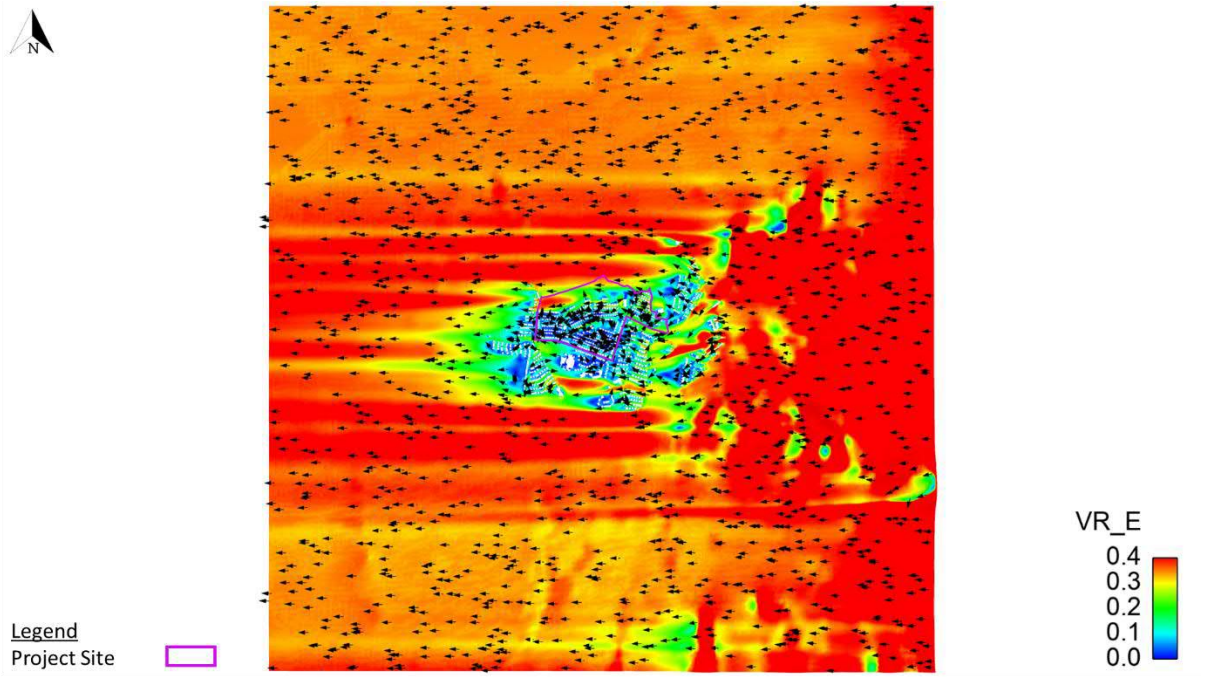


Figure 14 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

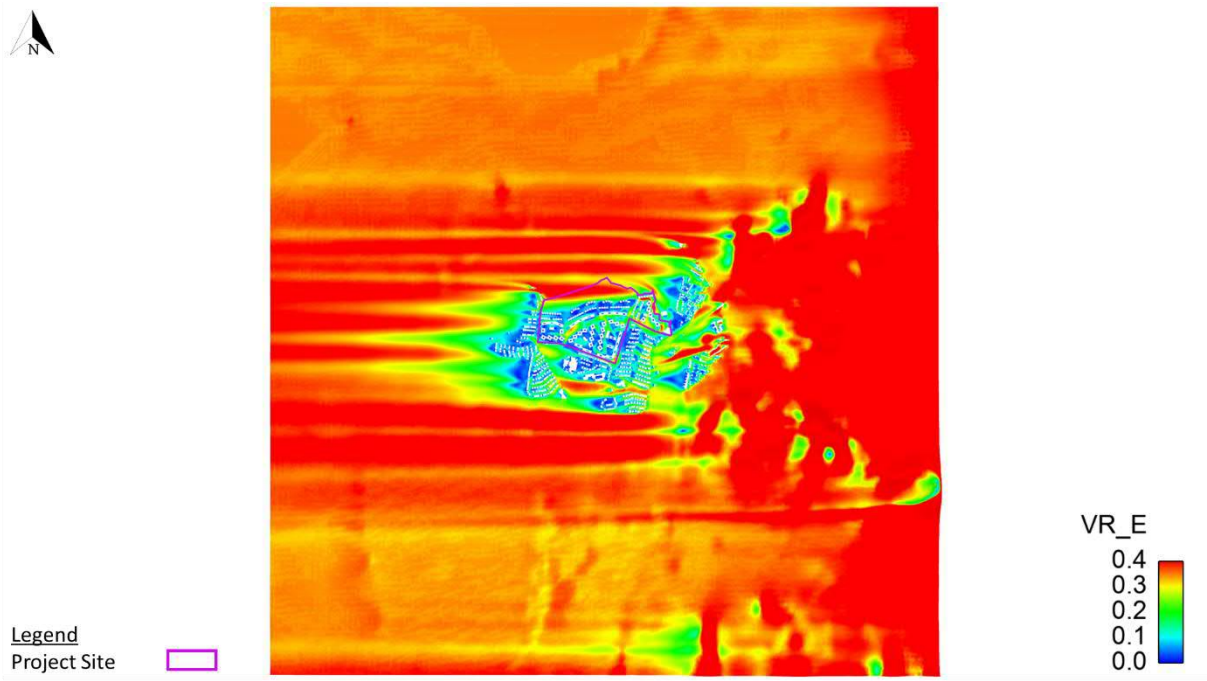


Figure 15 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

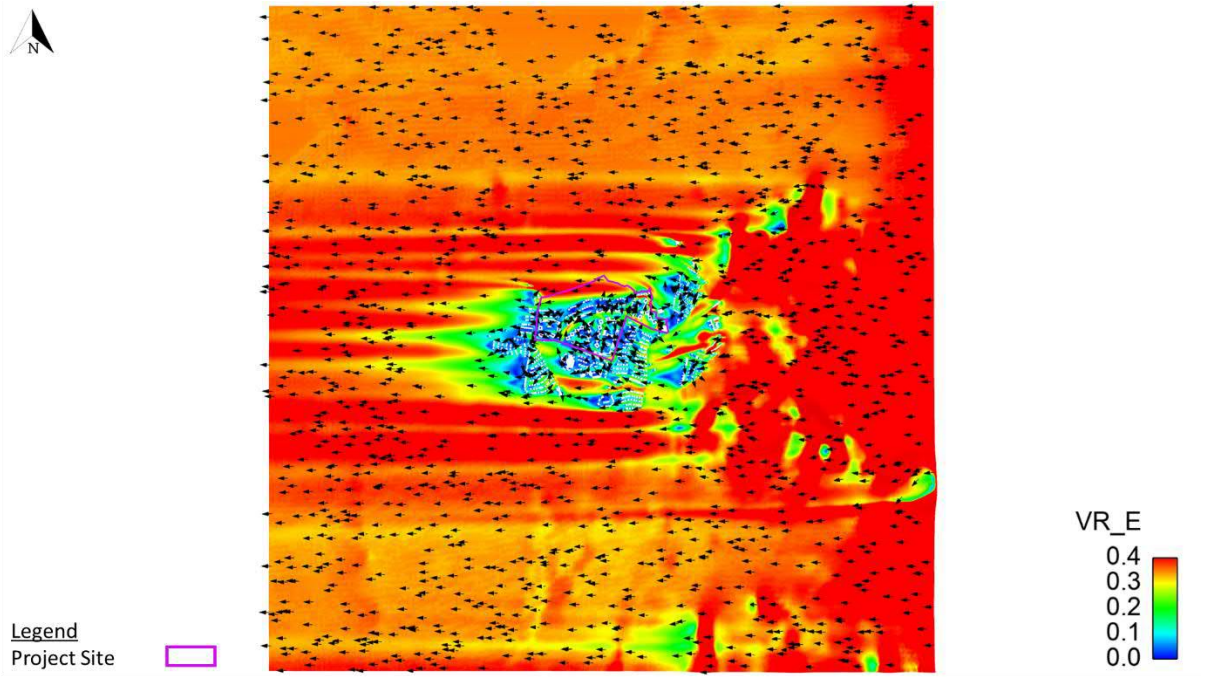


Figure 16 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

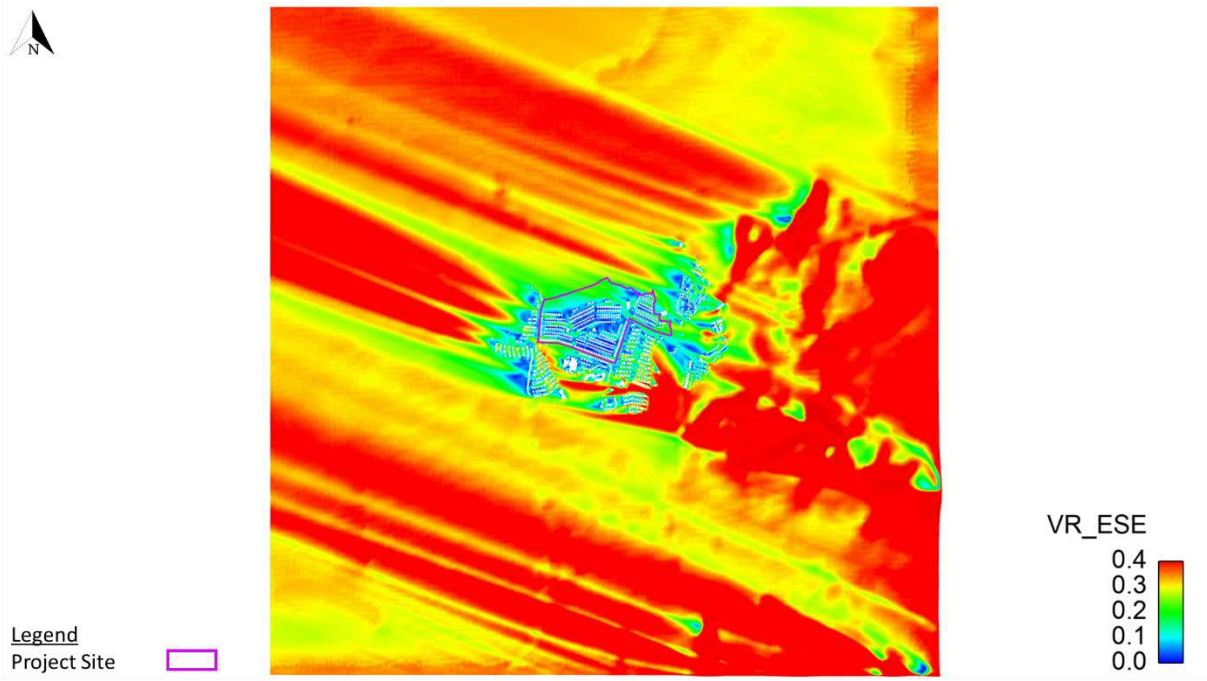


Figure 17 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

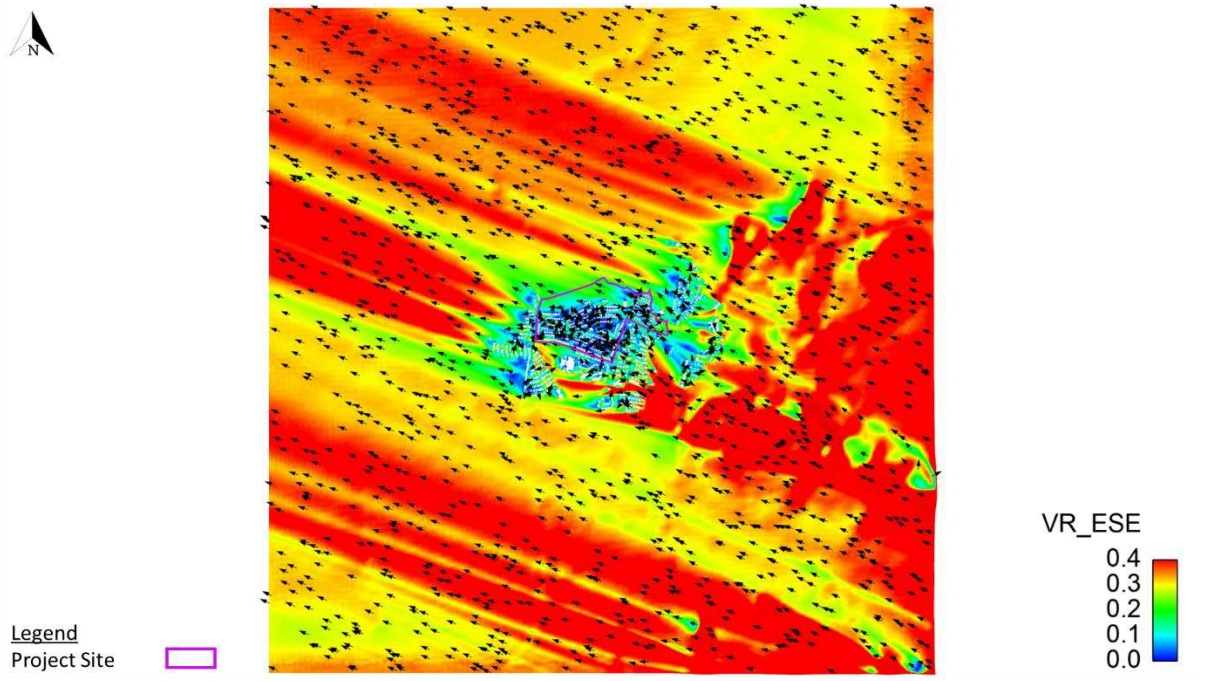


Figure 18 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

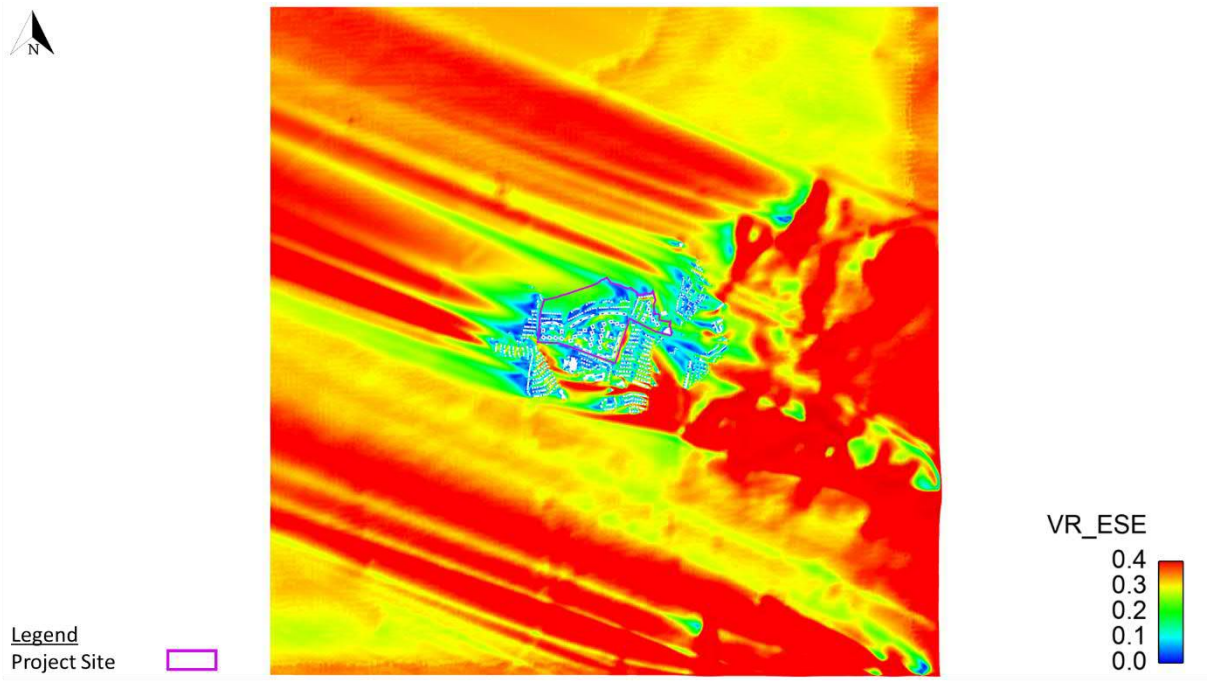


Figure 19 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

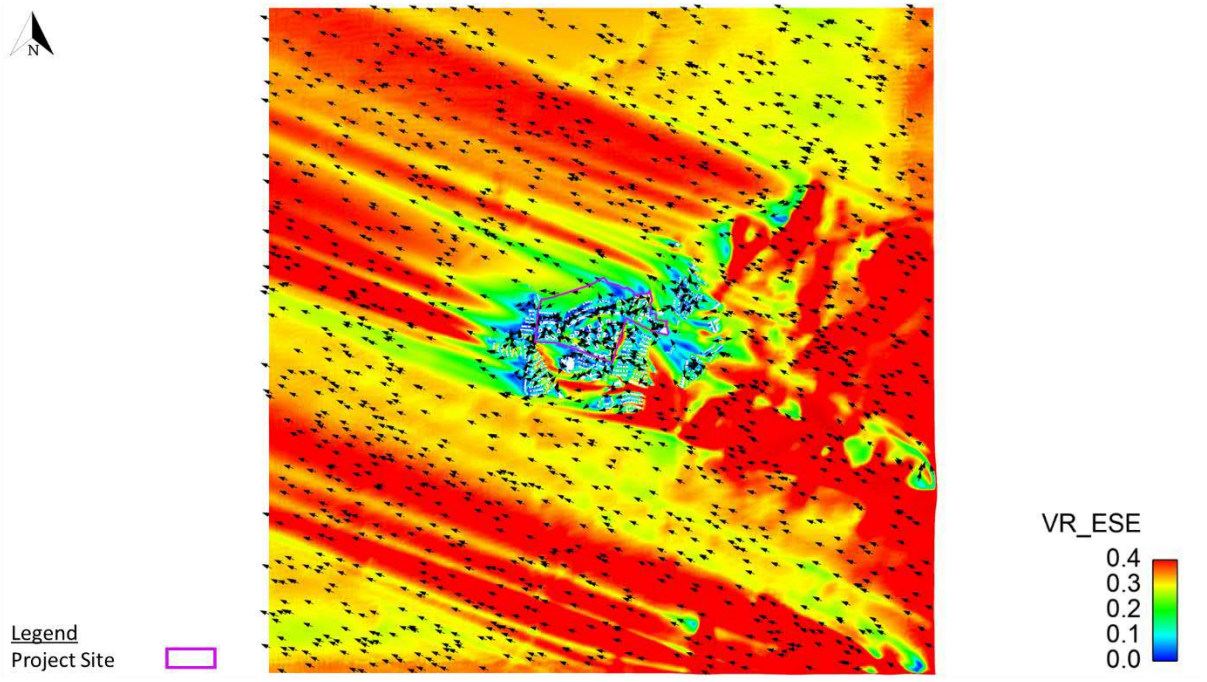


Figure 20 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

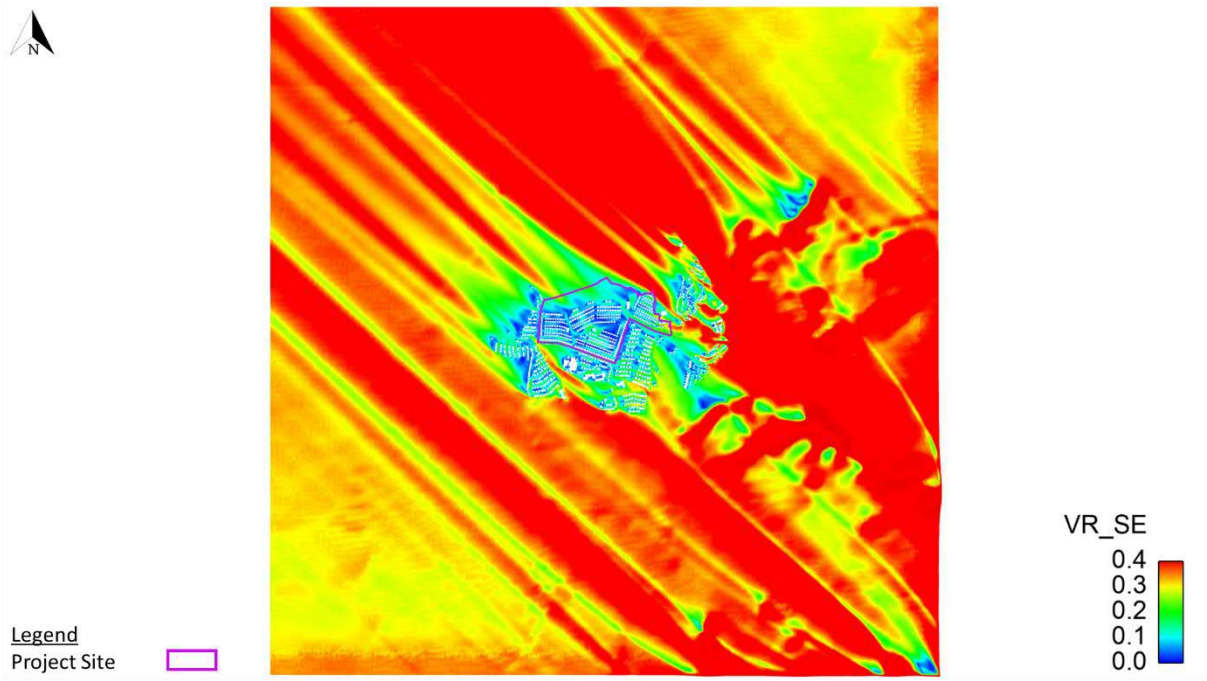


Figure 21 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

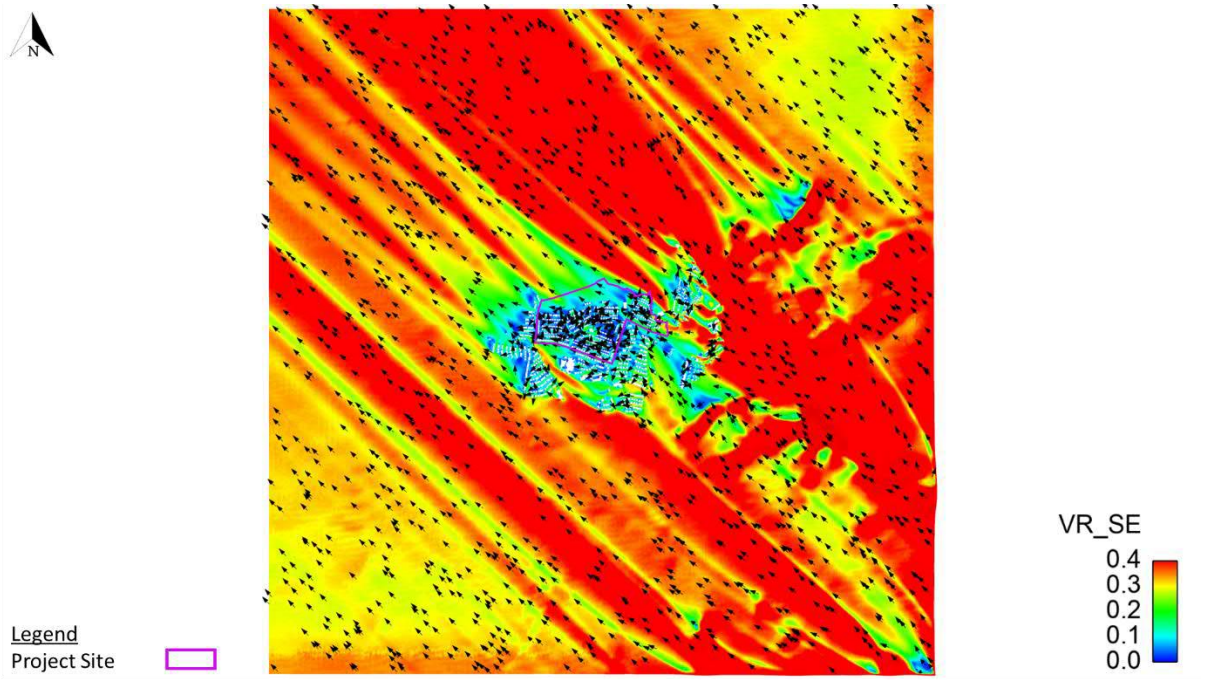


Figure 22 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

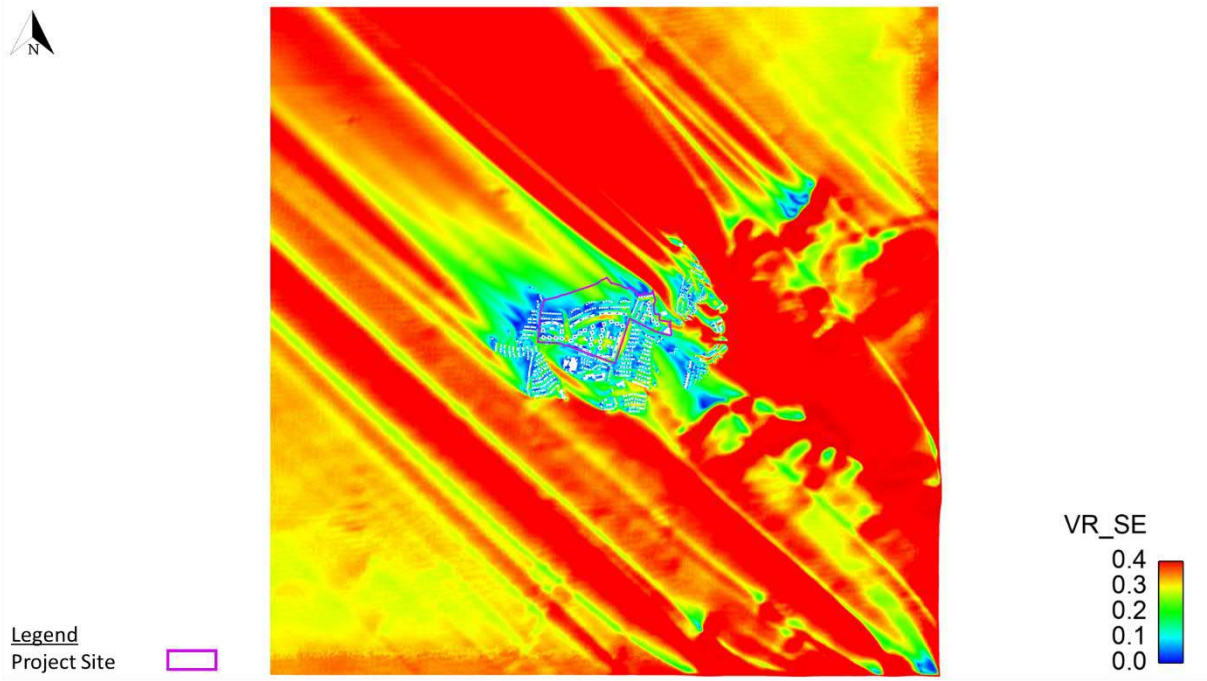


Figure 23 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

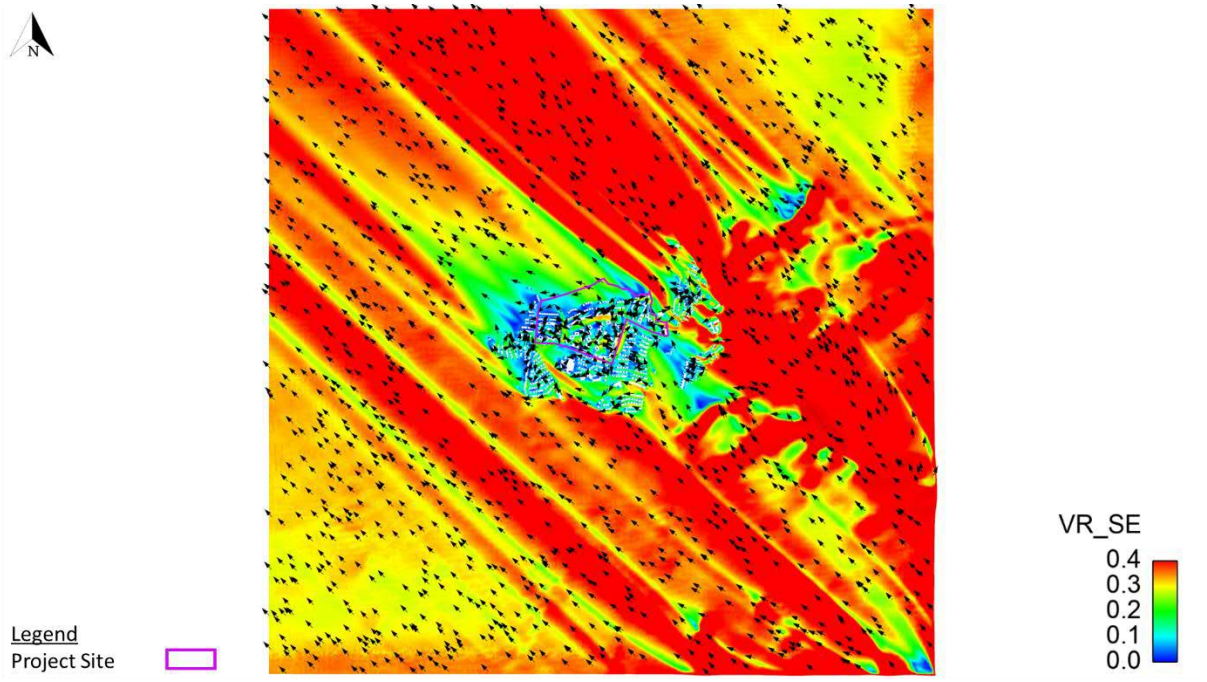


Figure 24 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

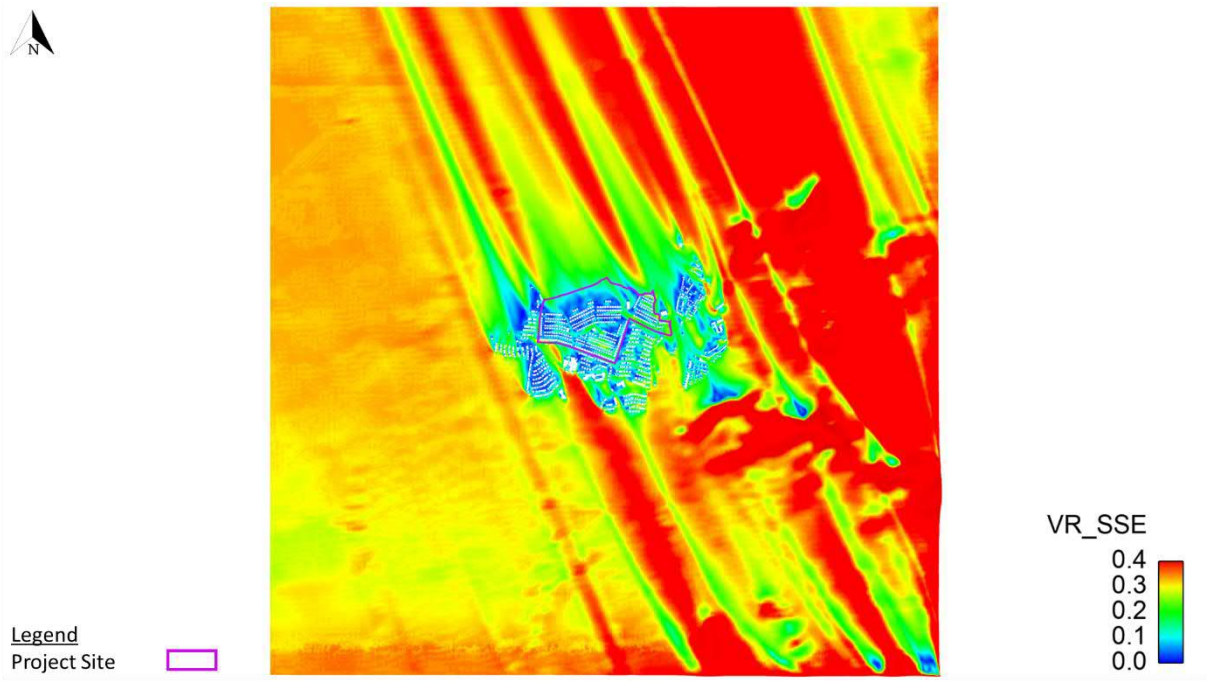


Figure 25 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

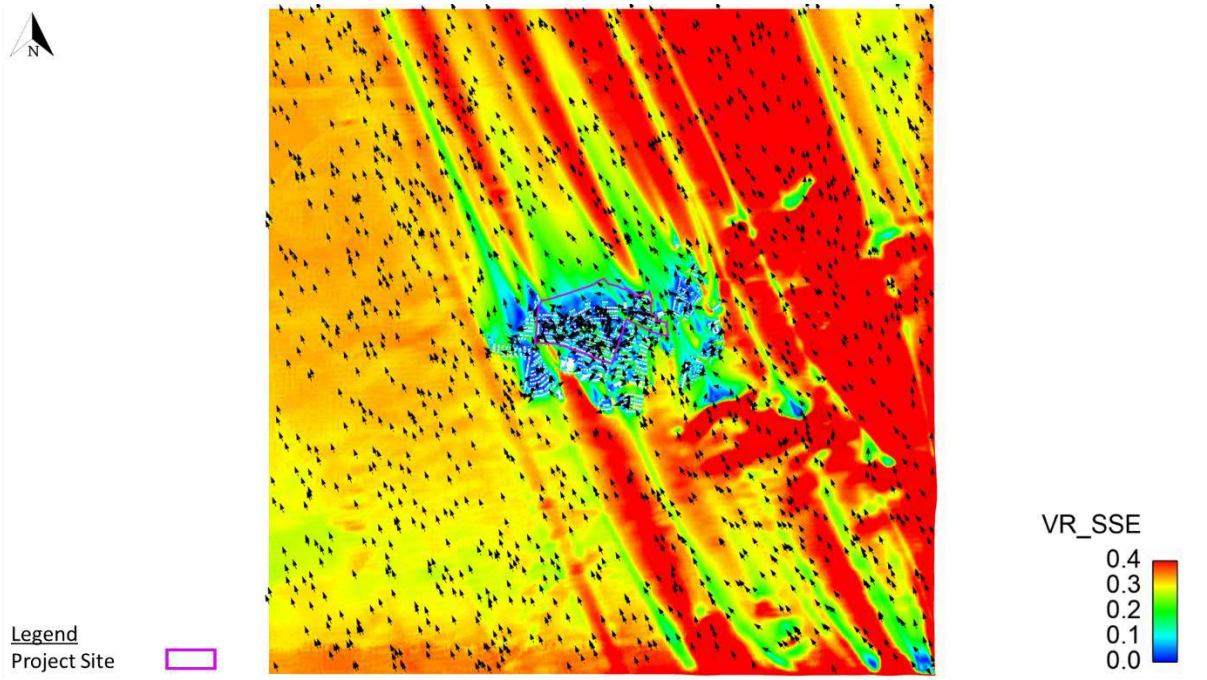


Figure 26 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

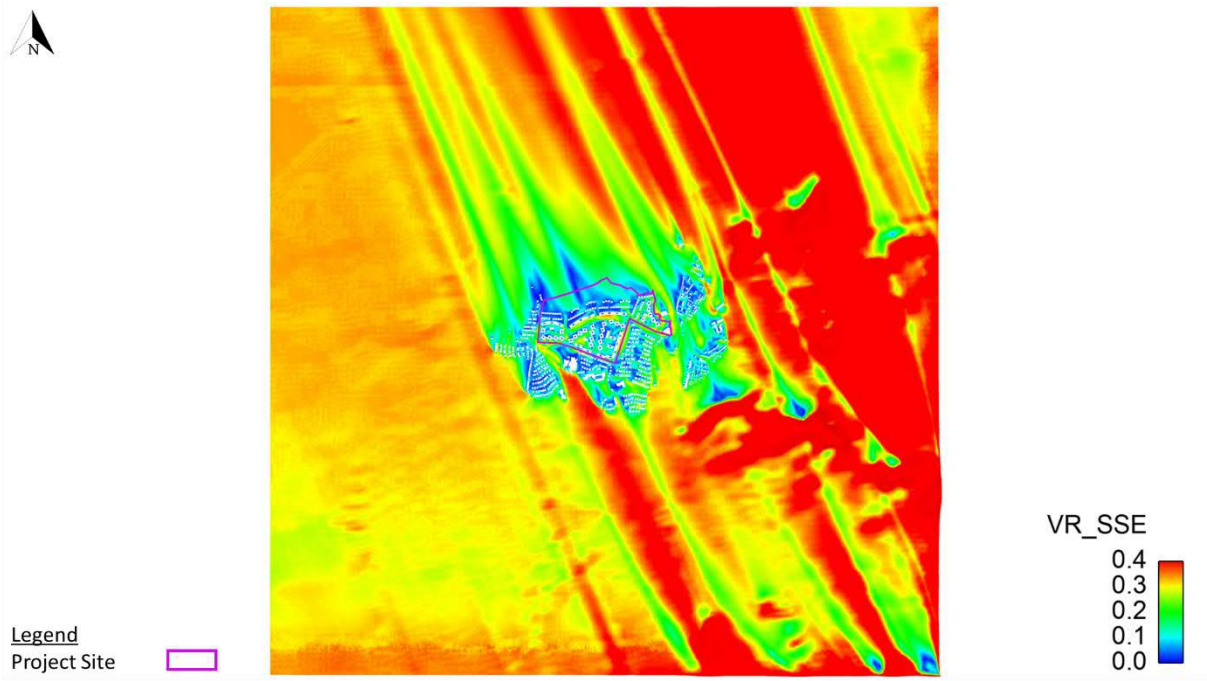


Figure 27 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

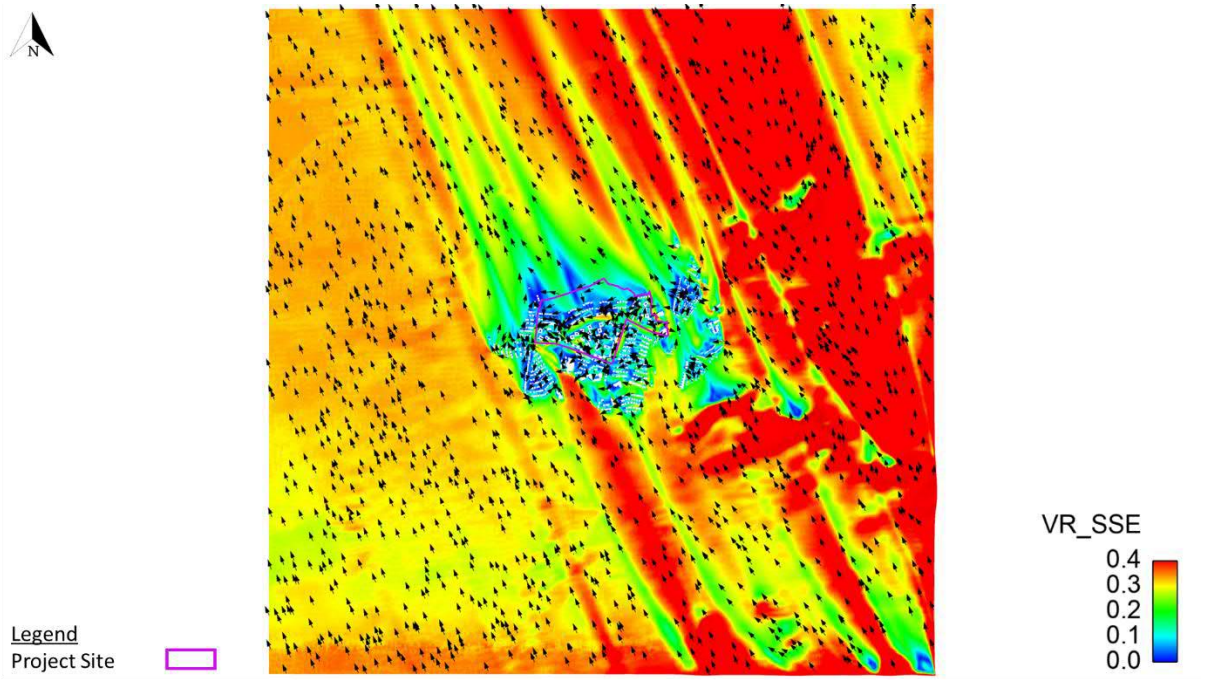


Figure 28 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

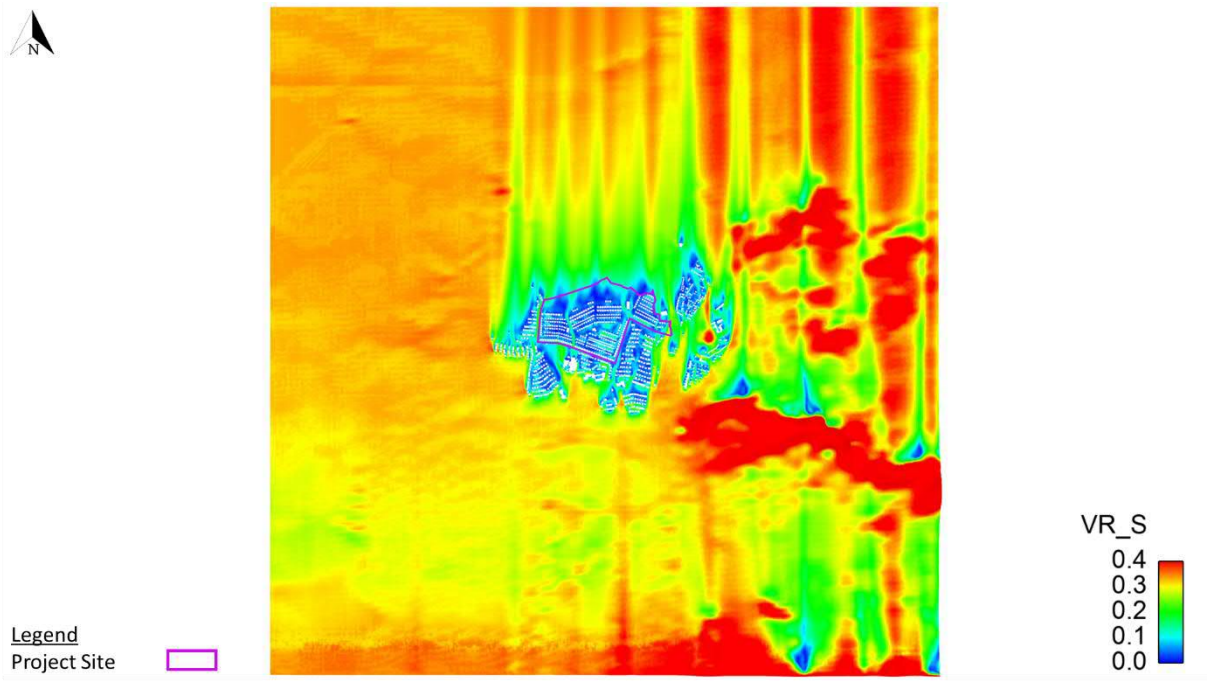


Figure 29 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

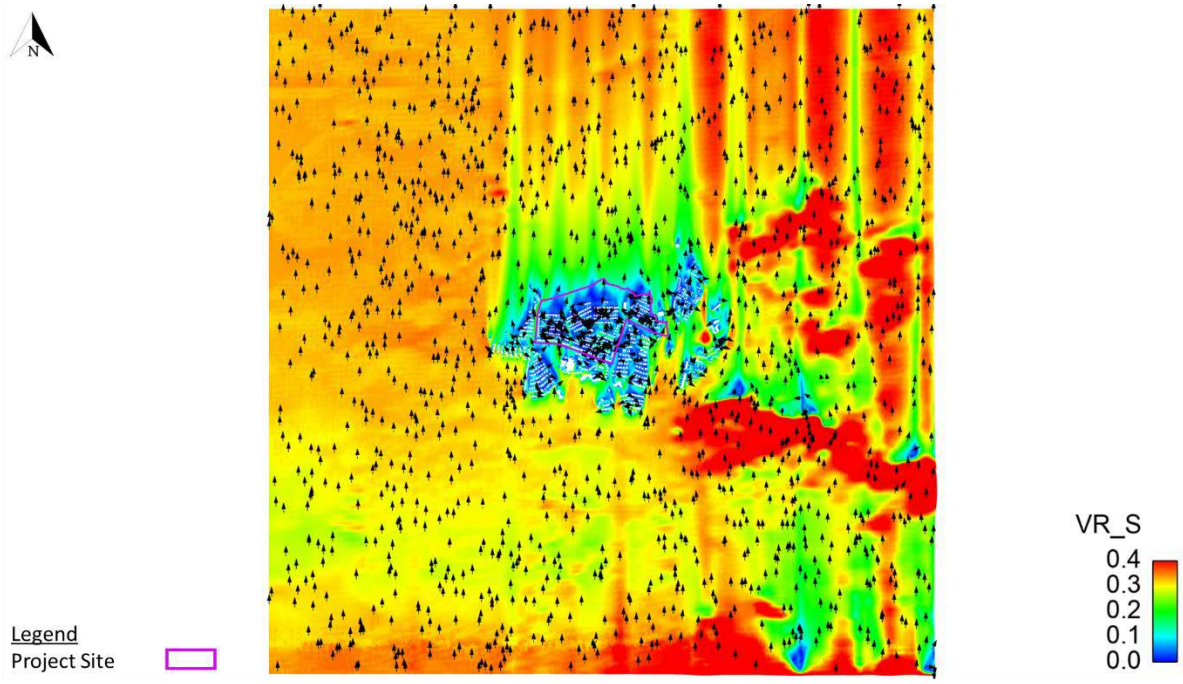


Figure 30 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

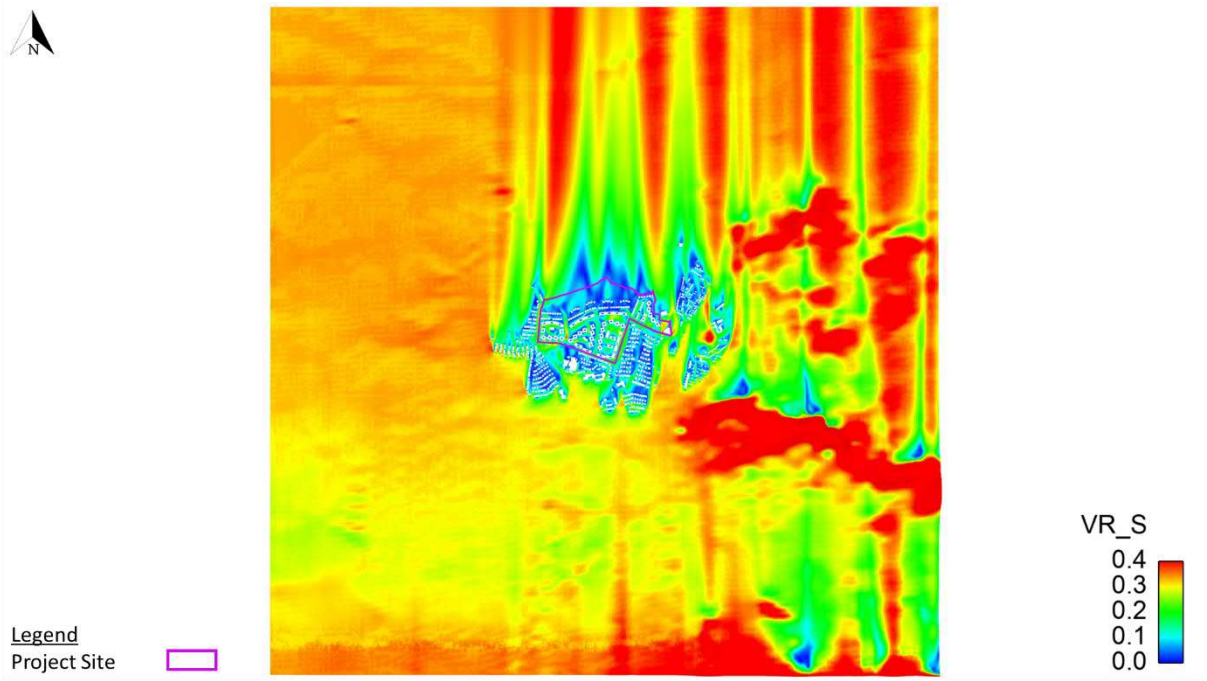


Figure 31 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

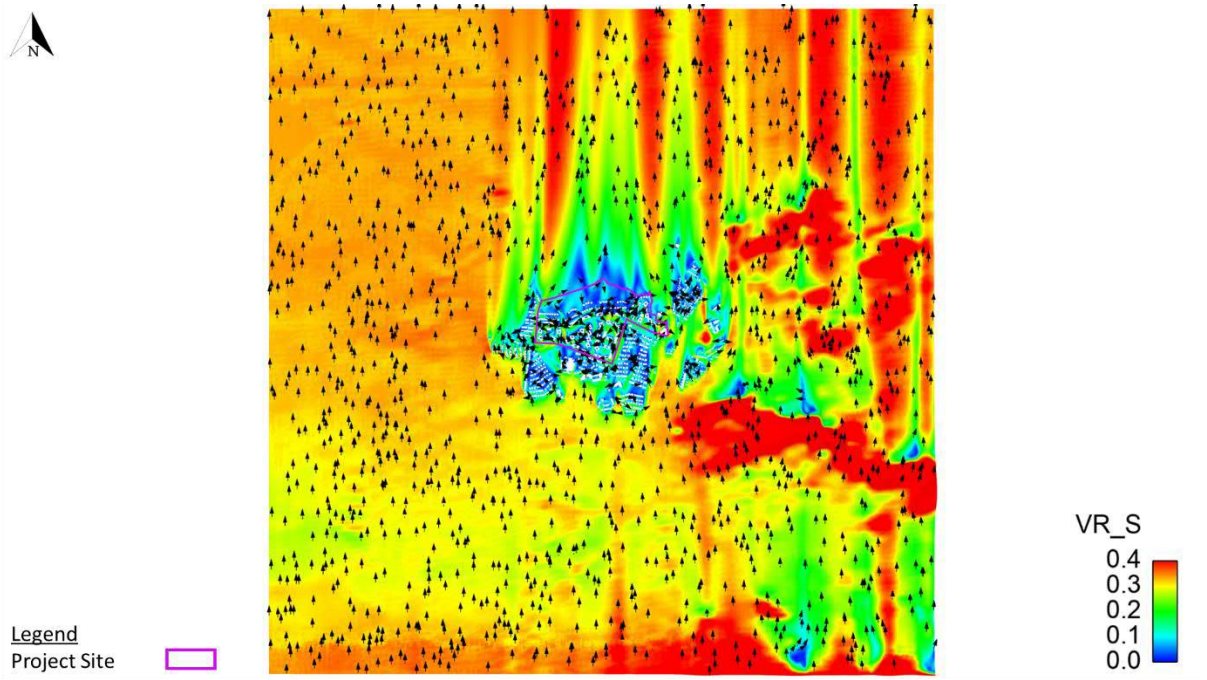


Figure 32 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

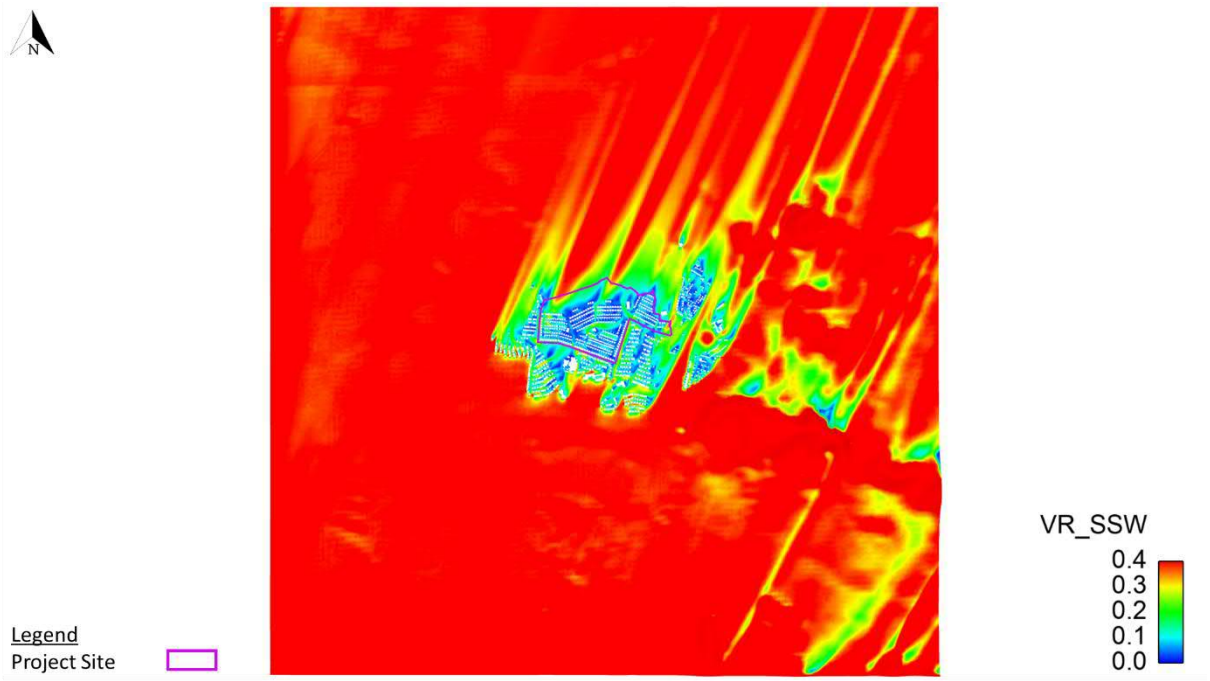


Figure 33 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

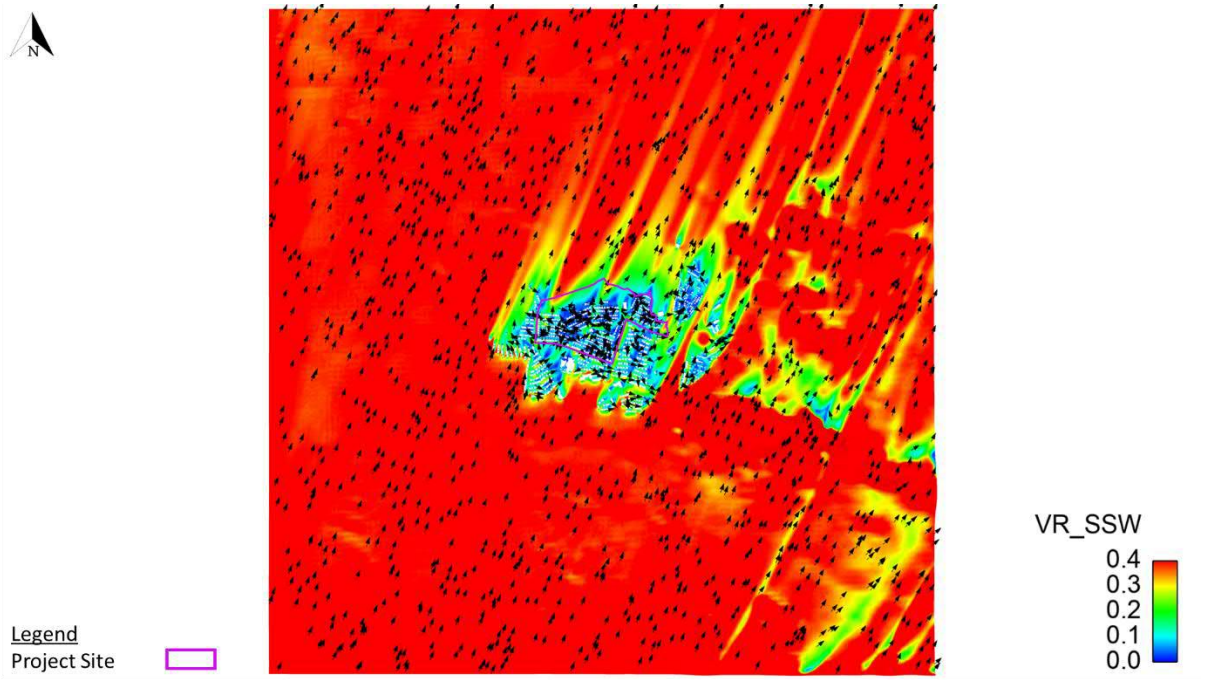


Figure 34 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

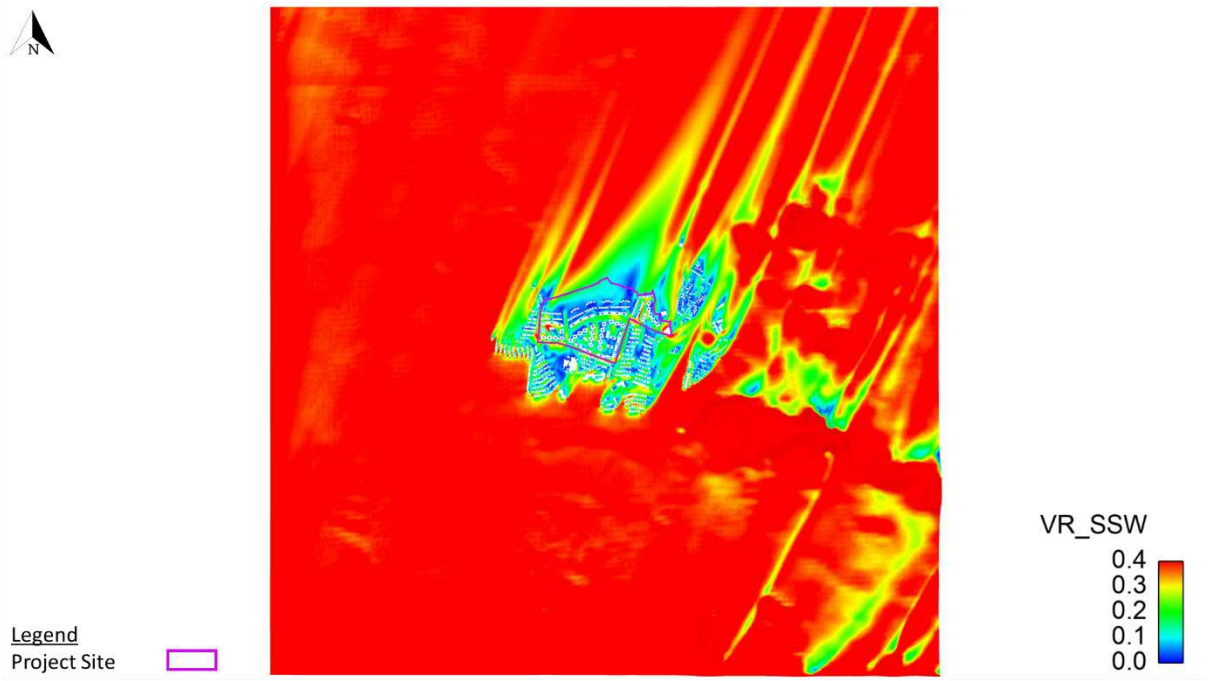


Figure 35 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

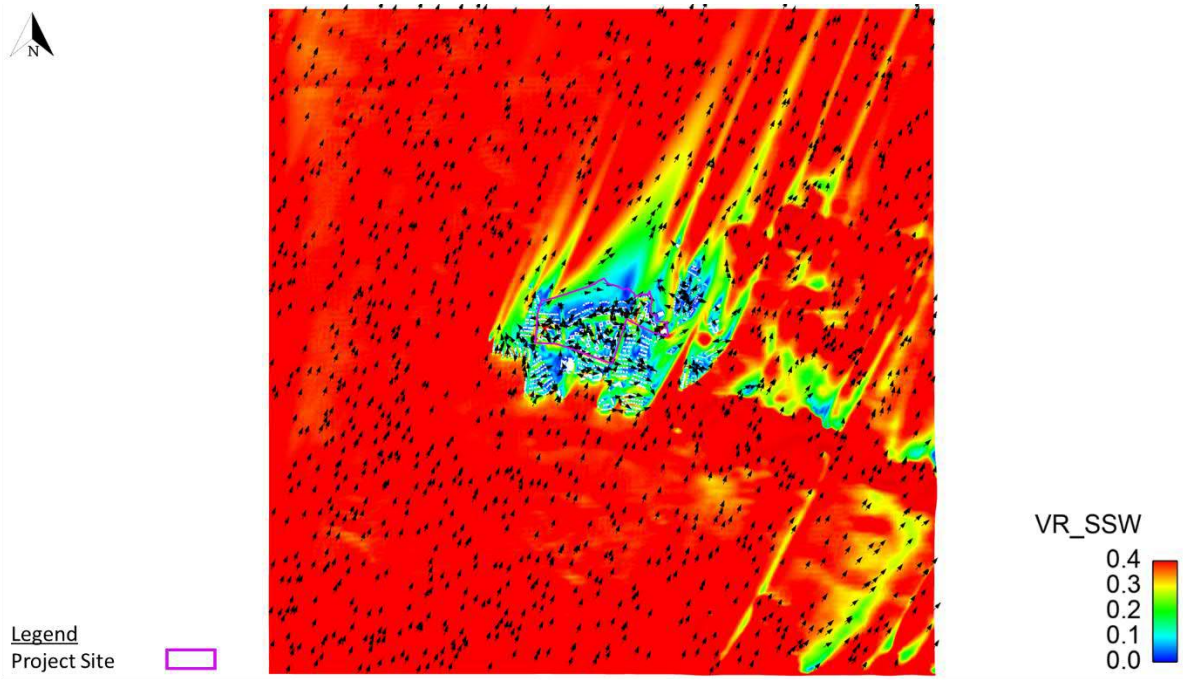


Figure 36 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

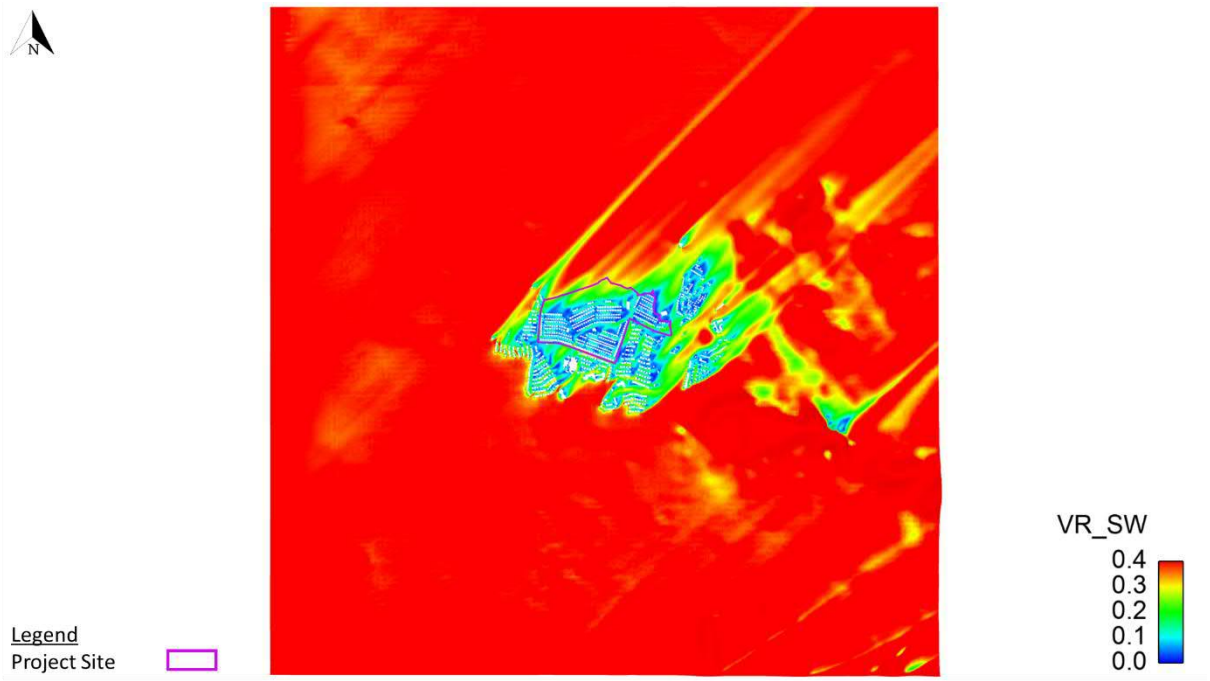


Figure 37 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

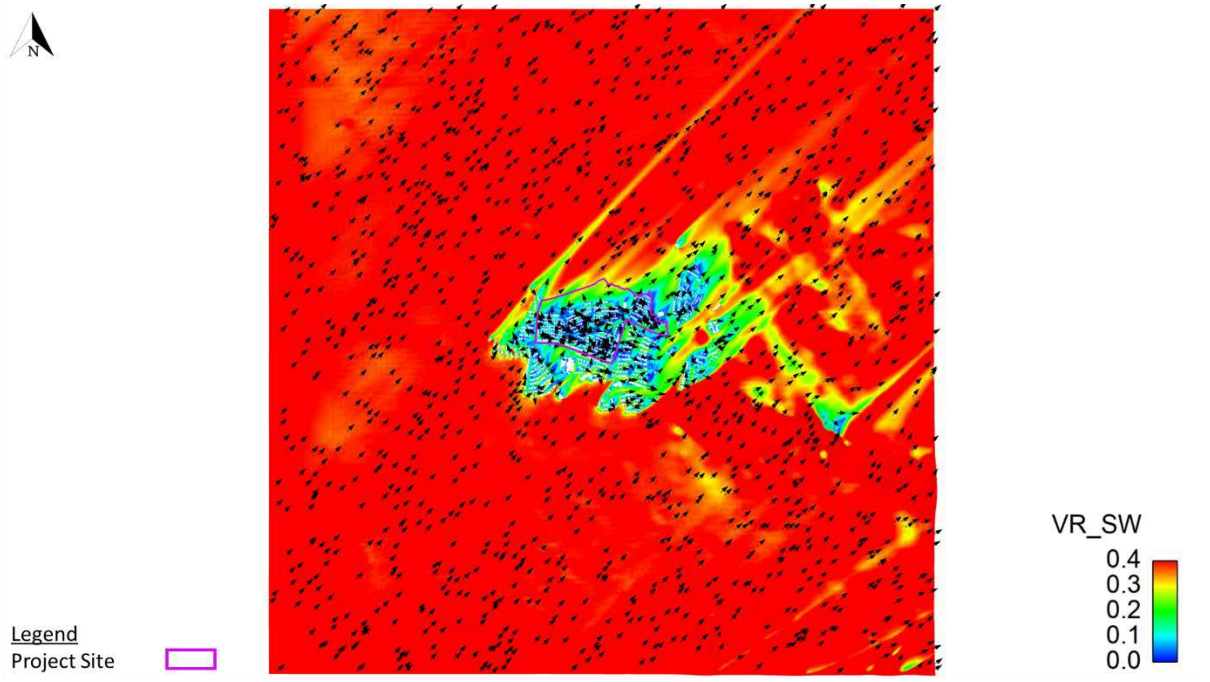


Figure 38 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

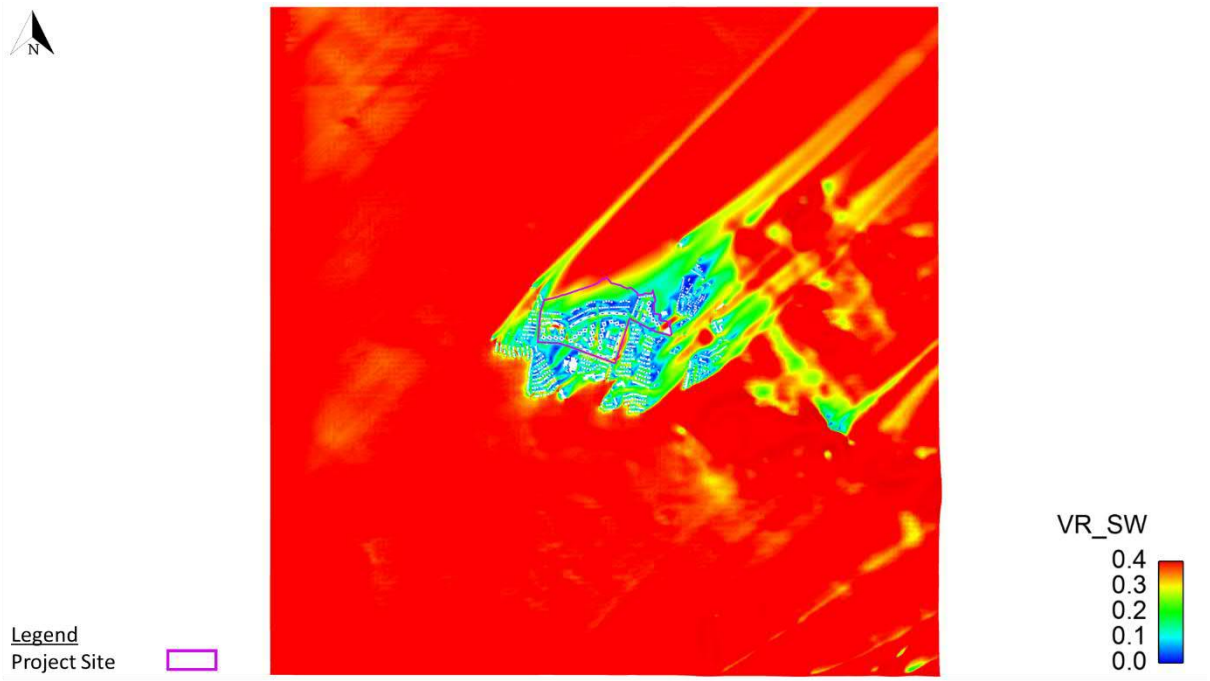


Figure 39 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

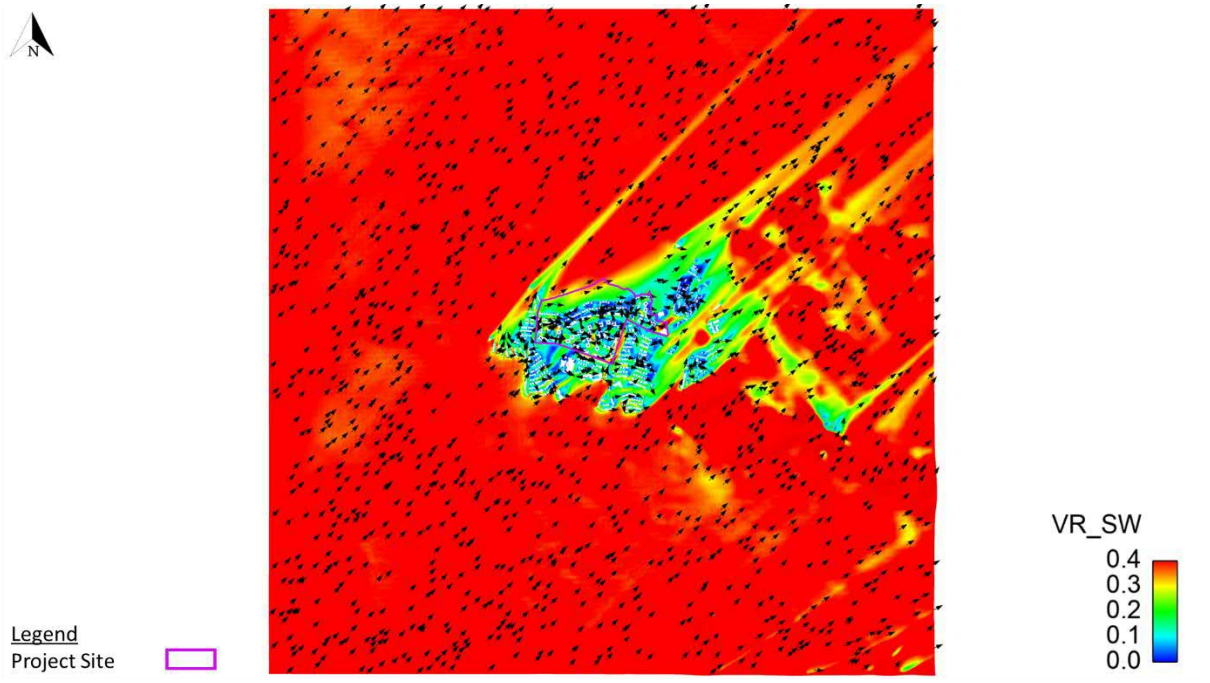


Figure 40 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

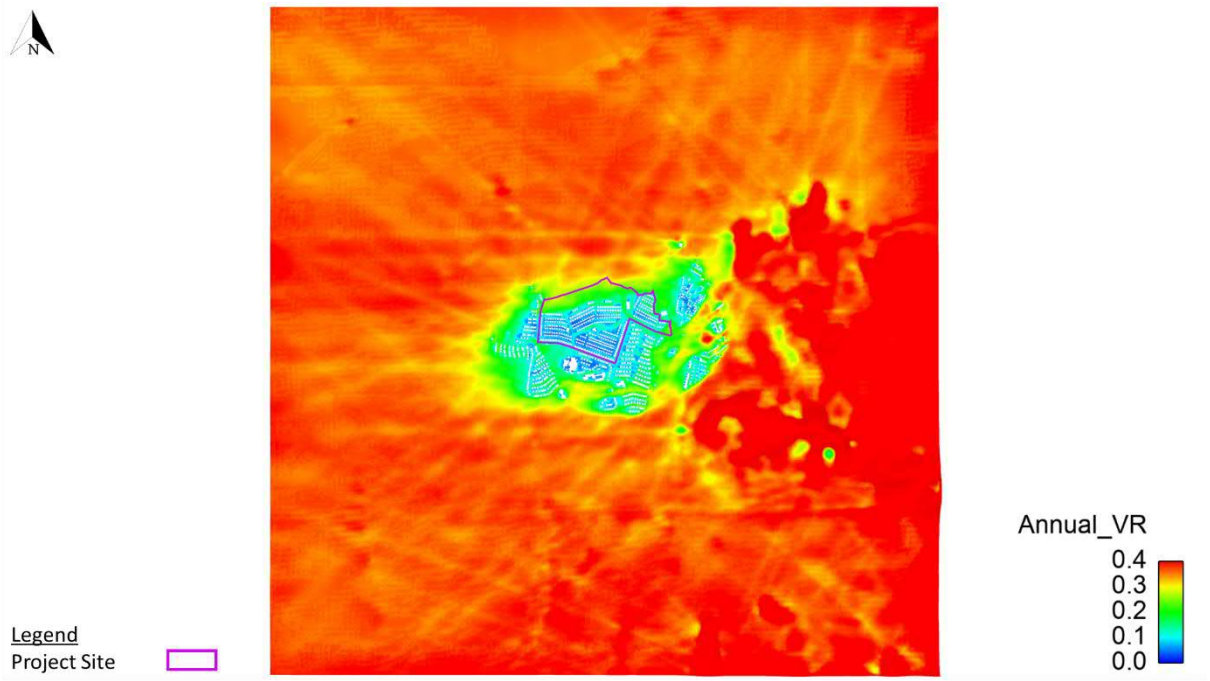


Figure 41 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

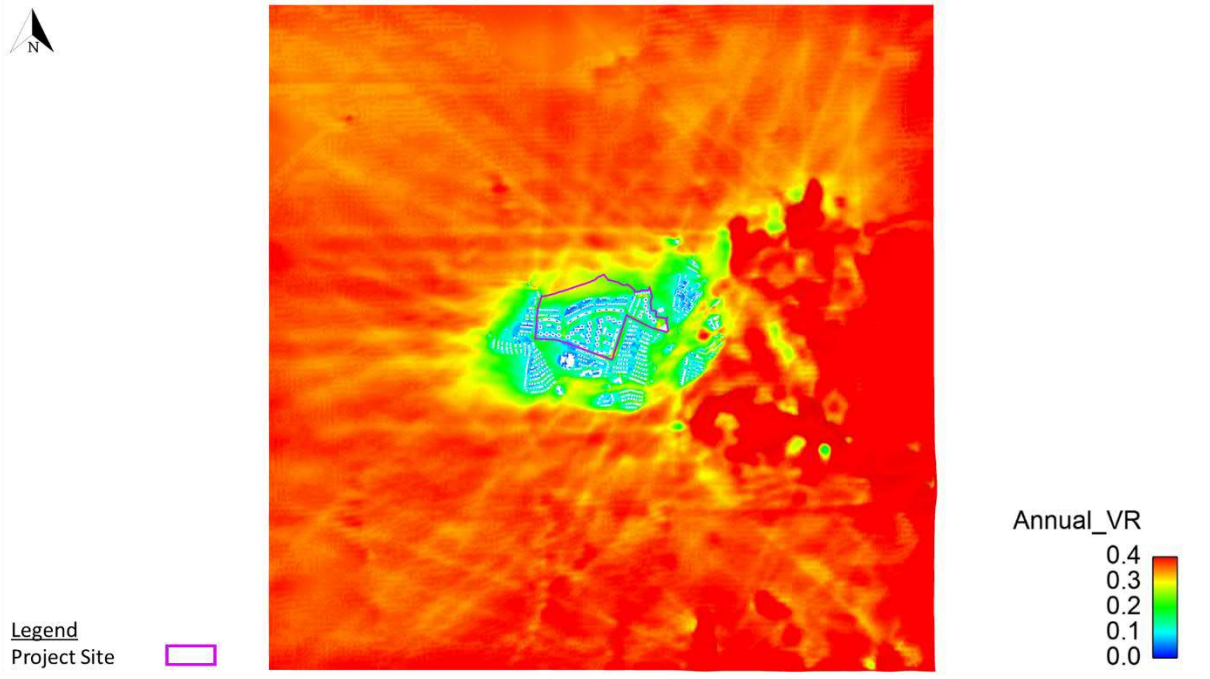


Figure 42 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

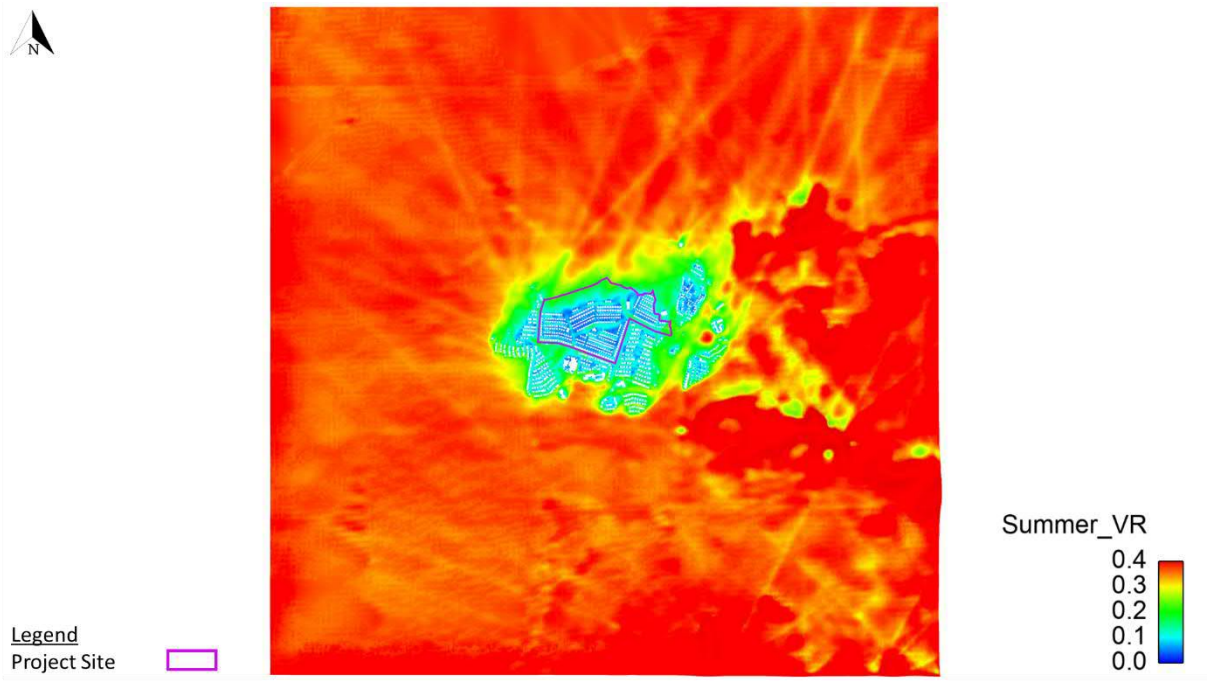


Figure 43 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

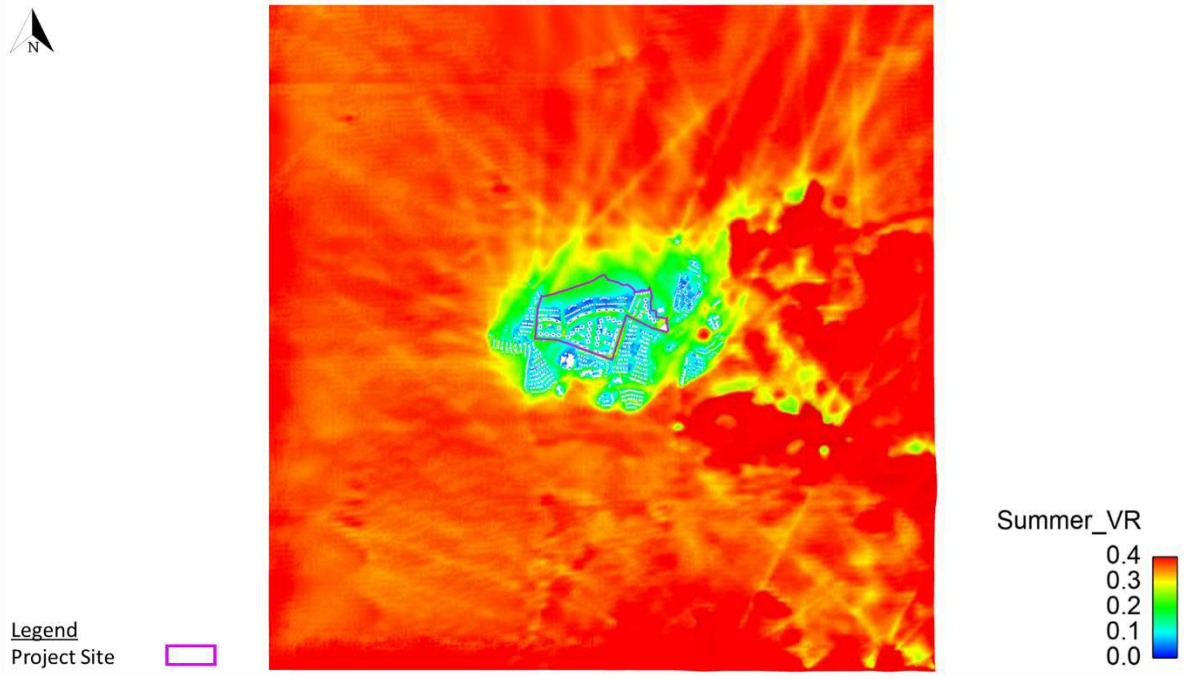
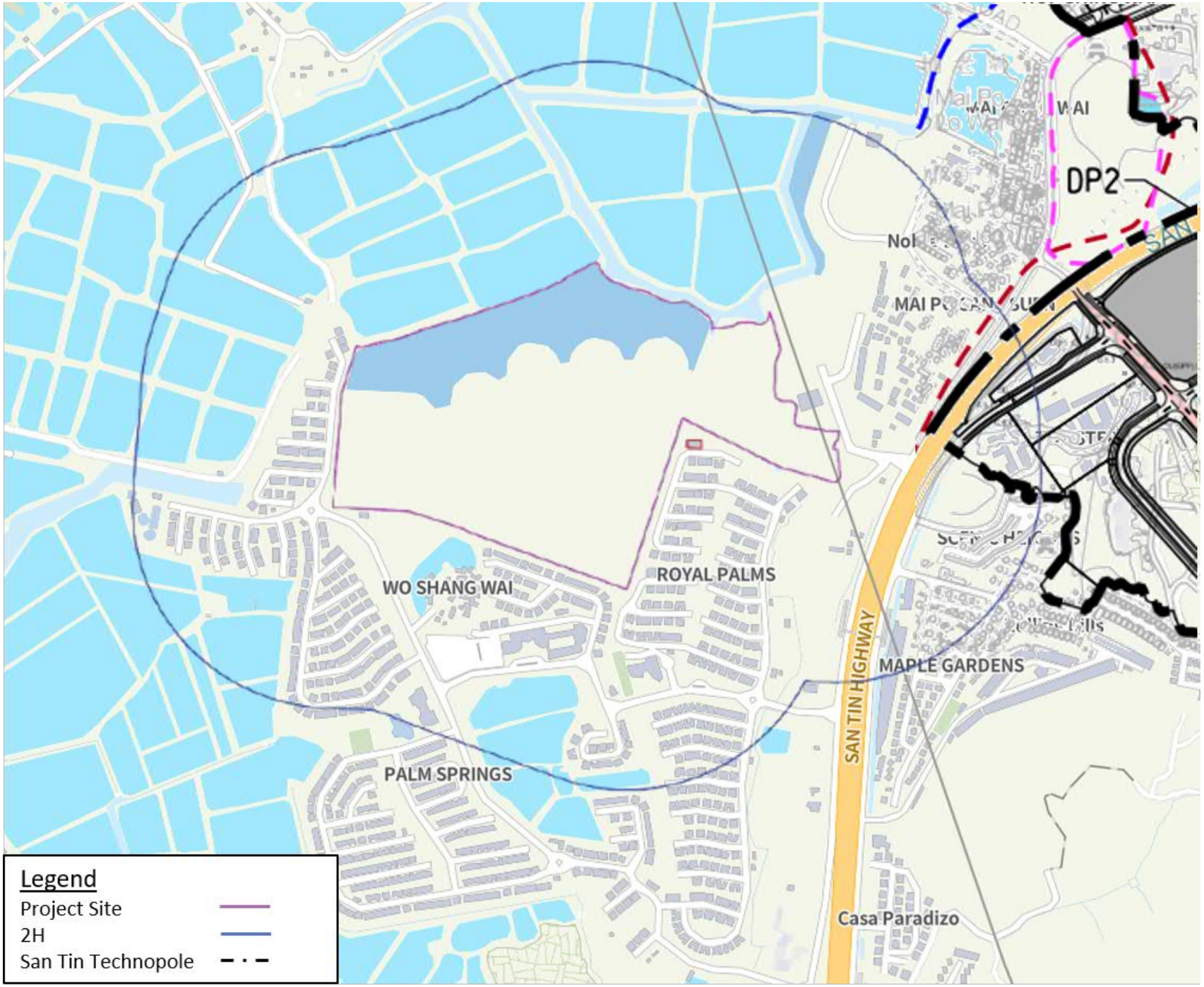


Figure 44 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

Appendix G – Location of the Planned / Committed Developments within the Surrounding Area


DP2
WO SHANG WAI
ROYAL PALMS
PALM SPRINGS
SAN TIN HIGHWAY
MAPLE GARDENS
Casa Paradizo
Legend
Project Site
2H
San Tin Technopole

ISO A1 594mm x 841mm

Approved:

Checked:

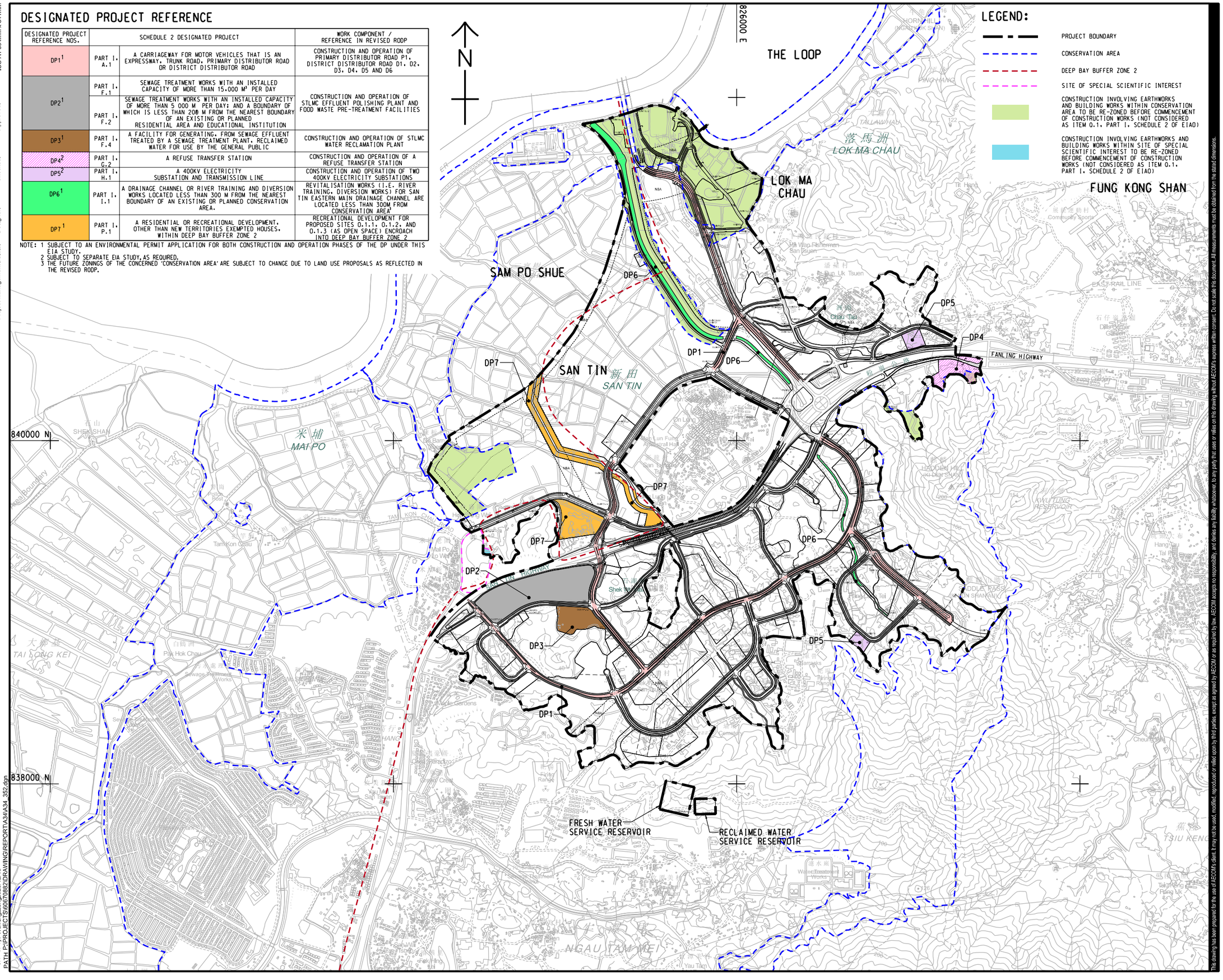
Designer:

Project Management Initials:

DESIGNATED PROJECT REFERENCE

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT		WORK COMPONENT / REFERENCE IN REVISED RODP
DP1[1]	PART I, A.1	A CARRIAGEWAY FOR MOTOR VEHICLES THAT IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD	CONSTRUCTION AND OPERATION OF PRIMARY DISTRIBUTOR ROAD P1, DISTRICT DISTRIBUTOR ROAD D1, D2, D3, D4, D5 AND D6
DP2[1]	PART I, F.1	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 15,000 M^3 PER DAY	CONSTRUCTION AND OPERATION OF STLMC EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES
	PART I, F.2	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 5 000 M PER DAY; AND A BOUNDARY OF WHICH IS LESS THAN 200 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED RESIDENTIAL AREA AND EDUCATIONAL INSTITUTION	
DP3[1]	PART I, F.4	A FACILITY FOR GENERATING, FROM SEWAGE EFFLUENT TREATED BY A SEWAGE TREATMENT PLANT, RECLAIMED WATER FOR USE BY THE GENERAL PUBLIC	CONSTRUCTION AND OPERATION OF STLMC WATER RECLAMATION PLANT
DP4[2]	PART I, G.2	A REFUSE TRANSFER STATION	CONSTRUCTION AND OPERATION OF A REFUSE TRANSFER STATION
DP5[2]	PART I, H.1	A 400KV ELECTRICITY SUBSTATION AND TRANSMISSION LINE	CONSTRUCTION AND OPERATION OF TWO 400KV ELECTRICITY SUBSTATIONS
DP6[1]	PART I, I.1	A DRAINAGE CHANNEL OR RIVER TRAINING AND DIVERSION WORKS LOCATED LESS THAN 300 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED CONSERVATION AREA.	REVITALISATION WORKS (I.E. RIVER TRAINING, DIVERSION WORKS) FOR SAN TIN EASTERN MAIN DRAINAGE CHANNEL ARE LOCATED LESS THAN 300M FROM CONSERVATION AREA[3]
DP7[1]	PART I, P.1	A RESIDENTIAL OR RECREATIONAL DEVELOPMENT, OTHER THAN NEW TERRITORIES EXEMPTED HOUSES, WITHIN DEEP BAY BUFFER ZONE 2	RECREATIONAL DEVELOPMENT FOR PROPOSED SITES O.1.1, O.1.2, AND O.1.3 (AS OPEN SPACE) ENCROACH INTO DEEP BAY BUFFER ZONE 2

NOTE: 1 SUBJECT TO AN ENVIRONMENTAL PERMIT APPLICATION FOR BOTH CONSTRUCTION AND OPERATION PHASES OF THE DP UNDER THIS EIA STUDY.
2 SUBJECT TO SEPARATE EIA STUDY, AS REQUIRED.
3 THE FUTURE ZONINGS OF THE CONCERNED 'CONSERVATION AREA' ARE SUBJECT TO CHANGE DUE TO LAND USE PROPOSALS AS REFLECTED IN THE REVISED RODP.



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PROJECT
項目
FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

CLIENT
業主
土木工程拓展署 Civil Engineering and Development Department
規劃署 Planning Department

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核

STATUS
階段

SCALE 比例: A3 1 : 20000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60670882
AGREEMENT NO. 協議編號: CE 20/2021

SHEET TITLE
圖紙名稱
LOCATION OF DESIGNATED PROJECTS

SHEET NUMBER
圖紙編號
60670882/A34/FIGURE 1.2

Plot File by: WunhingZeng@2023/12/15
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_352.dgn

Appendix H – Overviews of the 3D Model Covering Whole Computational Domain



Figure 1a: Overview of the 3D Simulation Model Covering Whole Computation Domain (East)



Figure 1b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (East)



Figure 2a: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)

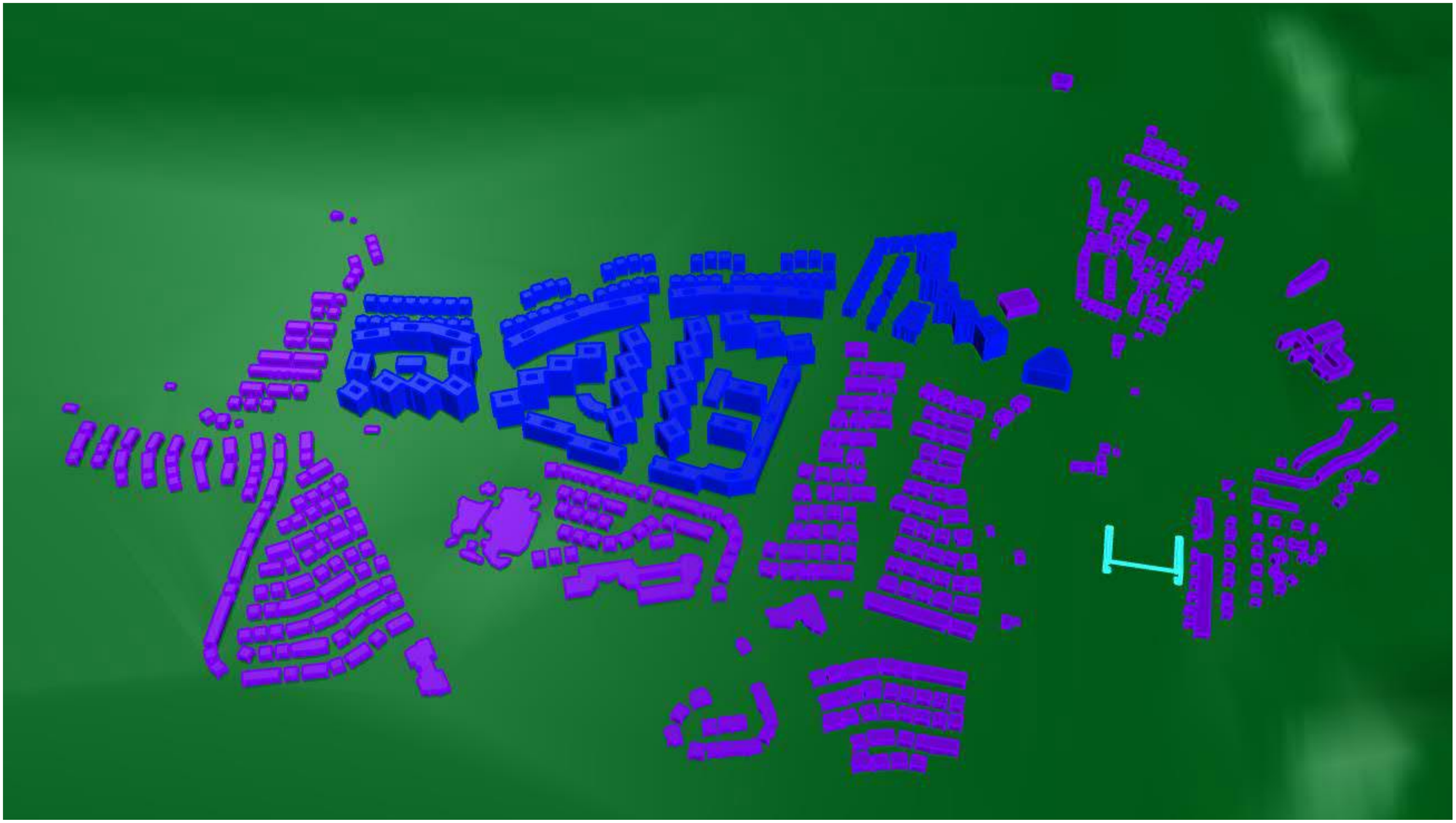


Figure 2b: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)

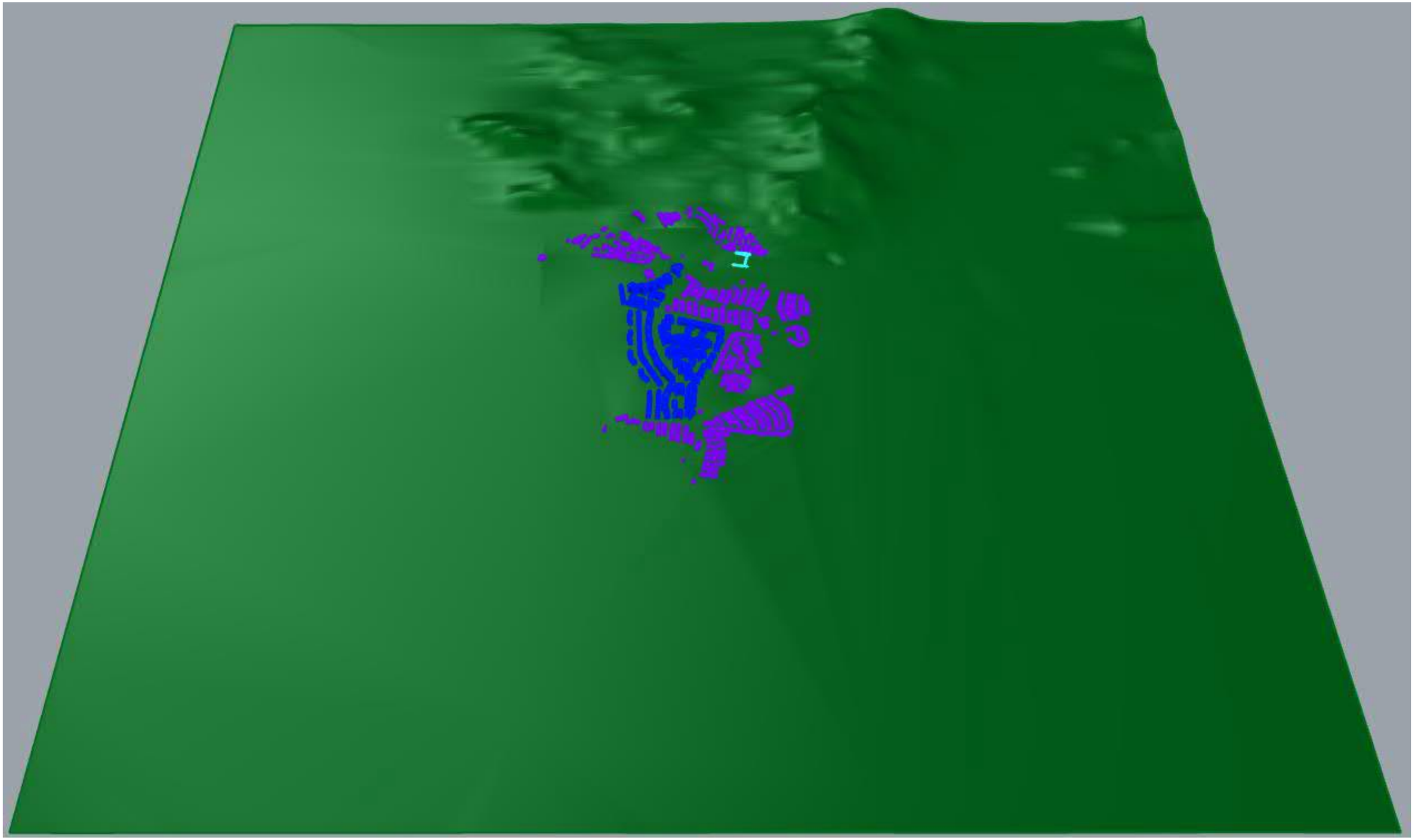


Figure 3a: Overview of the 3D Simulation Model Covering Whole Computation Domain (West)



Figure 3b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (West)

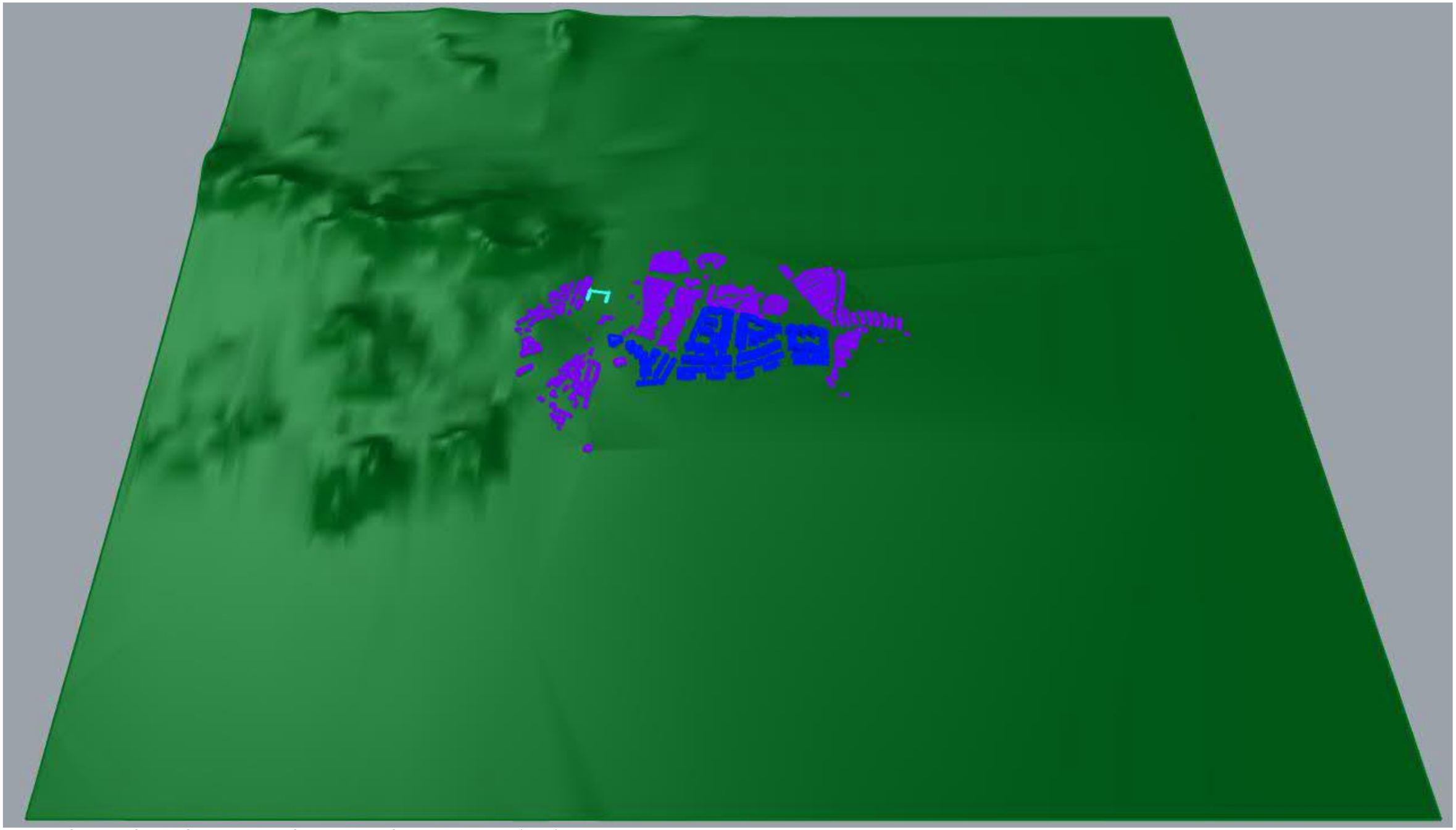


Figure 4a: Overview of the 3D Simulation Model Covering Whole Computation Domain (North)

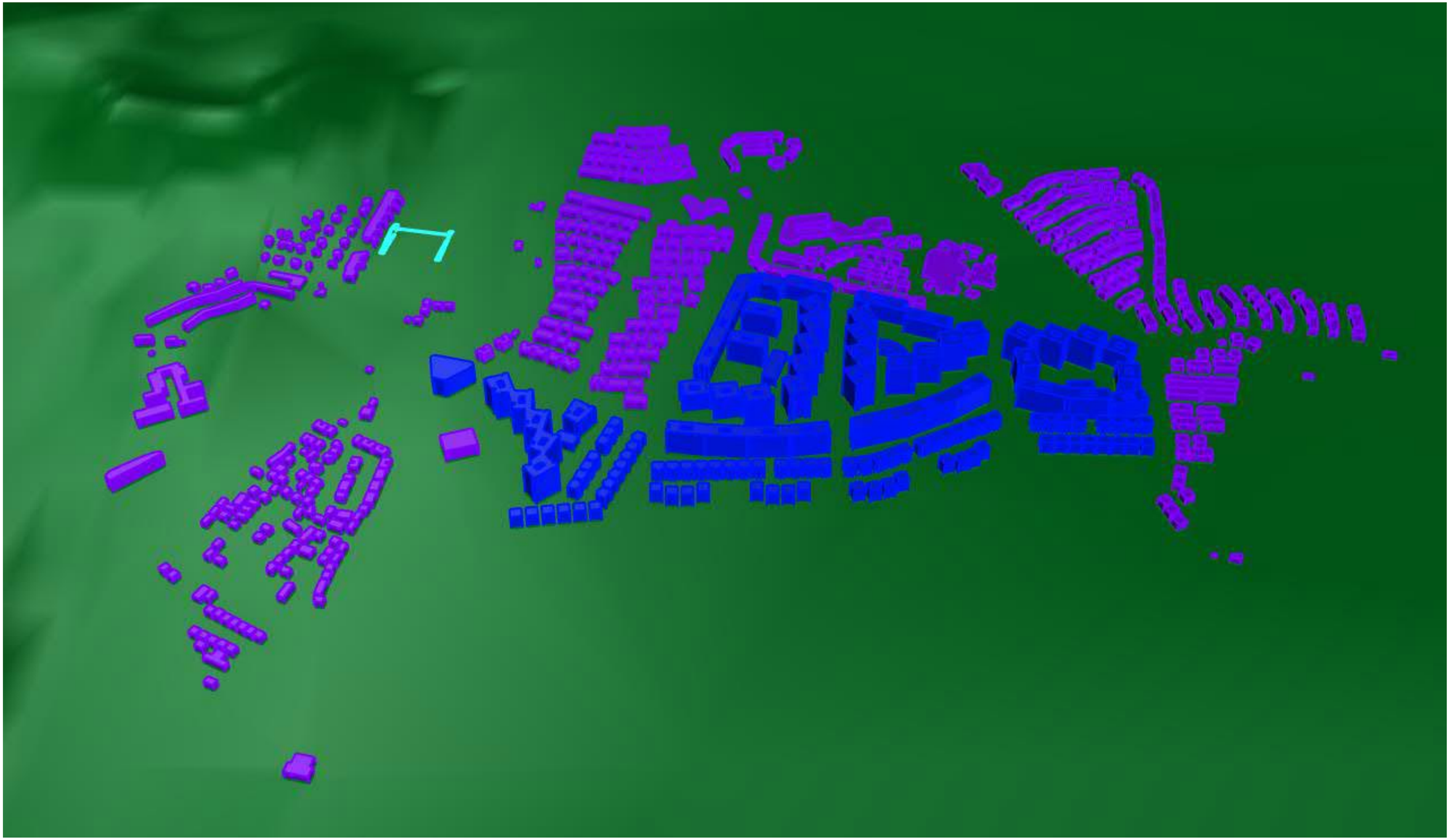
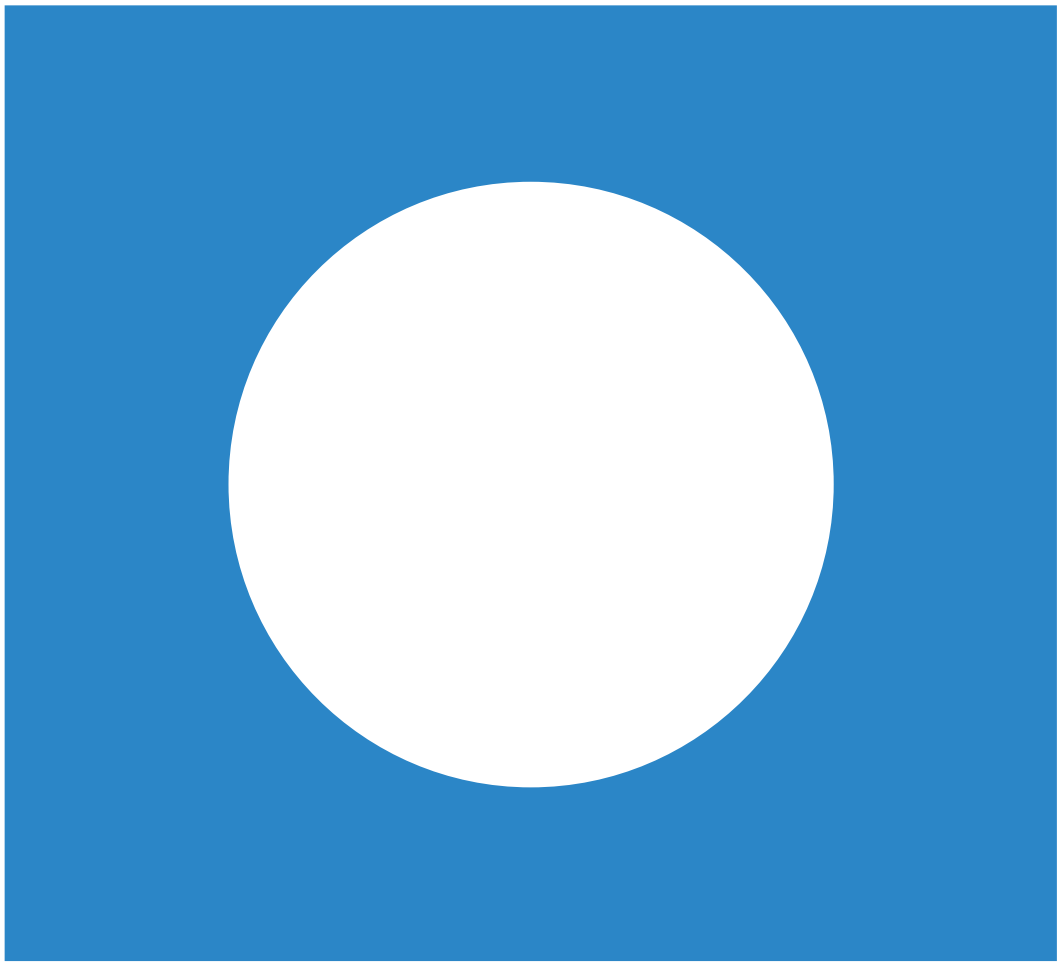


Figure 4b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (North)



Appendix 12: Landscape Masterplan (Including Tree Preservation Proposal)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

LANDSCAPE MASTER PLAN SUBMISSION
[Including Tree Preservation Proposal]

JANUARY 2025

Landscape Government Submission Consultant

Axxa Group Limited

Landscape Architects Registration Board HKSAR
LARB
TEO Yee Shun
張義舜
R-101
香港園境師註冊管理局

Mr. Jason TEO, Registered Landscape Architect (R101)

axxa group

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APPENDICES

APPENDIX A Landscape Master Plan

APPENDIX B Open Space Demarcation Plan

APPENDIX C Landscape Sections
(i) Section A
(ii) Section B
(iii) Section C & D
(iv) Section E, F & G

APPENDIX D Fence Wall Demarcation Plan

APPENDIX E Tree Planting Plan

ANNEX A Greenery Demarcation Plan

ANNEX B Tree Preservation Proposal

ANNEX C EPD's Approved Wetland Restoration and Creation Scheme

1.0 Project Background and Introduction

1.1 This Landscape Master Plan (LMP) is submitted to support Section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)"("OU(CDWRA)") zone.

1.2 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.3 This Submission contains Landscape Master Plan (LMP) and **Annex B** – Tree Preservation Proposal which sets out in details in Section 4 to Section 7 (**Appendix A**), aiming to demonstrate the broad design intent of the landscape proposal for the amended comprehensive development.

2.0 Site and Existing Condition

2.1 The Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The Wetland Restoration Area (WRA) in the northern part of the Site was completed.

3.0 Assessment of the Potential Impacts on Existing Trees

3.1 According to **Annex B** – Tree Preservation Proposal, there are a total of 203 nos. of existing trees surveyed within Application Site. The following **Table 1** shows the Tree Treatment and Planting Schedule:

Table 1: Tree Treatment and Planting Proposal Schedule

Description	**S16 Approved Scheme** (approved on 15 Feb 2024)	**Current Scheme**	**Difference**
Total Nos. of Trees Surveyed	203	203	0
Nos. of Trees Proposed to be Retained	0	0	0
Nos. of Trees Proposed to be Transplanted	16	16	0
Nos. of Trees Proposed to be Felled	187	187	0
Nos. of New Trees to be Planted	1200*	1200*	0

Remarks:
* 349 nos. of perimeter buffer trees have been planted through previous planning application approvals since 2008.

3.2 It is confirmed that **no** endangered tree species identified in the tree survey under the listing in 'Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)'. Additionally, there is **no** rare and precious plants, OVT/ potential OVT, **no** "Champion" tree, and no tree of particular interest observed within the site or its periphery during the survey.

3.3 Trees bordering the southern and western boundary outside Application Site are existing tree groups within the adjacent residential developments of 'Royal Palms' and 'Palm Springs'. Based on visual observation, these trees are mainly *Casuarina equisetifolia*, *Acacia confusa*, *Eucalyptus* species ranging from Fair to Good health, they will not be affected by works carried out within the Application Site.

4.0 Landscape Objectives

4.1 The primary landscape objectives are:

4.1.1 To integrate the proposed development with the Wetland Restoration Area to form a cohesive landscape character.

4.1.2 To enhance the quality of the environment and improve the landscape value of the existing Site.

4.1.3 To provide recreational facilities and passive amenity areas for the future residents associated with the wetland restoration objective.

4.1.4 To create a buffer tree zone along its perimeter, whilst acknowledging that the Site is also situated within the wetland buffer area.

4.1.5 To create a green sanctuary and ecologically sound environment in order to achieve a high value landscape.

5.0 Landscape Master Plan

This section provides a broad description of the design, function and amenity provisions for the landscape components. Refer to **Appendix A and C** for details.

5.1 Site Layout

5.1.1 The layout consists of two main components: northern Site which comprises the wetland restoration component and the southern Site consisting of residential development.

5.1.2 The proposed development consists of a combination of detached houses, semi-detached houses, 6 to 10 storeys residential towers.

5.2 Landscape Design Concept

5.2.1 The landscape design aims to take full advantage of the Site as a means to raise the overall landscape value and fully enhance the existing conditions (i.e. to maximize tree planting). The design takes into account the adjacent sites by creating a 3m wide greenbelt buffer zone along its perimeter, whilst acknowledging that the subject Site is also situated within the wetland buffer area.

5.2.2 In addition to the completed ponds and marshes at Wetland Restoration Area, landscape elements will include; street tree planting, buffer planting, footpaths & benches through communal greenery, feature paving, landscape garden, open lawn with seating, private residential gardens, landscape (within the clubhouse area). In addition, layers of structural planting consisting of species indigenous to the area and those that will be of benefit to the immediate ecology would also be incorporated within the planting design to create a 'green sanctuary' and ecologically sound environment in order to achieve a high value landscape.

Major landscape elements include:

5.2.3 Landscape open space to create an attractive, lush landscape setting for the buildings and to provide visual and airflow permeability.

5.2.4 Pocket open space punctuated by tree clusters throughout the Site is designed as a strong node and visual landmark within the development.

5.2.5 Green roofs and vertical greens are proposed at various locations to enhance existing greenery.

5.2.6 Landscape pond is introduced to create potential ecological habitat within the Proposed Development. Butterfly garden and lily pond garden are proposed with native vegetation and flowering plants to provide as an education area for ecological biodiversity.

5.2.7 Blue and green linkage is strengthened through enhanced streetscape planting.

5.2.8 The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimise potential visual impacts. This buffer will be on communal land to be maintained and managed by the Property Manager.

5.2.9 The clubhouse will be landscaped to provide a relaxed, resort-like atmosphere and will incorporate shade trees, ornamental shrubs and groundcovers, as well as buffer planting around the edges of the Site.

5.2.10 Private garden at individual lots will be landscaped and to be managed and maintained by future Lot owners.

5.3 Landscape Buffer Planting

5.3.1 Landscape Buffer Planting: The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimize potential visual impacts. Considering the actual planting space required for viable growth of trees, **349** trees in total are proposed to be planted in the landscape buffer and have been planted through previous planning application approvals since 2008. The proposed landscape buffer will be on communal land to be maintained and managed by the Property Manager.

5.3.2 Green Barrier: an approximately 5m wide buffer planting, i.e. 2.5m alongside the WRA and 2.5m within the residential component of the Site is proposed. Additional row of native trees is proposed at Green Barrier to harmonize and to strengthen buffering effect between the residential component of the Site and the WRA. Refer to **Appendix C** for Landscape Sections.

6.0 Hard Landscape (Paving Materials / Finishes)

This section provides a description of the hardscape design together with general information on hardscape related aspects of the design which relate to all phases, including lighting, levels and technical standards. Hardscape elements of the landscape include: paving; walls; site structures; site furniture; signage and lighting.

6.1 Hard Landscape Materials

6.1.1 Hardscape materials and design are chosen to compliment the building finishes, add character to the development and provide variety to the circulation areas.

6.1.2 Natural stone materials and/ or concrete tiles and/ or concrete unit pavers, all suitable for outdoor uses are proposed for outdoor paving materials and wall finishes.

6.1.3 Communal and private swimming pool is proposed to be paved with decorative ceramic/ mosaic tiles. Swimming pool surrounds will be paved using a non-slip paver with decorative banding. Patterning shall compliment the swimming pool tile patterns and the architectural style of the buildings.

6.1.4 The use of varied finishes to natural stone and/ or artificial tiles provide for safe application through varied textures in the paving pattern design, including ripple texture, brush and hammered finishes.

6.1.5 Natural material textures exhibit a natural variation in material colour, adding interest to the patterns and helping to highlight entrances to different functional zones.

6.1.6 A summary of the hardscape materials is listed in the Preliminary Finishes Schedule for Hardscape. Refer to **Table 2** below:

Table 2: Preliminary Finishes Schedule for Hardscape

Preliminary Finishes Schedule for Hardscape	
Footpaths / paved areas	Natural stone/ concrete tiles / concrete unit paver
Vehicular access road	Natural stone/ concrete tiles / concrete unit paver
Clubhouse surrounds	Decorative unit paver at entries, outdoor terraces and courtyard areas. Natural stone/ concrete tiles / concrete unit paver.
Swimming pool	Decorative ceramic/ mosaic swimming pool tiles
Swimming pool surrounds	Non-slip paver with decorative banding

6.2 Landscape Lighting

6.2.1 The landscape lighting design for all areas will follow an aesthetic and functional approach. Generally, lighting will be provided for the safety and security of pedestrian circulation as well as highlighting specific landscape features. Lighting will be designed in accordance to the intended use of an area, such as seating areas or play areas.

6.2.2 The desired effect for general landscape lighting in amenity areas is indirect, non-glaring and subtle, with occasional accent lighting to highlight points of interest.

6.2.3 Accent landscape lighting will be up-lights for trees. Signage and feature walls will be spot lit to give prominence. Surface mounted fixtures and burial up-lighters will be employed to highlight the entrance areas.

6.2.4 Low-level lighting, such as recessed step lights, will be incorporated into the walls beside level changes such as ramps and steps, and in some cases will be set into the riser of steps, to ensure maximum awareness of level changes that may otherwise prove unsafe.

6.3 Design Codes, Technical Standards & Safety Provision

6.3.1 Hard landscape design works and all outdoor facilities shall be in full compliance with, or better than, government ordinances, codes and regulations, and relevant international safety standards and guidelines. Criteria for the selection of hard landscape materials include: durability, sustainability, low maintenance, reasonable cost, contemporary theme and specific criteria for themed areas as necessary.

6.3.2 Criteria for the selection of soft landscape materials include: salinity tolerance, low maintenance, seasonal interest, non-toxic (safe / non- poisonous / biodegradable) and appropriately selected plant stock in good health.

6.3.3 All paved areas will have adequate gradient falls for proper drainage and positive fall to drain inlets, gullies or covered channels, in accordance with accepted surface water run-off drainage practices.

6.3.4 Light fittings to be a minimum IP55 standard, suitable for external use.

7.0 Soft Landscape (Planting Design / Materials)

This section provides a description of the soft landscape design and softscape elements together with general information on softscape related aspects of design, including covered planting, irrigation and maintenance. Softscape elements of the landscape include plantings, planting soil and sub-surface drainage materials.

7.1 Planting Strategy

7.1.1 The hierarchy of landscape planting within the development is summarized as follows:

- Tree Cluster – Tree clusters are located at key/ focal areas over the Site (e.g. main entrance, major communal open space & pocket space). Trees of various sizes will be used in combination with ornamental shrub planting to create lush greenery. Tree species will be selected carefully to ensure maximum greening effect.

- Avenue Tree Planting – A combination of specimen trees and shrub planting will be provided along the major roads within the development. These will have the most benefit with a creation of lush tree planting avenue. The design incorporates a varied planting palette to yield changing variety and seasonal interest. Evergreen trees, flowering trees and shrubs, variegated foliage plants and groundcover will be selected.

- Buffer / Perimeter Planting – Tree buffer planting has been accommodated along the perimeter in order to minimize the visual impact of the development. Buffer plantings are designed to screen out adverse visual elements on the proposed development and to mitigate any negative visual impact that the proposed development may have on its surrounding neighbours.

- Street Tree Planting – To further explore greening opportunities, trees will be planted in front of the houses in order to enhance the internal streetscape environment. These will

have the most benefit with planting softening and shading the streetscape.

7.2 Plant Material Schedule

7.2.1 Planting will comprise a mix of native as well as exotic trees and shrubs selected to rapidly form a landscape buffer to the perimeter of the Site. Planting will be selected on its ecological value for the area. Indigenous species will be chosen to enhance the ecology of the Site, while exotic species will be used in key locations as fast-growing screening plants or to provide colour and seasonal variation. Feature shade and palm trees will be provided along the access road and at selected locations as landscape features.

7.2.2 A summary of plant materials is provided in **Table 3A** and **3B** below.

Table 3A: Plant Material Schedule

Proposed Species	Chinese Name	Quantity/ Size
Acacia auriculiformis	耳果相思	851 nos. Size: Heavy Standard Size 4m High; 3-4m Spread; 4-5m Spacing; DBH 0.09m 349 nos. Size: Standard Size 2-2.5m High; 3m Spread; 3m Spacing; DBH 0.075m
Acacia mangium	大葉相思	
Araucaria heterophylla	異葉南洋杉	
*Bischofia javanica**	秋楓	
Casuarina equisetifolia	木麻黃	
Callistemon x hybridus 'Golden Ball'	黃金串錢柳	
Camellia japonica	山茶	
*Celtis sinensis**	朴樹	
Chorisia speciosa	絲木棉	
Chukrasia tabularis	麻楝	
*Cinnamomum burmannii**	陰香	
*Cinnamomum camphora**	樟	
Delonix regia	鳳凰木	
Dracontomelon duperreanum	人面子	
*Elaeocarpus decipiens**	杜英	
Elaeocarpus hainanensis	水石榕	
Eucalyptus cumini	赤桉	
Ficus benjamina	垂葉榕	
*Ficus microcarpa**	細葉榕	
*Hibiscus tiliaceus**	黃槿	
Lagerstroemia indica	紫薇	
*Liquidambar formosana**	楓香	
Mella azedarach	苦楝	
Melaleuca quinquenervia	白千層	
Michelia x alba	白蘭	
*Morella rubra**	楊梅	
Osmanthus fragrans	桂花	
*Podocarpus macrophyllus**	羅漢松	
Roystonea regia	王棕	
*Sapium sebiferum**	烏桕	
*Sterculia lanceolata**	假蘋婆	
Syzygium cumini	海南蒲桃	
Syzygium jambos	蒲桃	
Tabebuia impetiginosa	紫花風鈴木	

Terminalia mantaly	小葉欖仁	
Terminalia mantaly cv. 'Tricolor'	錦葉欖仁	
*Viburnum odoratissimum**	珊瑚樹	

Remarks: * Native Tree Species

Table 3B: Proposed Shrub, Groundcover and Lawn Species

Botanical Name	Chinese Name	Height x Spread (mm)	Spacing (mm)
Aglaia odorata	米仔蘭	600 x 500	400
Bougainvillea spectabilis	簕杜鵑	600 x 500	400
Cuphea hyssopifolia	細葉萼距花	300 x 300	250
Duranta repens	金連翹	300 x 300	250
Fagraea ceilanica	非洲茉莉	800 x 800	800
Iris spp.	水生鳶尾	500 x 400	300
*Ixora chinensi**	龍船花	500 x 400	300
Lantana montevidensis	小葉馬纓丹	300 x 300	250
Loropetalum chinense rubrum	紅花檵木	300 x 300	250
*Melastoma malabathricum**	野牡丹	500 x 400	300
Michelia figo	含笑	300 x 300	250
*Nephrolepis auriculata**	腎蕨	300 x 300	250
*Ophiopogon japonicus**	沿階草	300 x 300	250
Osmanthus fragrans	桂花	600 x 500	400
*Rhaphiolepis indica**	車輪梅	600 x 500	400
*Rhododendron simsii**	紅杜鵑	500 x 400	300
*Rhodomyrtus tomentosa**	桃金娘	600 x 500	400
Schefflera arboricola	鵝掌藤	500 x 400	300
Tibouchina semidecandra	巴西野牡丹	500 x 400	300
Zanthoxylum piperitum	胡椒木	300 x 300	250
Zoysia japonica	台灣草	N/A	N/A

Remarks: * Native Tree Species

7.2.3 All new planting will be planted at-grade and in accordance with standard horticultural practice for planting into ground. Water points or automatic irrigation will be provided with a spacing not more than 40m apart c/c and drainage will be naturally soaked away into the ground water table unless at low-lying areas, where additional drainage will cater for potential water accumulation e.g. at the 3m wide sloped buffer planting strip base.

7.3 General Planting Sizes and Densities

7.3.1 Planting sizes and densities are listed in **Table 4**.

Table 4: General Planting Sizes and Densities

General Planting Sizes and Densities		
Type / Design Function	**Size**	**Spacing**
Trees		
- to achieve screening, shade and provide amenity, ornamental, ecological and aesthetic value	Heavy Standard	As indicated on plan
Perimeter Planting		
- to achieve a buffer screen to the perimeter of the Site	Trees – Standard Palms – min. 2000 to 2500mm ht.	3m 3m
Ornamental Shrub Planting		
- to provide screening, to enhance aesthetics, to define outdoor areas	Shrubs – min.300 to 500mm ht. Groundcovers – min. 300mm ht.	between 250 and 500mm between 150 and 250mm

7.4 Tree Planting within the Development

7.4.1 Tree planting will be provided in the following areas:

- Landscape Buffer/ Green Barrier
- Remaining Landscape Area within Site

7.4.2 Considering the actual planting space required for viable growth of trees, **349** nos. of trees have been planted as Landscape Buffer/ Green Barrier through previous planning application approvals since 2008. For the remaining area within the development, **851** nos. of trees are proposed to be planted. Thus, a minimum of 1200 new trees will be planted within the Site.

7.4.3 Carefully selected species will ensure maximum greening effect with minimum maintenance requirements. Specimen trees of various sizes will be used in combination with ornamental shrub planting to create a year-round display.

7.5 Wetland Planting

7.5.1 Wetland planting has been completed to maximise habitat creation for wetland fauna by providing habitats for breeding, feeding, nesting and resting. It comprises principally of native trees and shrubs selected for their ecological value to the area. These may include; *Bridelia tomentosa*, *Cynodon dactylon*, *Cyperus malaccensis*, *Eleocharis spiralis*, *Ficus hispida*, *Ficus microcarpus*, *Ficus varigata var. chlorocarpa*, *Gardenia jasminoides*, *Ludwigia octovalvis*, *Ludwigia perennis*, *Macaranga tanarius*, *Melastoma candidum*, *Melia azedarach*, *Panicum maximum*, *Paspalum paspaloides*, *Phragmites spp*., *Polygonum barbatum*, *Polygonum glabra*, *Raphiolepis indica*, *Syzigium jambos*, *Trema orientalis* and *Viburnum odoratissimum*.

7.6 Level of Landscaped Area Provision

7.6.1 Open Space Provision (Appendix B)

In accordance with the open space requirement in the Hong Kong Planning Standard and Guidelines, 1m^2 of open space per person is required. Not less than 9,998m^2 open space will be provided for designed population of 9,998 residents. The total open space achieves 9,998m^2.

7.6.2 Greenery Provision (for PlanD's Reference Only)

In accordance with the requirement of PNAP APP-152, an area of not less than 30% of the total greenery will be provided for the Proposed Development. Please refer to **Annex A** for Greenery Demarcation for PlanD's reference Only.

7.7 Soil Depth and Drainage Provision for the Planted Area

7.7.1 The majority planting areas occur on grade and/ or tree pits. The need for adequate soil depths to ensure proper plant growth is taken into account for all planting areas. The minimum soil depths (excluding drainage layers) are:

- Trees: 1200mm
- Shrub: 600mm
- Groundcover/ Lawn: 300mm

7.8 Future Maintenance and Management

Maintenance and establishment works to soft landscape areas shall be undertaken by the softworks contractor for an Establishment Period of a minimum of 12 months following Practical Completion. This will ensure the proper establishment of the planted material. The maintenance responsibility of completed landscape works and trees are under the future management agent of the lot owner under lease. Regular vegetation maintenance including tree risk assessment and soft landscape maintenance as stated in below "Soft Landscape Maintenance Schedule", will be conducted by the future management agent as instructed by the lot owner in accordance with the Handbook on Tree Management by Development Bureau.

Soft Landscape Maintenance Schedule (excluding Wetland Restoration Area)

Watering: Water all plants as necessary, adjusted to rainfall, to ensure adequate water supply for plant consumption during the establishment period.

Pruning: Cut back annuals after flowering period. Healthy cuttings may be used for propagation. Prune shrubs and groundcover in early March to encourage flowering. Prune woody shrubs and trees selectively according to species (annually). Remove dead fronds from palm trees. Utilise established and approved tree surgery techniques as necessary and seal all sharp cut wounds with approved material to resist decease attack.

Fertilizing: Two to three times annually, emphasis shall be in the March application. Test soil in January to analyse quality ameliorates as necessary.

Fungicide / Insecticide: Spray only as necessary with approved chemical.

Weeding: Manually or use selective non-toxic, biodegradable herbicide to keep the weed growth and its establishment under control.

Securing: Adjust tree stakes in spring and as necessary to taut up the staking. Care shall be applied to avoid chaffing of tree bark.

Mulching: Top up the mulching inside all planting beds twice a year and as necessary.

Thinning: Reduce overcrowding and transplant as necessary at selected periods:

- Evergreens: Spring
- Deciduous: Winter
- Palms: June to August

Table 5: Maintenance Schedule

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Watering	•	•	•	•	•	•	•	•	•	•	•	•
Pruning		D	GC									
Fertilizing	soil test		**X**								**X**	
Fungicide / Insecticide			**X**						**X**			**X**
Weeding		**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**		**X**
Securing			**X**									
Thinning			EG								D	

Remarks: Tree risk assessment will be conducted at appropriate time for appropriate tree as instructed by the owner in accordance with the Handbook of Tree Management by DEVB

Schedule Legend:

GC - Groundcover EG - Evergreen D - Deciduous

• - Size proportional to quantity **X** - Application

7.8.1 Structural engineers have made sufficient allowances to accommodate the necessary planting components, i.e., plant stock, soil volume and sub-surface drainage materials loading.

7.8.2 Closed bottom planters will have proper and adequate subsoil drainage system and drain outlets to the storm water drainage system.

7.8.3 The landscape works are designed to avoid obstruction of the maintenance of drainage works. Adequate clearance between drainage works and landscape works will be maintained so as to prevent any potential damage to drainage works.

7.9 Irrigation and Proposed Source of Water Supply

7.9.1 Water points (not more than 40m apart c/c) are located throughout the soft landscape area for irrigation.

APPENDIX A

Landscape Master Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Master Plan

Dwg. No. : 2023202-LMP-01a

Date : JAN 2025
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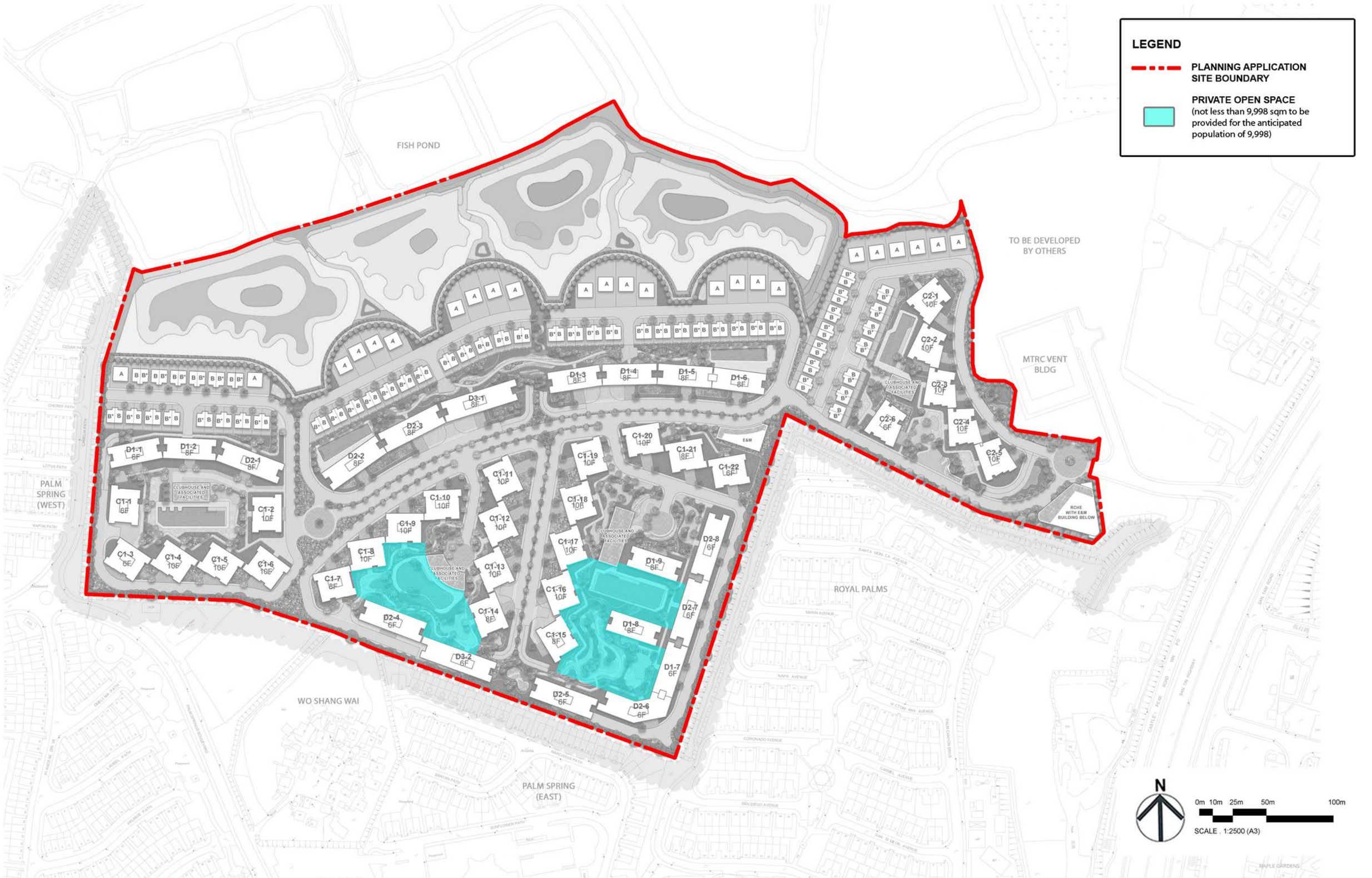
APPENDIX B

Open Space Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Open Space Demarcation Plan

Dwg. No. : 2023202-OSP-01

Date : JAN 2025
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APPENDIX C

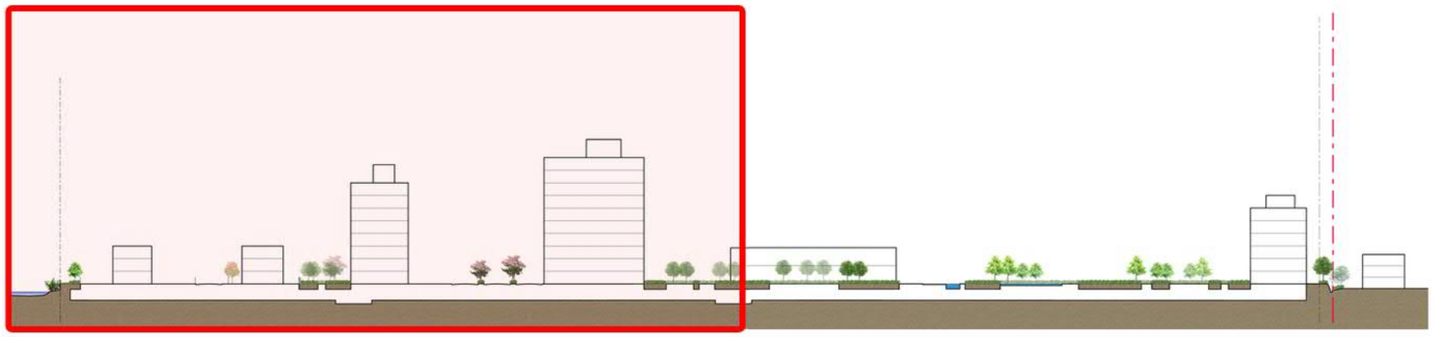
Landscape Sections

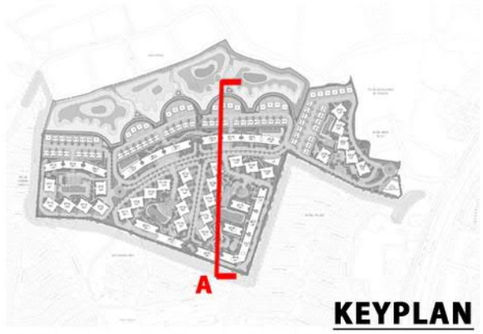
(i) Section A

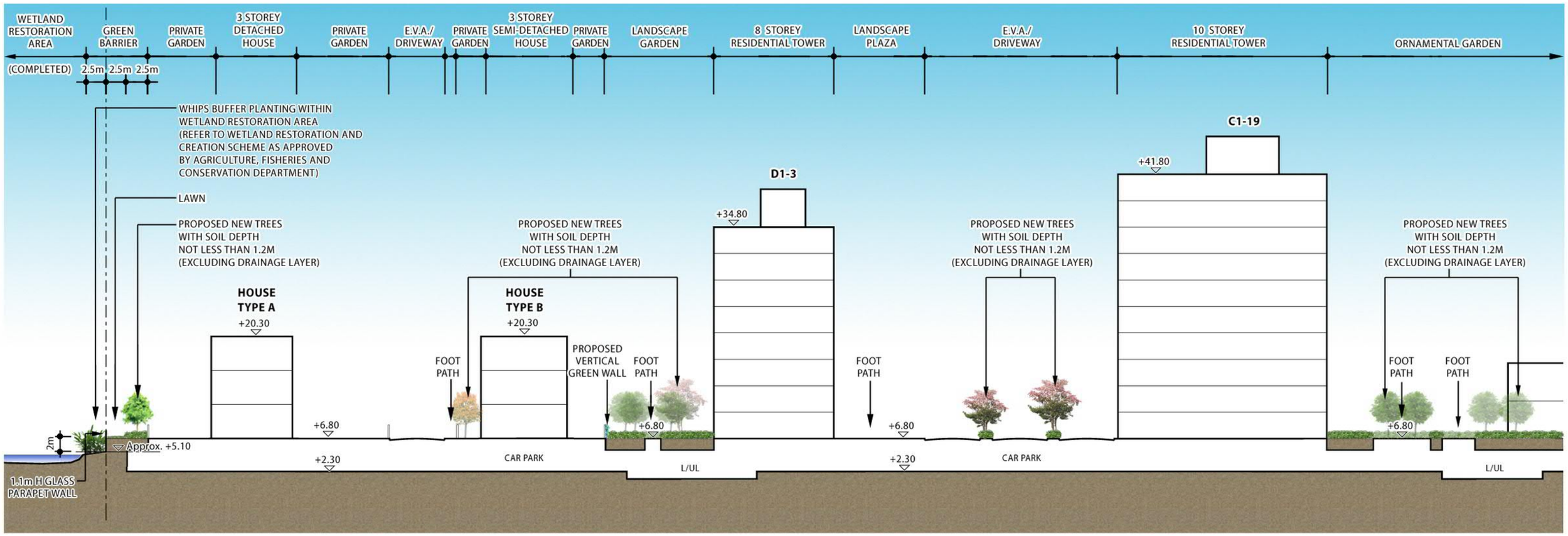
(ii) Section B

(iii) Section C & D

(iv) Section E, F & G







SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section A

Dwg. No. : 2023202-SEC-01a

Date : JAN 2025
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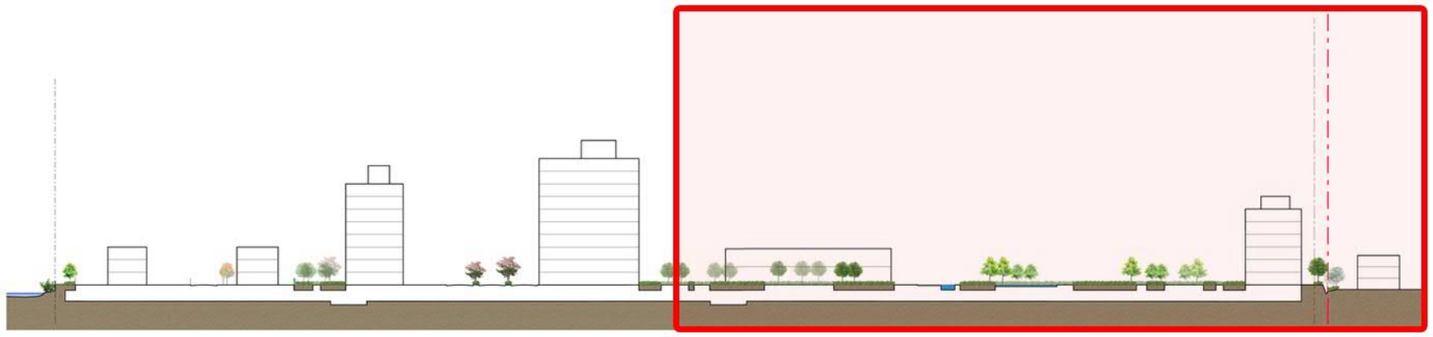

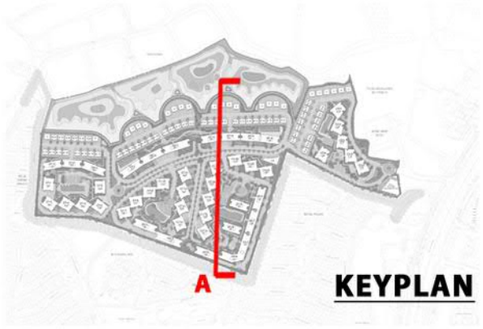

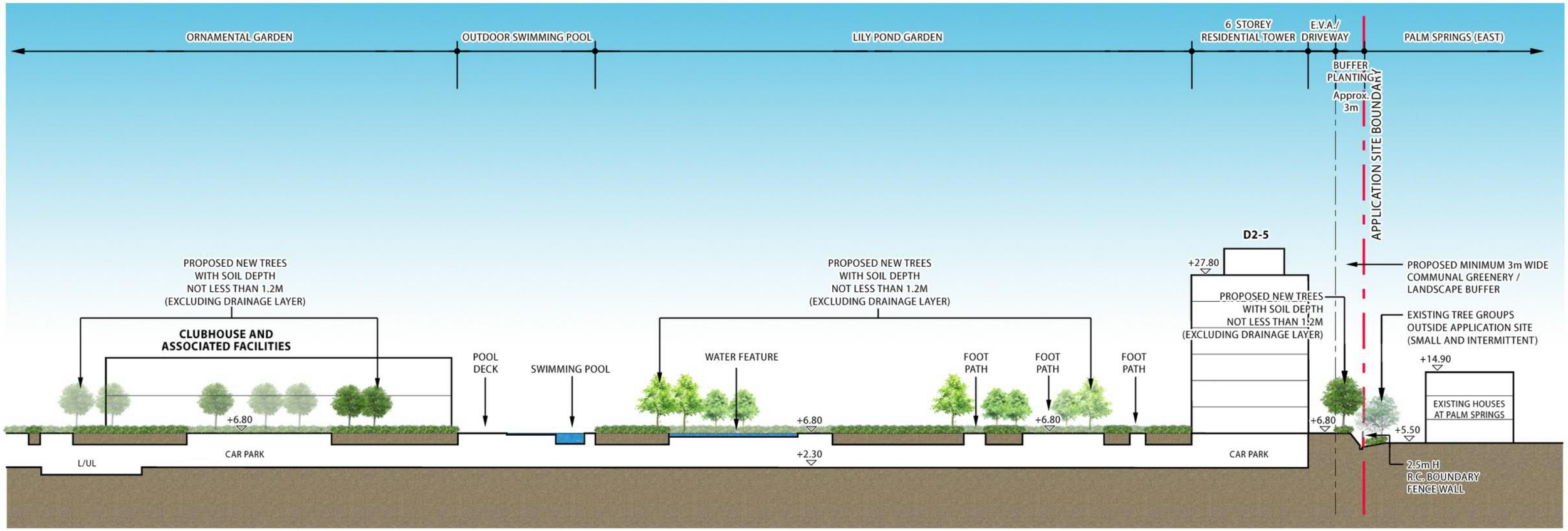

SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section A

Dwg. No. : 2023202-SEC-01_1a

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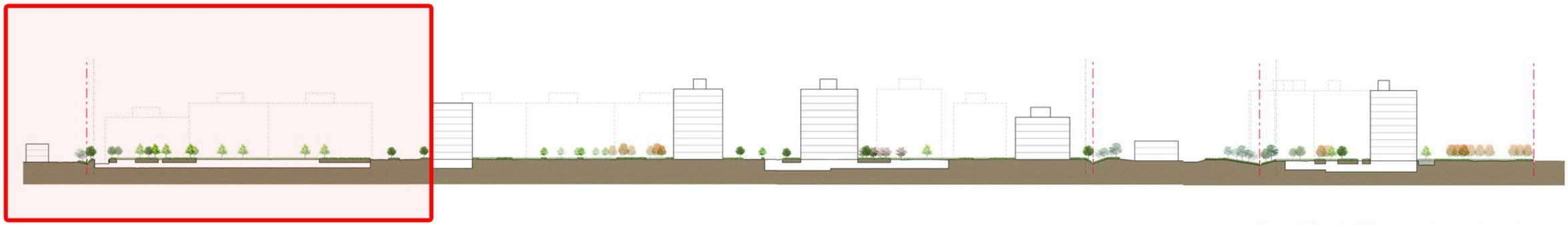

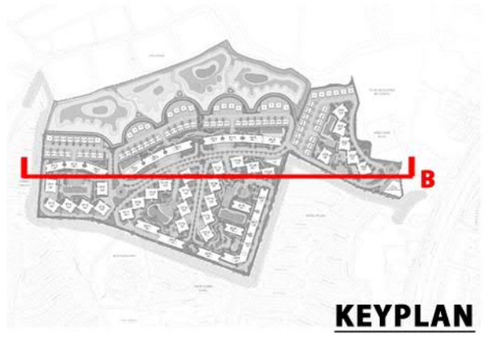

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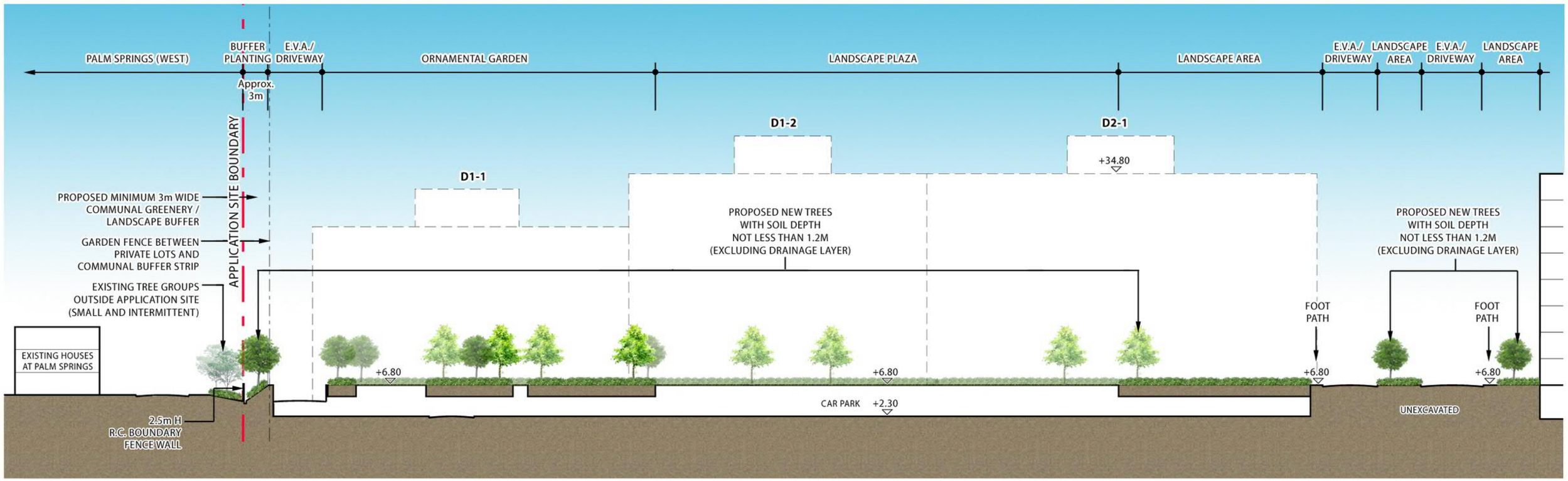

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

Dwg. No. : 2023202-SEC-02a

Date : JAN 2025
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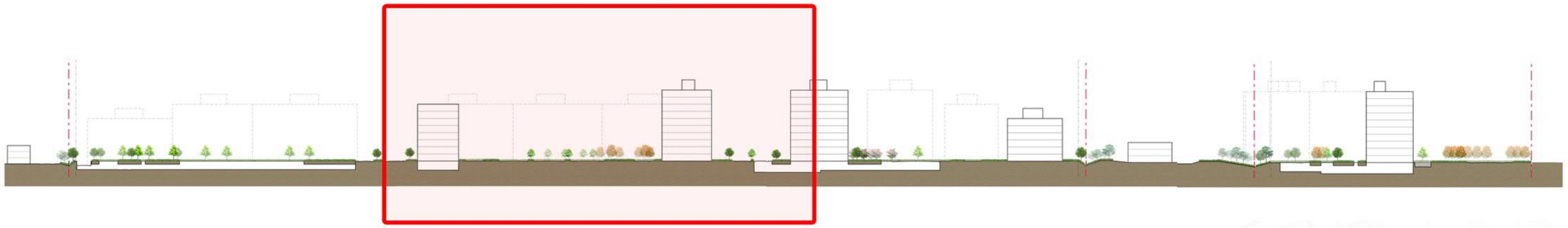

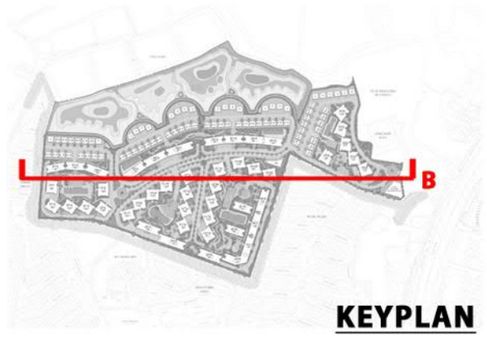

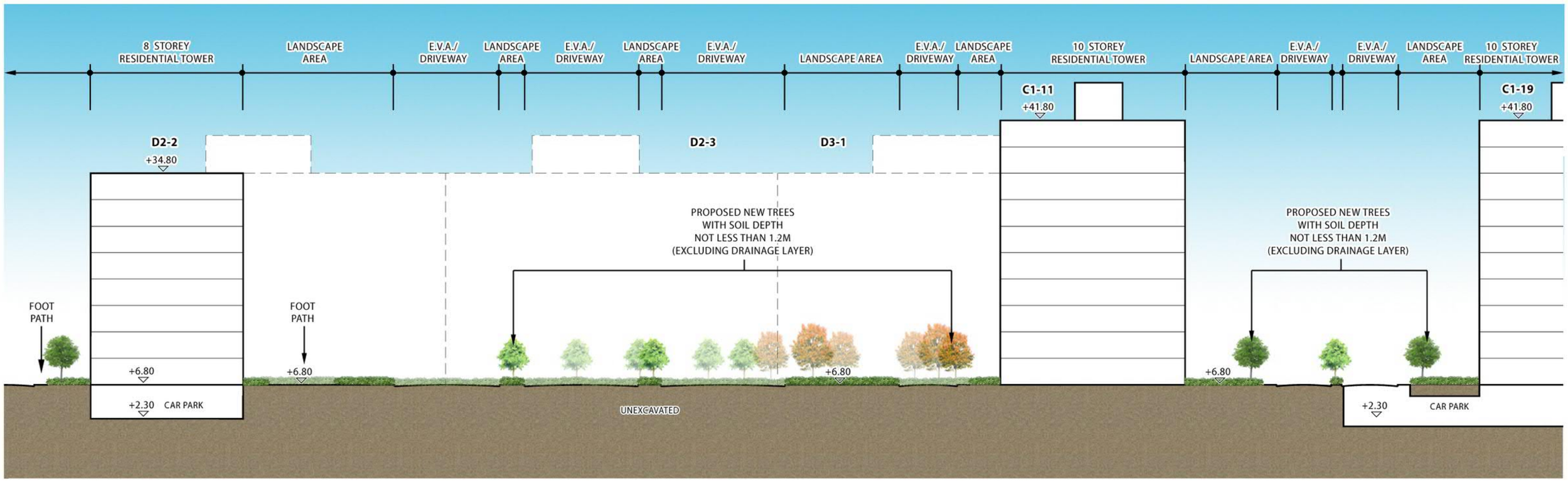

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

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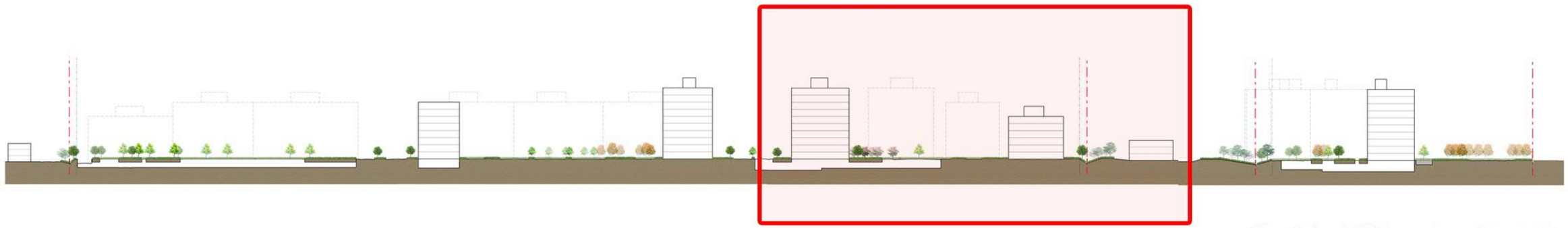

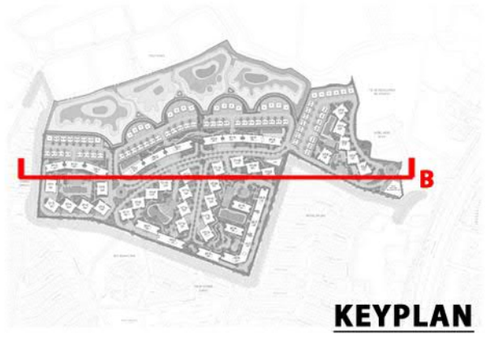

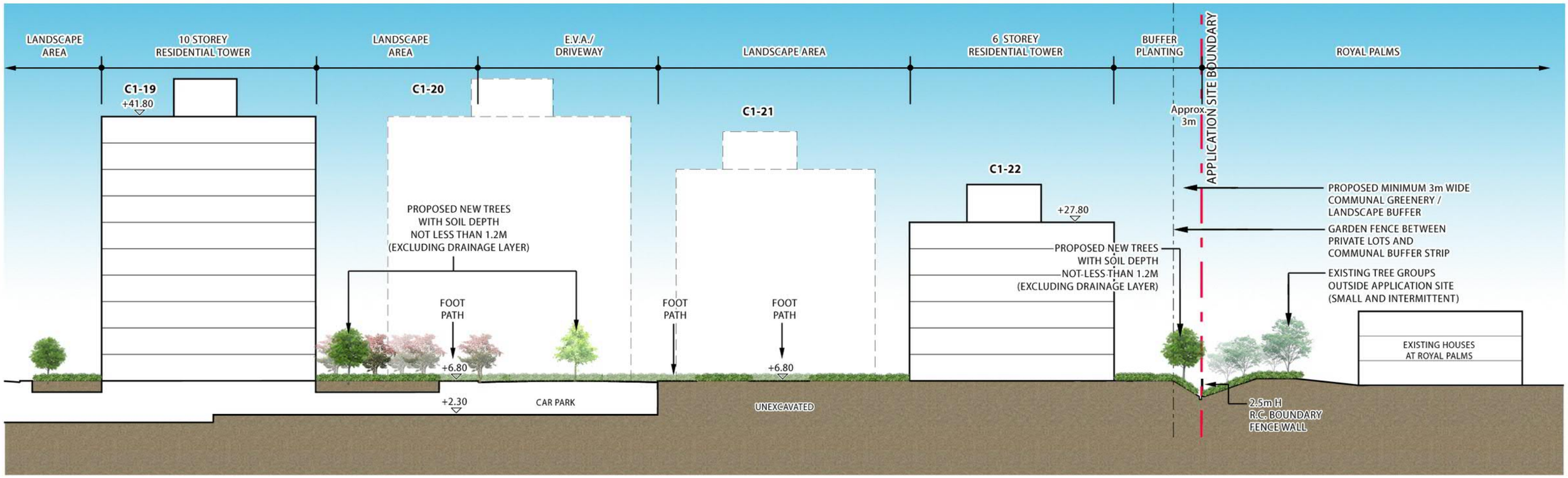

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

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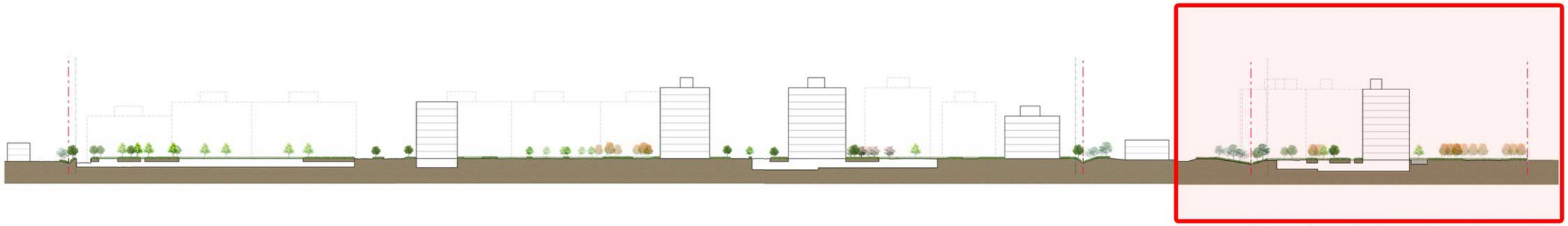



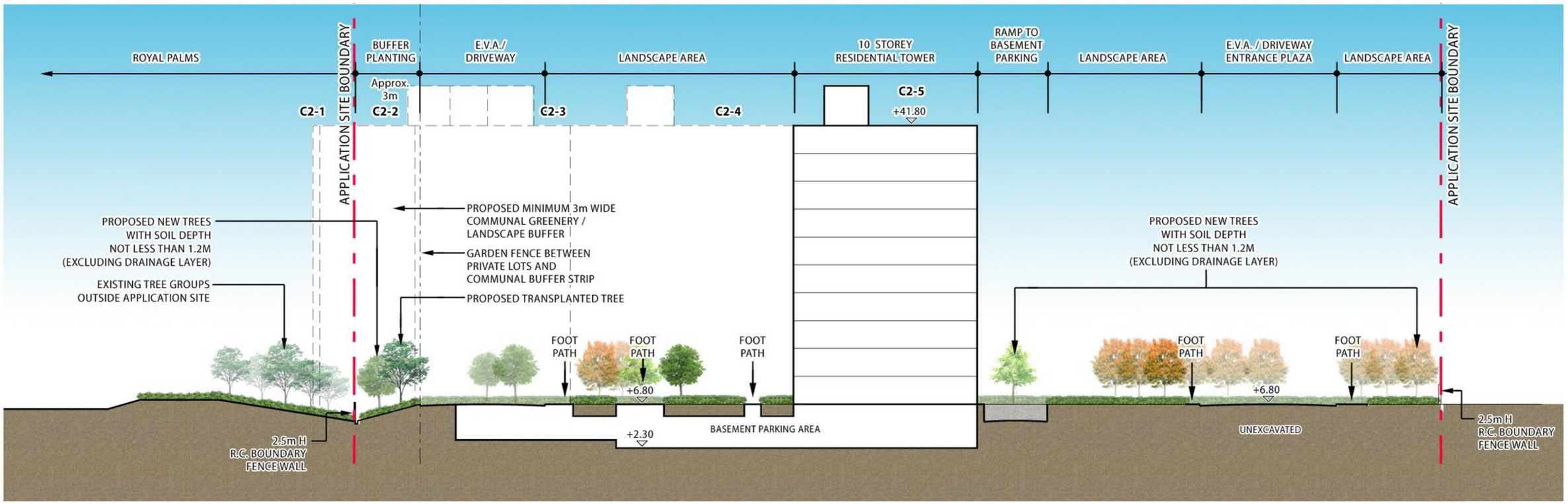

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

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Date : JAN 2025
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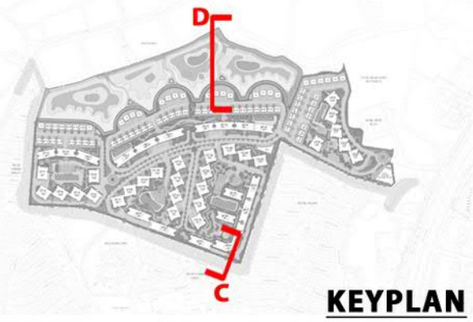
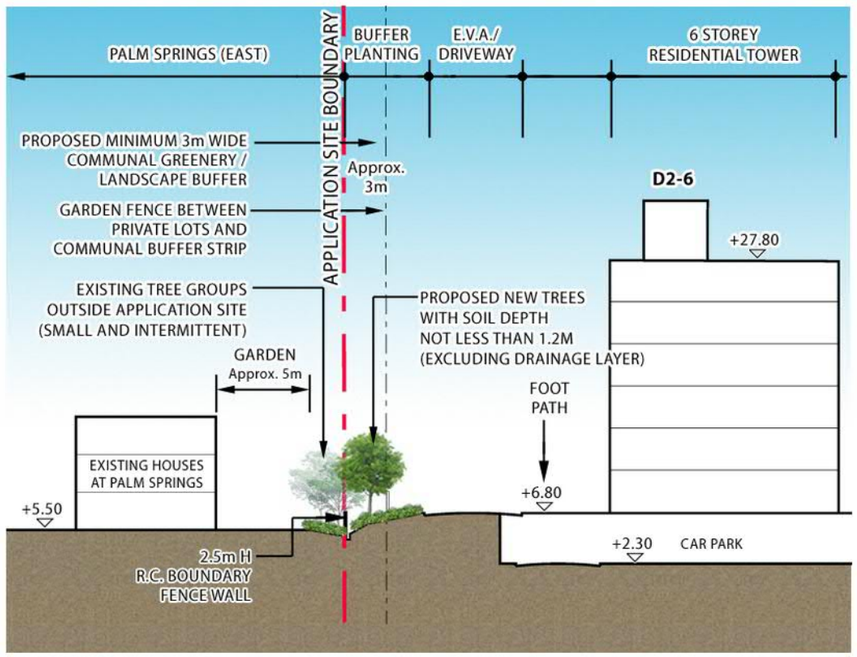
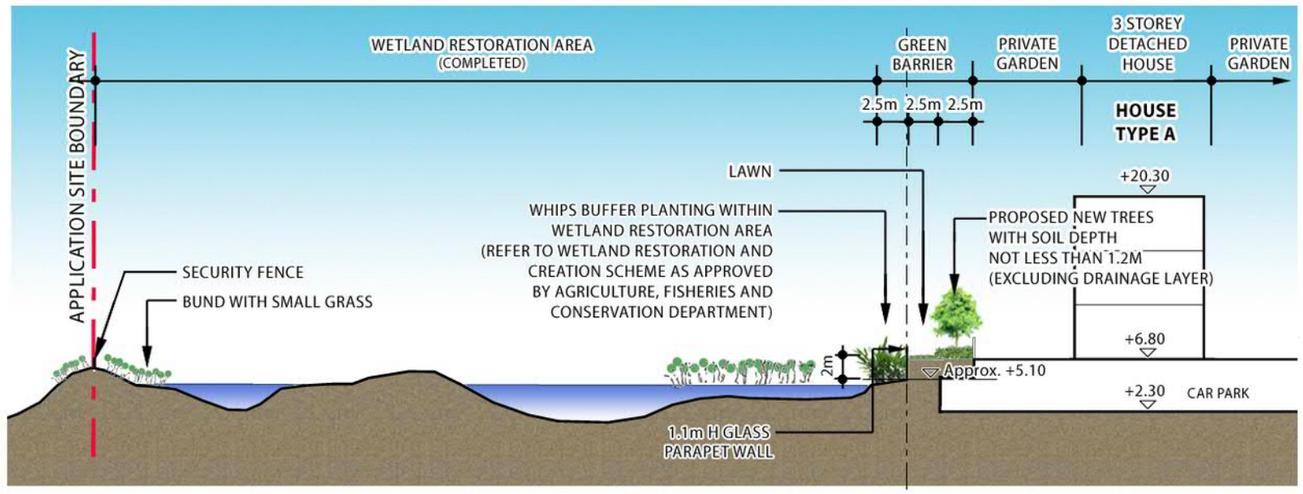




SECTION C - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE



SECTION D - THROUGH INTERFACE OF WETLAND BUFFER AND RESIDENTIAL AREA (TYPICAL)

0m 2m 5m 10m 20m

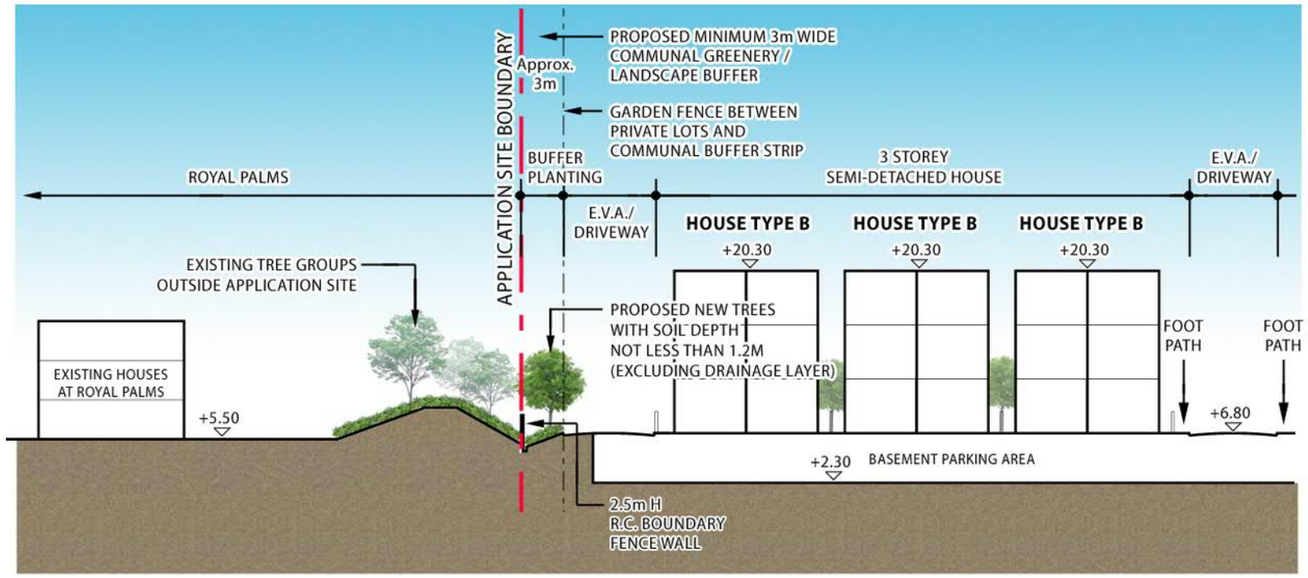
SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

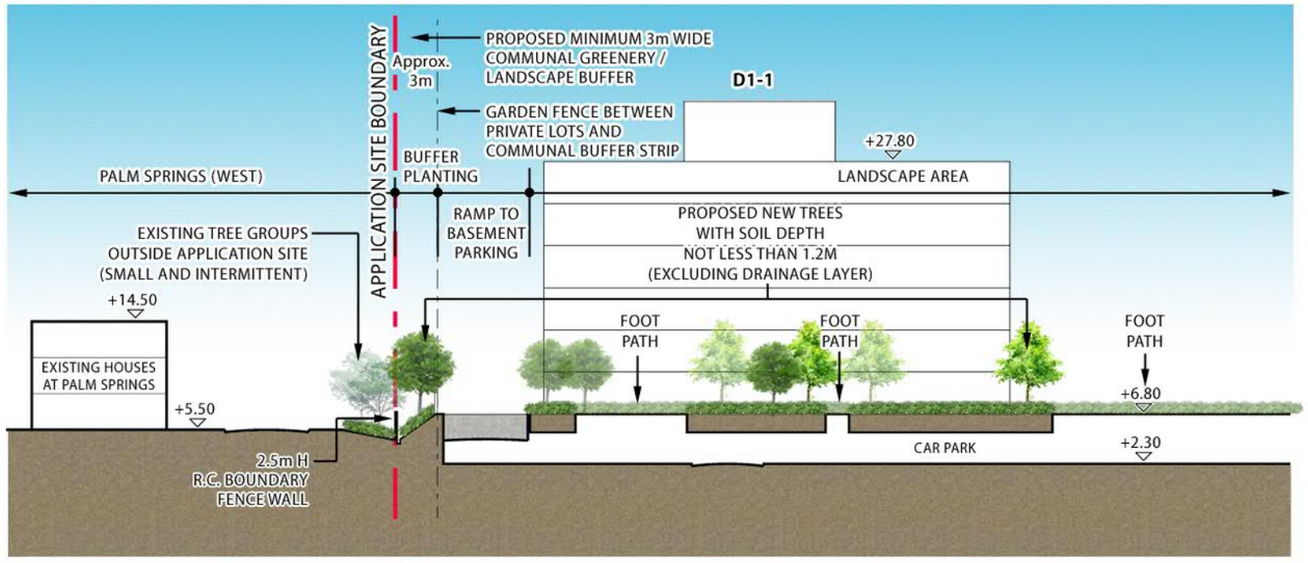
Landscape Section C & D

Dwg. No. : 2023202-SEC-03a

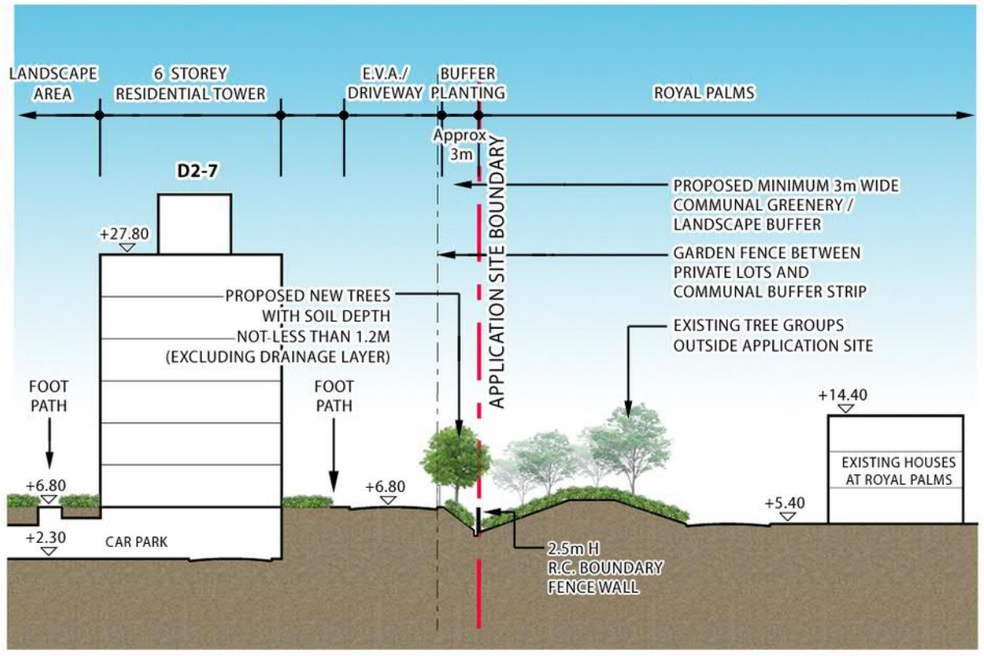
Date : JAN 2025
(A3-size)



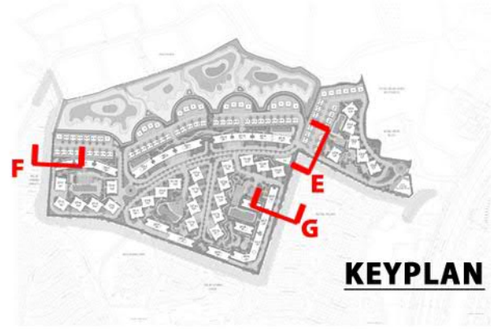
SECTION E - SECTION THROUGH ROYAL PALMS / APPLICATION SITE



SECTION F - SECTION THROUGH PALM SPRINGS (WEST) / APPLICATION SITE



SECTION G - SECTION THROUGH ROYAL PALMS / APPLICATION SITE



0m 2m 5m 10m 20m

SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section E, F & G

Dwg. No. : 2023202-SEC-04a

Date : JAN 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-01-06 LMP\2023202-SEC-04a

APPENDIX D

Fence Wall Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Fence Wall Demarcation Plan

Dwg. No. : 2023202-FWP-01

Date : JAN 2025
(A3-size)

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APPENDIX E

Tree Planting Plan

LEGEND:

- LOT BOUNDARY
- TREES PROPOSED TO BE TRANSPLANTED (16nos.)
- PROPOSED NEW TREE (1200nos.)
- EXISTING TREE GROUP

no.	description	date
A	GENERAL REVISION	14/01/25

REVISION

Copyright of this drawing is reserved by AXXA GROUP LIMITED

IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

axxa group limited

UNIT 301-02, 3/F PLAZA 228,
No. 228 WAN CHAI ROAD, HONG KONG.
香港 灣仔 灣仔道 228號,
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E: ag@axxagroup.com.hk

PROJECT: To Amend the Notes of the 'Comprehensive Development to include Wetland Restoration Area' Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE PLANTING PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202
CAD Ref.:	2023202-12A-TPP-01

Drawing No.: TPP-01

REV. A

A0 1189 x 841

ANNEX A

Greenery Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Greenery Demarcation Plan

Dwg. No. : 2023202-GDP-01

Date : JAN 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-01-06 LMP\2023202-GDP-01

ANNEX B

Tree Preservation Proposal

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

ANNEX B

TREE PRESERVATION PROPOSAL

JANUARY 2025

Landscape Government
Submission Consultant Axxa Group Limited

axxa group

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3.0 Tree Planting Proposal

4.0 Summary of Tree Treatment and Planting Proposal

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Appendix B Photographic Record of Existing Trees

Appendix C Tree Treatment Plan

Appendix D Tree Planting Plan

1.0 INTRODUCTION

1.1 This Tree Preservation Proposal is submitted to support Section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)"("OU(CDWRA)") zone.

1.2 The Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The Wetland Restoration Area (WRA) in the northern part of the Site was completed.

2.0 TREE TREATMENT PROPOSAL

2.1 Previous Approved Tree Preservation Proposal

Based on previous S16 Approved Tree Preservation Proposal (15 February 2024), a total of **203** nos. of trees located within Site were surveyed in 2023. Among them, 16 nos. of trees approved to be transplanted and 187 nos. of trees approved to be felled.

2.2 Current Tree Transplanting and Felling Proposal

There is **no change** to the tree treatment proposal comparing to the approved scheme. For detail, please refer to **Appendix A** for the Tree Treatment Schedule, **Appendix B** for the Photographic Record of Existing Trees and **Appendix C** for the Tree Treatment Plan.

3.0 TREE PLANTING PROPOSAL

1200 nos. of new trees as approved from previous planning applications are proposed to be planted. Among them, 851 nos. are proposed to be planted in residential portion, while 349 nos. along the perimeter have been planted through previous planning application approvals since 2008.

The following list indicates the proposed tree species along with suitable ornamental species to replenish the loss and to strengthen the greening / conservation. Species selected for planting are mostly larger woodland trees suitable for boundary buffer planting. Others chosen are native woodland species with dense foliage and to substitute felled tree species, recreating an environment similar to the original state of Site. The following list indicates the tree species to compensate for the loss and to strengthen the greening / conservation. Refer to **Table 1** and **Appendix D** - Tree Planting Plan**.**

Table 1: Plant Material Schedule

Proposed Species	Chinese Name	Quantity/ Size
Acacia auriculiformis	耳果相思	
Acacia mangium	大葉相思	
Araucaria heterophylla	異葉南洋杉	
*Bischofia javanica**	秋楓	
Casuarina equisetifolia	木麻黃	
Callistemon x hybridus 'Golden Ball'	黃金串錢柳	
Camellia japonica	山茶	
*Celtis sinensis**	朴樹	
Chorisia speciosa	絲木棉	
Chukrasia tabularis	麻楝	
*Cinnamomum burmannii**	陰香	851 nos.
*Cinnamomum camphora**	樟	
Delonix regia	鳳凰木	Size: Heavy Standard Size 4m High; 3-4m Spread; 4-5m Spacing; DBH 0.09m
Dracontomelon duperreanum	人面子	
*Elaeocarpus decipiens**	杜英	
Elaeocarpus hainanensis	水石榕	
Eucalyptus cumini	赤桉	349 nos.
Ficus benjamina	垂葉榕	
*Ficus microcarpa**	細葉榕	Size: Standard Size 2-2.5m High; 3m Spread; 3m Spacing; DBH 0.075m
*Hibiscus tiliaceus**	黃槿	
Lagerstroemia indica	紫薇	
*Liquidambar formosana**	楓香	
Mella azedarach	苦楝	
Melaleuca quinquenervia	白千層	
Michelia x alba	白蘭	
*Morella rubra**	楊梅	
Osmanthus fragrans	桂花	
*Podocarpus macrophyllus**	羅漢松	
Roystonea regia	王棕	
*Sapium sebiferum**	烏桕	
*Sterculia lanceolata**	假蘋婆	
Syzygium cumini	海南蒲桃	
Syzygium jambos	蒲桃	
Tabebuia impetiginosa	紫花風鈴木	
Terminalia mantaly	小葉欖仁	
Terminalia mantaly cv. 'Tricolor'	錦葉欖仁	
*Viburnum odoratissimum**	珊瑚樹	

Remarks: * Native Tree Species

Sufficient soil depth of not less than a minimum of 1200mm (excluding drainage layer) will be provided for each in-ground planting pit / bed / area to ensure future growth of transplanted and new trees. Water points will be installed based on the principle of not more than 40m c/c spacing.

5.0 SUMMARY OF TREE TREATMENT AND PLANTING PROPOSAL

A summary showing Tree Treatment and Planting Proposal is shown in **Table 2**:

Table 2: Tree Treatment and Planting Proposal Schedule

Description	**S16 Approved Scheme** (approved on 15 Feb 2024)	**Current Scheme**	**Difference**
Total Nos. of Trees Surveyed	203	203	0
Nos. of Trees Proposed to be Retained	0	0	0
Nos. of Trees Proposed to be Transplanted	16	16	0
Nos. of Trees Proposed to be Felled	187	187	0
Nos. of New Trees to be Planted	1200*	1200*	0

Remarks:

* 349 nos. of perimeter buffer trees have been planted through previous planning application approvals since 2008.

APPENDIX A

Tree Treatment Schedule

Tree Treatment Schedule

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T051	T051	*Ficus hispida*	對葉榕	7	130	3	F	F	
T052	T052	*Ficus hispida*	對葉榕	7	130	4	F	F	
T053	T053	*Ficus variegata*	青果榕	7	150	4	F	F	
T058	T058	*Ficus hispida*	對葉榕	7	140	3	F	F	
T063	T063	*Melaleuca cajuputi* subsp. *cumingiana*	白千層	7	100	2	F	F	Leaning
T070	T070	*Morus alba*	桑	6	140	4	F	F	
T072	T072	*Macaranga tanarius* var. *tomentosa*	血桐	8	100	4	F	F	
T554	T554	*Ficus microcarpa*	細葉榕	10	380	6	T	T	Broken branches/ exposed roots
T560	T560	*Ficus microcarpa*	細葉榕	11	280	6	T	T	Exposed roots
T567	T567	*Syzygium cumini*	海南蒲桃	11	280	6	T	T	
T569	T569	*Hibiscus tiliaceus*	黃槿	8	230	5	T	T	Broken branches / cross branches / epicormics
T571	T571	*Ficus microcarpa*	細葉榕	12	900	7	T	T	Broken branches
T580	T580	*Ficus microcarpa*	細葉榕	12	450	7	T	T	Broken branches / exposed roots
T584	T584	*Syzygium cumini*	海南蒲桃	11	190	5	T	T	
T588	T588	*Ficus microcarpa*	細葉榕	12	500	5	T	T	Bent trunk / broken branches/ exposed roots
T594	T594	*Ficus microcarpa*	細葉榕	12	520	8	T	T	Bent trunk/ broken branches/ exposed roots
T599	T599	*Syzygium cumini*	海南蒲桃	6	120	3	T	T	Decay at trunk base / leaning
T601	T601	*Ficus microcarpa*	細葉榕	12	260	8	T	T	Exposed root
T602	T602	*Syzygium cumini*	海南蒲桃	8	220	4	T	T	
T604	T604	*Ficus microcarpa*	細葉榕	12	300	9	T	T	
T605	T605	*Melaleuca cajuputi subsp. cumingiana*	白千層	12	200	5	T	T	multi-stems with included bark
T607	T607	*Ficus microcarpa*	細葉榕	12	250	6	T	T	Broken branches/ exposed roots/ bent trunk
T609	T609	*Syzygium cumini*	海南蒲桃	9	230	5	T	T	Broken branches/ codominant trunk
T636	T636	*Casuarina equisetifolia*	木麻黃	8	110	3	F	F	
T657	T657	*Casuarina equisetifolia*	木麻黃	7	130	3	F	F	
T669	T669	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	
T1450	T1450	*Casuarina equisetifolia*	木麻黃	6	100	2	F	F	
T1451	T1451	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1452	T1452	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1467	T1467	*Casuarina equisetifolia*	木麻黃	7	120	3	F	F	
T1468	T1468	*Casuarina equisetifolia*	木麻黃	7	130	3	F	F	
T1505	T1505	*Casuarina equisetifolia*	木麻黃	11	130	4	F	F	
T1520	T1520	*Casuarina equisetifolia*	木麻黃	6	140	5	F	F	
T1529	T1529	*Casuarina equisetifolia*	木麻黃	10	125	3	F	F	
T1599	T1599	*Leucaena leucocephala*	銀合歡	9	185	5	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1603	T1603	*Leucaena leucocephala*	銀合歡	8	235	3	F	F	Cross branches / multi-stems
T1605	T1605	*Leucaena leucocephala*	銀合歡	8	140	3	F	F	
T1607	T1607	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1609	T1609	*Casuarina equisetifolia*	木麻黃	4	140	2	F	F	Leaning
T1610	T1610	*Casuarina equisetifolia*	木麻黃	10	105	2	F	F	
T1611	T1611	*Casuarina equisetifolia*	木麻黃	10	100	2	F	F	
T1614	T1614	*Casuarina equisetifolia*	木麻黃	10	140	4	F	F	
T1616	T1616	*Casuarina equisetifolia*	木麻黃	10	130	2	F	F	
T1618	T1618	*Casuarina equisetifolia*	木麻黃	8	110	3	F	F	
T1619	T1619	*Casuarina equisetifolia*	木麻黃	10	95	2	F	F	Bark crack
T1621	T1621	*Leucaena leucocephala*	銀合歡	8	170	4	F	F	Codominant Stems
T1622	T1622	*Leucaena leucocephala*	銀合歡	7	110	2	F	F	
T1623	T1623	*Leucaena leucocephala*	銀合歡	8	233	5	F	F	Codominant Stems
T1624	T1624	*Leucaena leucocephala*	銀合歡	8	141	4	F	F	Multi-stems
T1626	T1626	*Leucaena leucocephala*	銀合歡	8	115	2	F	F	
T1627	T1627	*Leucaena leucocephala*	銀合歡	8	160	4	F	F	
T1629	T1629	*Leucaena leucocephala*	銀合歡	7	120	2	F	F	
T1630	T1630	*Leucaena leucocephala*	銀合歡	8	201	6	F	F	Multi-stems
T1631	T1631	*Leucaena leucocephala*	銀合歡	7	135	3	F	F	
T1732	T1732	*Casuarina equisetifolia*	木麻黃	7	105	2	F	F	
T1733	T1733	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1734	T1734	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1736	T1736	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1738	T1738	*Casuarina equisetifolia*	木麻黃	8	95	2	F	F	
T1739	T1739	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	Broken branches
T1740	T1740	*Casuarina equisetifolia*	木麻黃	8	130	3	F	F	
T1765	T1765	*Casuarina equisetifolia*	木麻黃	9	100	2	F	F	
T1781	T1781	*Casuarina equisetifolia*	木麻黃	10	115	2	F	F	
T1783	T1783	*Casuarina equisetifolia*	木麻黃	12	130	4	F	F	
T1784	T1784	*Casuarina equisetifolia*	木麻黃	11	115	5	F	F	
T1785	T1785	*Casuarina equisetifolia*	木麻黃	11	140	3	F	F	
T1786	T1786	*Casuarina equisetifolia*	木麻黃	8	142	4	F	F	Codominant Stems
T1797	T1797	*Casuarina equisetifolia*	木麻黃	9	95	2	F	F	
T1798	T1798	*Casuarina equisetifolia*	木麻黃	10	120	4	F	F	
T1800	T1800	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1802	T1802	*Casuarina equisetifolia*	木麻黃	9	105	3	F	F	Broken branches
T1804	T1804	*Casuarina equisetifolia*	木麻黃	12	105	3	F	F	
T1806	T1806	*Casuarina equisetifolia*	木麻黃	10	120	3	F	F	
T1814	T1814	*Casuarina equisetifolia*	木麻黃	9	115	4	F	F	
T1903	T1903	*Casuarina equisetifolia*	木麻黃	10	150	2	F	F	
T1904	T1904	*Casuarina equisetifolia*	木麻黃	9	130	2	F	F	
T1905	T1905	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1906	T1906	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1909	T1909	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	Broken branches
T1912	T1912	*Casuarina equisetifolia*	木麻黃	8	145	3	F	F	
T1913	T1913	*Casuarina equisetifolia*	木麻黃	9	170	5	F	F	
T1914	T1914	*Casuarina equisetifolia*	木麻黃	8	145	3	F	F	
T1916	T1916	*Casuarina equisetifolia*	木麻黃	8	160	4	F	F	
T1917	T1917	*Casuarina equisetifolia*	木麻黃	7	120	2	F	F	Codominant Stems / leaning
T1919	T1919	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1920	T1920	*Casuarina equisetifolia*	木麻黃	8	100	3	F	F	
T1921	T1921	*Casuarina equisetifolia*	木麻黃	8	95	2	F	F	
T1922	T1922	*Casuarina equisetifolia*	木麻黃	8	140	3	F	F	
T1923	T1923	*Casuarina equisetifolia*	木麻黃	8	145	2	F	F	
T1926	T1926	*Casuarina equisetifolia*	木麻黃	9	170	2	F	F	
T1927	T1927	*Casuarina equisetifolia*	木麻黃	8	150	2	F	F	
T1929	T1929	*Casuarina equisetifolia*	木麻黃	8	140	4	F	F	
T1930	T1930	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1933	T1933	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1934	T1934	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T1935	T1935	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1936	T1936	*Casuarina equisetifolia*	木麻黃	7	100	2	F	F	
T1937	T1937	*Casuarina equisetifolia*	木麻黃	7	105	2	F	F	
T1938	T1938	*Casuarina equisetifolia*	木麻黃	8	100	4	F	F	
T1939	T1939	*Casuarina equisetifolia*	木麻黃	8	120	3	F	F	
T1940	T1940	*Casuarina equisetifolia*	木麻黃	8	125	2	F	F	
T1941	T1941	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1942	T1942	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	Bark crack
T1943	T1943	*Casuarina equisetifolia*	木麻黃	8	115	3	F	F	
T1944	T1944	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1946	T1946	*Casuarina equisetifolia*	木麻黃	9	110	2	F	F	
T1947	T1947	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	Broken branches / leaning
T1948	T1948	*Casuarina equisetifolia*	木麻黃	8	140	2	F	F	
T1949	T1949	*Casuarina equisetifolia*	木麻黃	10	100	3	F	F	
T1950	T1950	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T1951	T1951	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1952	T1952	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1954	T1954	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1955	T1955	*Casuarina equisetifolia*	木麻黃	9	135	2	F	F	Bark crack
T1956	T1956	*Casuarina equisetifolia*	木麻黃	9	170	3	F	F	
T1957	T1957	*Casuarina equisetifolia*	木麻黃	9	120	2	F	F	
T1958	T1958	*Casuarina equisetifolia*	木麻黃	8	95	3	F	F	
T1959	T1959	*Casuarina equisetifolia*	木麻黃	9	100	2	F	F	
T1960	T1960	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1968	T1968	*Casuarina equisetifolia*	木麻黃	10	105	2	F	F	
T1970	T1970	*Casuarina equisetifolia*	木麻黃	10	130	2	F	F	
T1973	T1973	*Casuarina equisetifolia*	木麻黃	10	110	2	F	F	
T1982	T1982	*Casuarina equisetifolia*	木麻黃	10	200	4	F	F	Codominant Stems
T1999	T1999	*Casuarina equisetifolia*	木麻黃	7	100	2	F	F	
T2002	T2002	*Casuarina equisetifolia*	木麻黃	7	110	2	F	F	
T2008	T2008	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2009	T2009	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2010	T2010	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T2011	T2011	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T2012	T2012	*Casuarina equisetifolia*	木麻黃	9	110	3	F	F	
T2013	T2013	*Casuarina equisetifolia*	木麻黃	10	150	4	F	F	
T2017	T2017	*Casuarina equisetifolia*	木麻黃	11	150	2	F	F	
T2019	T2019	*Casuarina equisetifolia*	木麻黃	8	115	4	F	F	
T2020	T2020	*Casuarina equisetifolia*	木麻黃	8	125	2	F	F	
T2021	T2021	*Casuarina equisetifolia*	木麻黃	10	125	3	F	F	
T2022	T2022	*Casuarina equisetifolia*	木麻黃	10	115	2	F	F	
T2023	T2023	*Casuarina equisetifolia*	木麻黃	6	145	2	F	F	
T2025	T2025	*Casuarina equisetifolia*	木麻黃	9	135	3	F	F	Bark crack
T2027	T2027	*Casuarina equisetifolia*	木麻黃	11	115	2	F	F	
T2028	T2028	*Casuarina equisetifolia*	木麻黃	9	130	3	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T2029	T2029	*Casuarina equisetifolia*	木麻黃	11	120	4	F	F	
T2030	T2030	*Casuarina equisetifolia*	木麻黃	15	145	4	F	F	
T2031	T2031	*Casuarina equisetifolia*	木麻黃	11	170	2	F	F	Multi-stems
T2032	T2032	*Casuarina equisetifolia*	木麻黃	12	150	4	F	F	
T2033	T2033	*Casuarina equisetifolia*	木麻黃	10	120	2	F	F	
T2034	T2034	*Casuarina equisetifolia*	木麻黃	15	160	6	F	F	Codominant Stems
T2034A	T2034A	*Casuarina equisetifolia*	木麻黃	10	110	3	F	F	
T2041	T2041	*Casuarina equisetifolia*	木麻黃	8	105	3	F	F	
T2042	T2042	*Casuarina equisetifolia*	木麻黃	5	115	3	F	F	
T2044	T2044	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2049	T2049	*Casuarina equisetifolia*	木麻黃	7	120	2	F	F	
T2052	T2052	*Casuarina equisetifolia*	木麻黃	9	120	2	F	F	
T2053	T2053	*Casuarina equisetifolia*	木麻黃	9	160	3	F	F	
T2054	T2054	*Casuarina equisetifolia*	木麻黃	12	140	4	F	F	Exposed roots
T2057	T2057	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T2070	T2070	*Casuarina equisetifolia*	木麻黃	8	150	2	F	F	
T2108	T2108	*Leucaena leucocephala*	銀合歡	11	105	3	F	F	
T2110	T2110	*Leucaena leucocephala*	銀合歡	10	205	6	F	F	Codominant Stems
T2111	T2111	*Casuarina equisetifolia*	木麻黃	7	110	2	F	F	
T2112	T2112	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	
T2115	T2115	*Leucaena leucocephala*	銀合歡	8	110	3	F	F	Leaning
T2116	T2116	*Leucaena leucocephala*	銀合歡	13	120	4	F	F	Leaning
T2117	T2117	*Leucaena leucocephala*	銀合歡	10	120	3	F	F	Bark crack / leaning
T2123	T2123	*Leucaena leucocephala*	銀合歡	12	220	4	F	F	Leaning
T2127	T2127	*Leucaena leucocephala*	銀合歡	8	125	2	F	F	Leaning
T2130	T2130	*Casuarina equisetifolia*	木麻黃	9	95	2	F	F	
T2153	T2153	*Leucaena leucocephala*	銀合歡	8	110	5	F	F	Leaning
T2154	T2154	*Leucaena leucocephala*	銀合歡	10	110	4	F	F	Leaning
T2155	T2155	*Leucaena leucocephala*	銀合歡	8	134	4	F	F	Codominant Stesm / leaning
T2156	T2156	*Leucaena leucocephala*	銀合歡	8	139	3	F	F	Multi-stems
T2157	T2157	*Leucaena leucocephala*	銀合歡	8	120	2	F	F	Cross branches / codominant stems
T2160	T2160	*Leucaena leucocephala*	銀合歡	7	201	2	F	F	Multi-stems
T2161	T2161	*Leucaena leucocephala*	銀合歡	7	128	4	F	F	
T2162	T2162	*Leucaena leucocephala*	銀合歡	8	141	4	F	F	Multi-stems
T2163	T2163	*Leucaena leucocephala*	銀合歡	11	141	3	F	F	Codominant Stesm

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T2029	T2029	*Casuarina equisetifolia*	木麻黃	11	120	4	F	F	
T2030	T2030	*Casuarina equisetifolia*	木麻黃	15	145	4	F	F	
T2031	T2031	*Casuarina equisetifolia*	木麻黃	11	170	2	F	F	Multi-stems
T2032	T2032	*Casuarina equisetifolia*	木麻黃	12	150	4	F	F	
T2033	T2033	*Casuarina equisetifolia*	木麻黃	10	120	2	F	F	
T2034	T2034	*Casuarina equisetifolia*	木麻黃	15	160	6	F	F	Codominant Stems
T2034A	T2034A	*Casuarina equisetifolia*	木麻黃	10	110	3	F	F	
T2041	T2041	*Casuarina equisetifolia*	木麻黃	8	105	3	F	F	
T2042	T2042	*Casuarina equisetifolia*	木麻黃	5	115	3	F	F	
T2044	T2044	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2049	T2049	*Casuarina equisetifolia*	木麻黃	7	120	2	F	F	
T2052	T2052	*Casuarina equisetifolia*	木麻黃	9	120	2	F	F	
T2053	T2053	*Casuarina equisetifolia*	木麻黃	9	160	3	F	F	
T2054	T2054	*Casuarina equisetifolia*	木麻黃	12	140	4	F	F	Exposed roots
T2057	T2057	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T2070	T2070	*Casuarina equisetifolia*	木麻黃	8	150	2	F	F	
T2108	T2108	*Leucaena leucocephala*	銀合歡	11	105	3	F	F	
T2110	T2110	*Leucaena leucocephala*	銀合歡	10	205	6	F	F	Codominant Stems
T2111	T2111	*Casuarina equisetifolia*	木麻黃	7	110	2	F	F	
T2112	T2112	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	
T2115	T2115	*Leucaena leucocephala*	銀合歡	8	110	3	F	F	Leaning
T2116	T2116	*Leucaena leucocephala*	銀合歡	13	120	4	F	F	Leaning
T2117	T2117	*Leucaena leucocephala*	銀合歡	10	120	3	F	F	Bark crack / leaning
T2123	T2123	*Leucaena leucocephala*	銀合歡	12	220	4	F	F	Leaning
T2127	T2127	*Leucaena leucocephala*	銀合歡	8	125	2	F	F	Leaning
T2130	T2130	*Casuarina equisetifolia*	木麻黃	9	95	2	F	F	
T2153	T2153	*Leucaena leucocephala*	銀合歡	8	110	5	F	F	Leaning
T2154	T2154	*Leucaena leucocephala*	銀合歡	10	110	4	F	F	Leaning
T2155	T2155	*Leucaena leucocephala*	銀合歡	8	134	4	F	F	Codominant Stesm / leaning
T2156	T2156	*Leucaena leucocephala*	銀合歡	8	139	3	F	F	Multi-stems
T2157	T2157	*Leucaena leucocephala*	銀合歡	8	120	2	F	F	Cross branches / codominant stems
T2160	T2160	*Leucaena leucocephala*	銀合歡	7	201	2	F	F	Multi-stems
T2161	T2161	*Leucaena leucocephala*	銀合歡	7	128	4	F	F	
T2162	T2162	*Leucaena leucocephala*	銀合歡	8	141	4	F	F	Multi-stems
T2163	T2163	*Leucaena leucocephala*	銀合歡	11	141	3	F	F	Codominant Stesm

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T2164	T2164	*Leucaena leucocephala*	銀合歡	11	117	3	F	F	Multi-stems
T2165	T2165	*Leucaena leucocephala*	銀合歡	10	158	4	F	F	Broken branches / leaning / multi-stems
T2166	T2166	*Leucaena leucocephala*	銀合歡	10	170	4	F	F	Cross branches / leaning
T2168	T2168	*Leucaena leucocephala*	銀合歡	11	120	3	F	F	
T2170	T2170	*Leucaena leucocephala*	銀合歡	8	175	5	F	F	Leaning / multi-stems
T2172	T2172	*Leucaena leucocephala*	銀合歡	10	140	5	F	F	Leaning
T2173	T2173	*Leucaena leucocephala*	銀合歡	10	180	5	F	F	Leaning
T2174	T2174	*Leucaena leucocephala*	銀合歡	10	115	3	F	F	Leaning
T2178	T2178	*Leucaena leucocephala*	銀合歡	10	200	4	F	F	
T2179	T2179	*Leucaena leucocephala*	銀合歡	10	120	4	F	F	
T2188	T2188	*Leucaena leucocephala*	銀合歡	8	155	4	F	F	
T2242	T2242	*Casuarina equisetifolia*	木麻黃	8	130	3	F	F	
T2245	T2245	*Casuarina equisetifolia*	木麻黃	7	95	2	F	F	
T2249	T2249	*Casuarina equisetifolia*	木麻黃	9	95	3	F	F	
T2249A	T2249A	*Casuarina equisetifolia*	木麻黃	9	150	4	F	F	Codominant Stesm / included bark
T2250	T2250	*Casuarina equisetifolia*	木麻黃	11	165	4	F	F	
T2251	T2251	*Casuarina equisetifolia*	木麻黃	7	95	2	F	F	
T2253	T2253	*Casuarina equisetifolia*	木麻黃	11	125	3	F	F	
T2253A	T2253A	*Casuarina equisetifolia*	木麻黃	10	115	3	F	F	Bark crack
T2254	T2254	*Casuarina equisetifolia*	木麻黃	10	95	2	F	F	
T2255	T2255	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2266	T2266	*Casuarina equisetifolia*	木麻黃	10	115	3	F	F	Broken branches
T2275	T2275	*Casuarina equisetifolia*	木麻黃	13	120	3	F	F	Bark crack / codominant stems
T2278	T2278	*Casuarina equisetifolia*	木麻黃	14	200	5	F	F	
T2281	T2281	*Casuarina equisetifolia*	木麻黃	14	145	5	F	F	
T2283	T2283	*Casuarina equisetifolia*	木麻黃	12	180	6	F	F	Broken branches / Codominant Stems
T2284	T2284	*Casuarina equisetifolia*	木麻黃	12	200	6	F	F	
T2286	T2286	*Casuarina equisetifolia*	木麻黃	10	110	3	F	F	

Summary Table

	Number of Tree(s)
Tree to be Retained	0
Tree to be Transplanted	16
Trees to be Felled	187
Total Number of Existing Tree(s)	203

[1] Please state whether the OVT, potentially registrable OVT, trees of rare or protected species, trees with ecological and historical significance, etc. within and/or adjacent to the site is likely to be affected by the proposed development.

[2] DBH of a tree refers to its diameter at breast height (i.e. measured at 1.3m above ground level).

APPENDIX B

Photographic Record of Existing Trees



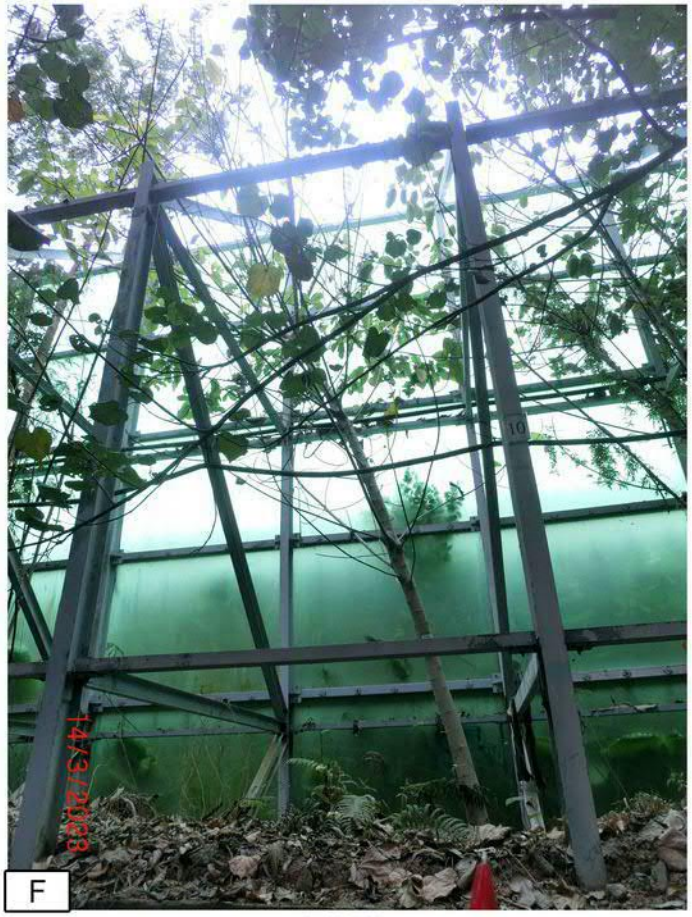
T051



T052



T053



T058

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T063



T070



T072

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T554



T560



T567



T569

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T571



T580



T584



T588

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



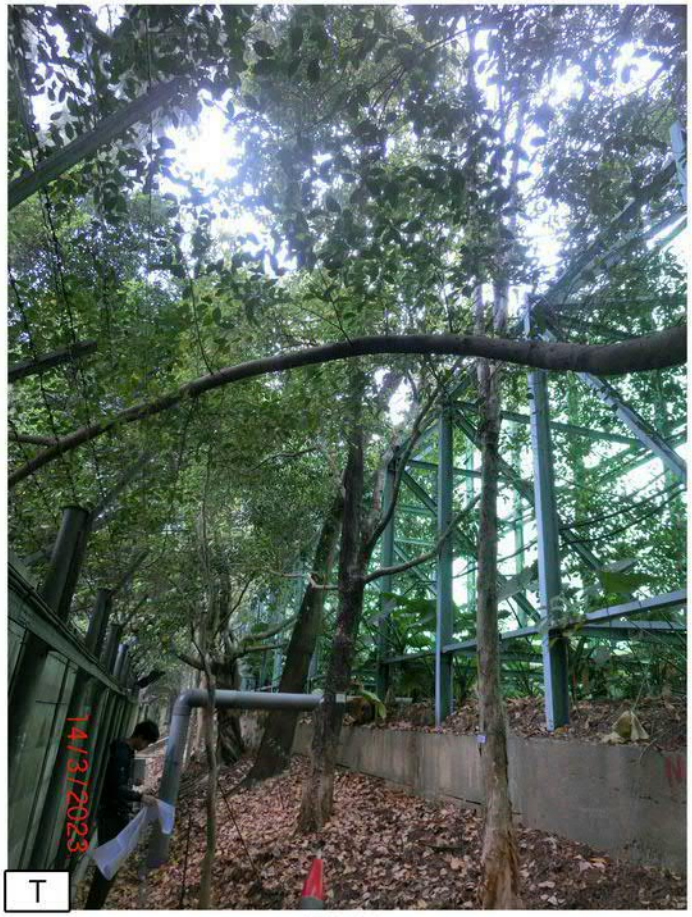
T594



T599



T601



T602

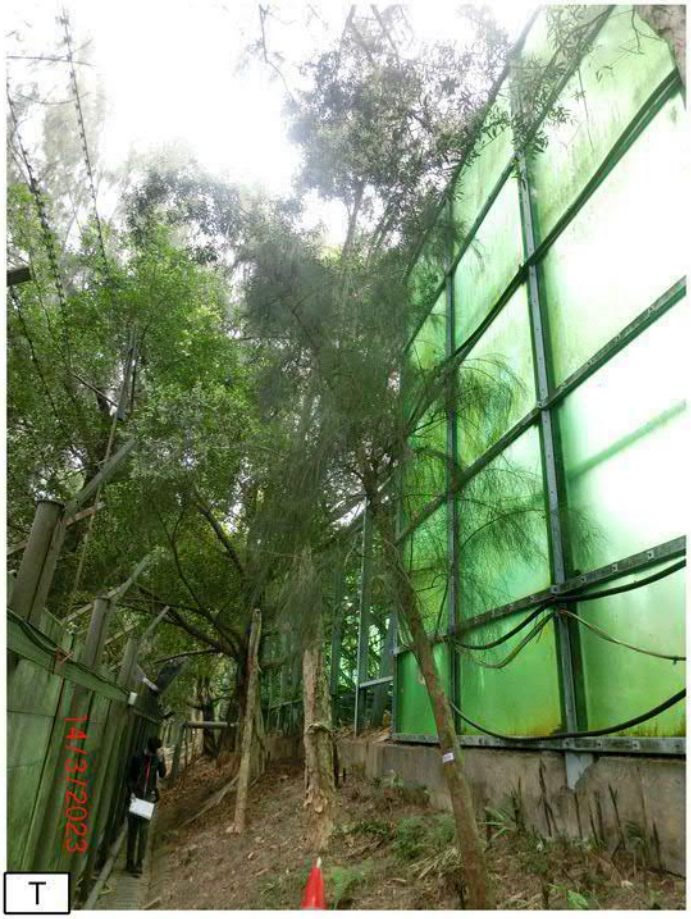
Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



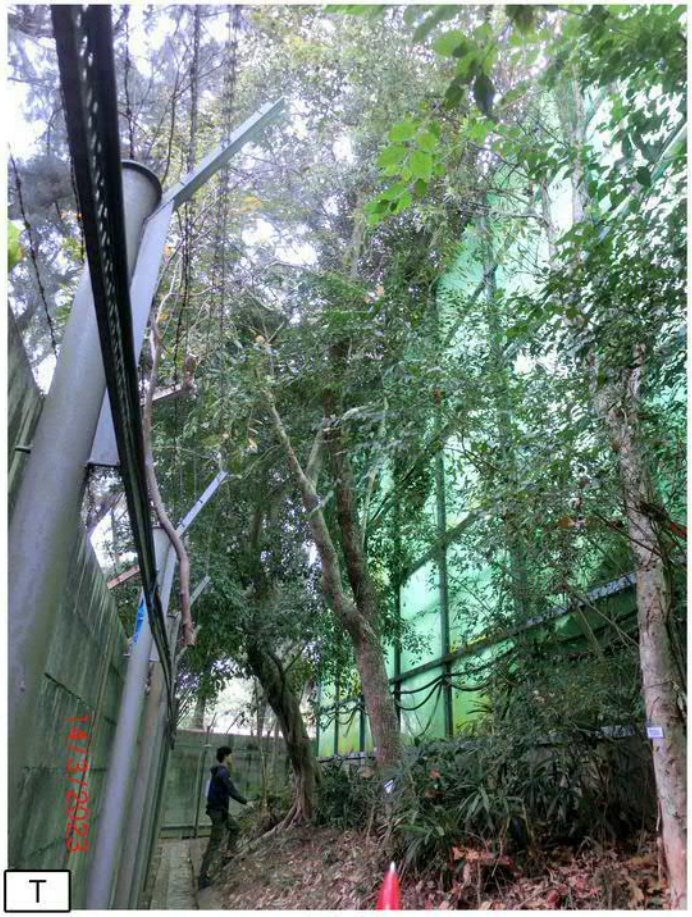
T604



T605



T607



T609

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T636



T657



T669



T1450

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1451



T1452



T1467



T1468

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1505



T1520



T1529



T1599

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1603



T1605



T1607



T1609

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1610



T1611



T1614



T1616

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1618



T1619



T1621



T1622

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1623



T1624



T1626



T1627

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1629



T1630



T1631



T1732

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1733



T1734



T1736



T1738

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1739



T1740



T1765



T1781

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1783



T1784



T1785



T1786

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1797



T1798



T1800



T1802

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1804



T1806



T1814



T1903

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1904



T1905



T1906



T1909

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1912



T1913



T1914



T1916

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1917



T1919



T1920



T1921

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1922



T1923



T1926



T1927

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1929



T1930



T1933



T1934

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1935



T1936



T1937



T1938

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1939



T1940



T1941



T1942

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1943



T1944



T1946



T1947

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1948



T1949



T1950



T1951

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1952



T1954



T1955



T1956

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1957



T1958



T1959



T1960

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1968



T1970



T1973



T1982

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1999



T2002



T2008



T2009

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2010



T2011



T2012



T2013

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2017



T2019



T2020



T2021

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2022



T2023



T2025



T2027

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2028



T2029



T2030



T2031

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2032



T2033



T2034



T2034A

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2041



T2042



T2044



T2049

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2052



T2053



T2054



T2057

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2070



T2108



T2110



T2111

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2112



T2115



T2116



T2117

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2123



T2127



T2130



T2153

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2154



T2155



T2156



T2157

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2160



T2161



T2162



T2163

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2164



T2165



T2166



T2168

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2170



T2172



T2173



T2174

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2178



T2179



T2188



T2242

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2245



T2249



T2249A



T2250

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2251



T2253



T2253A



T2254

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2255



T2266



T2275



T2278

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2281



T2283



T2284



T2286

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree

APPENDIX C

Tree Treatment Plan

LEGEND:

- LOT BOUNDARY
- TREES PROPOSED TO BE TRANSPLANTED (16nos.)
- TREES PROPOSED TO BE FELLED (187nos.)
- EXISTING TREE GROUP

no.	description	date
A	GENERAL REVISION	14/01/25

REVISION

Copyright of this drawing is reserved by AXXA GROUP LIMITED

IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

axxa group limited

UNIT 301-02, 3/F PLAZA 228,
No. 228 WAN CHAI ROAD, HONG KONG.
香港 灣仔 灣仔道 228號,
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T: (852) 2893 8586 F: (852) 2893 8997
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PROJECT: To Amend the Notes of the 'Comprehensive Development to include Wetland Restoration Area' Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE TREATMENT PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202
CAD Ref.:	2023202-12A-TTP-01

Drawing No.: TTP-01

REV. A

A0 1189 x 841

APPENDIX D

Tree Planting Plan



no.	description	date
A	GENERAL REVISION	14/01/25

REVISION

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IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

axxa group limited

UNIT 301-02, 3/F PLAZA 228,
No. 228 WAN CHAI ROAD, HONG KONG.
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PROJECT: To Amend the Notes of the 'Comprehensive Development to include Wetland Restoration Area' Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE PLANTING PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202
CAD Ref.:	2023202-12A-TPP-01

Drawing No.: TPP-01

REV. A

A0 1189 x 841

ANNEX C

EPD's Approved Wetland Restoration and Creation Scheme

本署檔號 OUR REF: (8) in EP2/N6/P/105 Pt 4
來函檔號 YOUR REF:
電話 TEL. NO.: 2835 1843
圖文傳真 FAX NO.: 2591 0558
電子郵件 E-MAIL: tomtam@epd.gov.hk
網址 HOMEPAGE: http://www.epd.gov.hk

Environmental Protection Department
Branch Office
28th Floor, Southern Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一百三十號
修頓中心廿八樓

3 December 2010
(Fax No: 2908 8838)

Profit Point Enterprises Limited
71-76/F, Two International Finance Centre
8 Finance Street
Central, Hong Kong

Attn.: Mr David F. Dunigan

Dear Mr Dunigan,

Proposed Comprehensive Development at Wo Shang Wai, Mai Po, Yuen Long
Environmental Permit No. EP-311/2008/B
Condition 3.6 – Notification of Completion of Wetland Restoration Area Construction

I refer to your letter ref. HLD/HAPT/N083/1511/416 dated 15.11.2010 regarding the captioned.

We understand from you that the construction of the Wetland Restoration Area (WRA) has been completed in accordance with the requirements stated in condition 3.6 of the relevant Environmental Permit (No. EP-311/2008/B). We take this opportunity to remind you to ensure that all the habitat establishment, maintenance, management and monitoring works in the WRA as described in the Wetland Restoration Plan (WRP) as well as the ecological mitigation measures as proposed in the Ecological Impact Assessment report (3rd edition) dated November 2009 be properly followed and implemented, and submitted the necessary Environmental Monitoring & Audit reports according to the requirements set in the WRP and the relevant EP conditions in due course.

Should you have any query on the above, please feel free to contact the undersigned or my colleague Mr Kenny LEUNG on 2835 1038.

Yours faithfully,

(Tom T. H. TAM)
Senior Environmental Protection Officer
for Director of Environmental Protection

c.c. AFCD (Attn: Ms Eva YAU) Fax No: 2377 4427
Mott MacDonald Hong Kong Ltd. (Attn: Ms Florence YUEN) Fax No: 2827 1823

Internal
E(SA)33
(20101201.001)

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG: DETAILED DESIGN AND IMPLEMENTATION

WETLAND RESTORATION AND CREATION SCHEME SECOND SUBMISSION

November 2009

Prepared by: **Shirley Lam**

Verified by: Shirley Lam



Date: 01-11-2009

Validated by: **Paul Leader**



Date: 1 Nov 2009

Asia Ecological Consultants Ltd
127 Commercial Centre
Palm Springs
Yuen Long
New Territories
Hong Kong
asiaecol@asiaecol.com.hk

MASTERPLAN LIMITED
Planning and Development Advisors
領賢規劃顧問有限公司

Your Ref. TPB/Y/YL-MP/9
The Secretary,
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

Date: 28 May 2025
By Hand and email

Dear Sir/Madam,

Application for Amendment to the Approved Mai Po & Fairview Park Outline Zoning Plan No. S/YL-MP/8, to amend the Notes of the "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone applicable to the site, Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai Po, Yuen Long

Further Information Submission 1st

We submit herewith, our 1st Further Information in response to comments from relevant Government departments, to facilitate the consideration of the application by the Board. 40 hardcopies are submitted with this letter.

The submission includes Batch 1 and Batch 2 responses to departmental comments on technical clarifications. In Batch 1, the highlighted sections in the RtC table are our responses to further comments from departments, following our submission of informal RtC on 02.05.2025 and undergone a departmental circulation. Each batch contains Response to Comments Table, and revised technical assessments and supporting information. The further information does not result in a "material change" in the nature of the application. The submission has been prepared in accordance with the Town Planning Board Guideline No. 32A on submission of further information under the Town Planning Ordinance.

Yours faithfully,



Benson Poon
For and on behalf of
Masterplan Limited

cc. Ms. CHAN Kei Yee, Karen (TP/YLE2) (DPO/FS&YLE)
Mr. CHIU Pak Him, Kimson (STP/YLE1) (DPO/FS&YLE)
Client and Consultants

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

Section 12A Rezoning Application No. Y/YL-MP/9

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Response to Comments (Batch 1)

28 May 2025

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Attachments

Attachment 1: Landscape Function Analysis Plan

Attachment 2: Replacement pages of Planning Statement

Attachment 3: Section and Layout Plans of Temporary Sewerage Treatment Plant

Attachment 4: Master Layout Plan (Revised)

Attachment 5: Phasing Plan (Revised)

Attachment 6: Comparison Table of Current Scheme and Previous Approved S16

Attachment 7: Sewerage Impact Assessment (Updated)

Attachment 8: Drainage Impact Assessment (Updated)

Attachment 9: Water Supply Impact Assessment (Updated)

Attachment 10: Environmental Assessment (Updated)

Attachment 11: Preliminary Drillhole Records for Reference

Attachment 12: Estimation of Excavated Sediment for Reference

Response to Departmental Comments of District Planning Officer, Planning Department

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
Planning Statement (a) Please elaborate with more justifications and planning merits on the relaxation of plot ratio and building height restrictions.	The justifications for the proposed development that were presented in the Planning Statement, Section 10 are listed below for reference: • Scheme complies with the planning intention of the OU(CDWRA) zone. The planning intention would continue to be to develop comprehensive residential development to include wetland restoration area as a means of incentive for the restoration of degraded wetlands. The completed WRA would continue its ecological function, while the residential portion continues to be designated for residential land use. • In line with Northern Metropolis Development Strategy (NMDS) to transform the area into a new engine for growth and housing supply. This is spearheaded by the infrastructure and MTRC railway upgrades, providing capacity and supporting facilities for developments to increase intensity. • In line with the principles of the San Tin Technopole of striving for co-existence of development and conservation. • Development trend of increasing intensity of similar comprehensive residential developments in the area. This is evident in the recent approvals of planning applications and OZP amendments in the vicinity for upzoning and relaxation of development intensity. (e.g. Y/YL-

	NSW/7, Y/YL-NSW/8, Y/YL-NSW/9, and Land Sharing Pilot Scheme at Tung Shing Lei LSPS002) • Compatible in land use and scale to the existing surrounding land uses. There will not be any adverse impact to the wetland ecology of the SPS WCP, and the proposed scheme complies with the principle of no-net-loss in wetland. The increased development intensity of the residential portion is insignificant as it would not create negative off-site disturbance impact, or lead to both loss in area and function of the existing wetland and fish ponds, and the conservation of continuous and adjoining fish ponds is maintained. The proposed scheme is also compatible in scale and land-use to the surrounding low- to medium-density housing neighbourhood on the west side of the San Tin Highway. • The proposed scheme complies with the Town Planning Board Guideline No. 12C, as supported by the technical assessments and discussed. • The assessment reports have demonstrated that the proposed scheme is technically feasible, in terms of environmental impact, drainage, sewerage, water supply, ecology, traffic, visual, air ventilation and landscape impact. The planning merits that were presented in the Planning Statement are listed below for reference: • Contributing to the medium- to long-term private housing supply with 3,571 units. • The Site has been underutilized for years and is currently vacant land with wild grass and partly paved. It is capable of speedy implementation as it is ready for construction.

	• From public education standpoint, providing wildlife viewing points, with vegetation screening, at the edge and outside of the WRA, and at the roof-top of the residential blocks, to raise the public awareness and education of biodiversity in the wetlands of this area. • Contains landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds). • Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads. • An increased buffer planting (from 2.5m to 5m compared with the approved application No. A/YL-MP/344) within the residential portion of the Site, with 1 to 2 rows of trees to screen residential development and prevent disturbance to the WRA. This is an increased buffer planting area compared to the previous approved s16 scheme, with a 2.5m buffer planting within the residential portion. • Only low-rise buildings (about +21mPD) adjacent to the WRA and within 50m buffer from the nearest fishponds (i.e. land zoned as OU wetland conservation park) so that the proposed development would not lead to adverse ecological impacts. • The scheme provides a community facility of Residential Care Homes for Elderly (RCHE) with 100-places to meet the district-wide demand for such facilities in the future. The additional planning merits proposed in this further information submission is listed below:

	• The Site is the only comprehensive residential zone that is closest to the San Tin Technopole, and is situated at a unique location to be at the fringe and interface of the wetland ecosystem to the north, and permissible residential developments to the south. It would offer a unique and attractive living environment of a quality private residential neighborhood to attract global professional talents to work close to the San Tin Technopole. • The proposed scheme contains a stepped building height profile that was carefully designed with variation and gradation, to respect the wetland habitats to the north, and blend in with the existing private houses to the south, while creating an interesting and unique building profile. The central spaces of the residential portion of the site have the tallest buildings at 10-storeys. This building height at maximum 10-storeys are in fact medium-rise and compatible with the development context of the Technopole and transformation of the existing residential neighborhood, and has no adverse visual or ecological impact to the surroundings. The buildings heights descend from the central area to the north of the site, facing the WRA and SPS WCP are kept to the lowest at 3-storeys. The buildings heights also descend to the south of the site, facing the private residential neighborhood are at a reasonably low height of 6-storeys, and blend in with the adjacent houses. • The scheme has dedicated a large proportion of area (i.e. about 47% land area of the residential portion) for communal open space, landscaping, and gardens. There are pockets of landscaped open spaces scattered around the site, encouraging residents to enjoy the outdoors, creating visual interest and a lush walking environment. There will be communal landscaping along the internal

	roads, the perimeter of the Site and the pedestrian pathways.
(b) Noting from the application form that the development proposal involves excavation and filling of land, please provide more details on the proposed excavation and filling of land, including the site formation level and details of filled materials. Please also provide a plan showing the location of the filling and excavation, and clarify if such works have been carried out under previous approved planning applications.	The site formation level would be around 6.5mPD. Filled materials are mainly from on-site reuse of inert C&D material and excavated material. The filling and excavation is for the construction of basement carpark, for details, please refer to Basement Floor Layout in Appendix 3 of the Planning Statement. In addition, due to difficult geological conditions, there would be deep excavation required for the basement void to offset the limits of stress in portion of the site that is classified as Site A and Site C under GEO's Technical Guidance Note No.26 as Marble Sites.
(c) The approved Ecological Impact Assessment has included measures to avoid night-time lighting and glare to the surrounding areas. Noting that the proposed development is located at the immediate adjoining of the wetland restoration area and the future Sam Po Shue Wetland Conservation Park, please elaborate more on these measures, or advise if there are additional measures to alleviate such impact.	The response to this comment will be provided in Batch 3 FI submission.
(d) **Table 4** – please provide a plan showing the demarcation of the wetland restoration area, communal open space, communal landscape and communal perimeter landscape and private garden. Please also clarify if the private open space of "not less than 9,998m2" is included as part of the 21,203m2 communal open space.	Please refer to the Landscape Function Analysis Plan (**Attachment 1**), which shows the demarcation of the Wetland Restoration Area (WRA), communal open space, communal landscape, communal perimeter landscape, and private garden. We would also like to clarify that the Private Open Space of 9,998m² is intended for communal use by future residents and is included as part of the 21,203m².
(e) **Section 7.7** - Please provide more details on the proposed Residential Care Home for the Elderly (RCHE), including its implementation arrangement, whether the communal open space can be used by the RCHE, whether RCHE can be co-located with E&M building, etc..	As this is a rezoning application, the details on the proposed RCHE and implementation arrangements are not available, and subject to the detailed design stage. The access of the RCHE to use the surrounding communal open space, is subject to detailed design and conditions of land exchange at a later development stage.

(f) **Section 9** – please clarify if the building height restriction of "not exceeding 42mPD" as stated in the application form would be included in the proposed amendments remarks (c) of the Notes of the Outline Zoning Plan (OZP) for the subject "OU(CDWRA)" zone.	Noted. The paragraphs have been updated. Please see the replacement page no. 33 of the Planning Statement at Attachment *2*
Appendix 3 (g) **Revised Master Layout Plan** - Please include the visual and breezeway corridors on the plan.	The VIA will be updated and submitted in the next round of FI submission (Batch 3). The breezeway/ air ventilation corridors are shown in the Air Ventilation Assessment report in Batch 2 of this FI submission.
(h) Please provide section plan for the temporary sewage treatment plant.	Please find the section plans in **Attachment 3**.
Received 20.3.2025 by email: 1. Two rezoning applications No. Y/YL-NSW/8 and Y/YL-NSW/9 for proposed comprehensive residential developments partially agreed by RNTPC on 28.2.2025, and a s.16 application no. A/YL-NSW/314 for a proposed residential development with wetland habitat and associated filling of ponds/ land and excavation of land approved with conditions by RNTPC on 28.2.2025, should be included.	Noted. The Planning Statement has been updated to reflect the approved planning applications. Please refer to **Attachment 2** for the replacement pages.
2. Please note that our comments do not cover any on-going s.16/s.12A applications and only reflects the latest situation as at 20.3.2025. The Consultant should ensure that the planned/ committed developments have taken into account the latest status of the approved s.12A/ s.16 applications or approval of general building plan(s) or lease, if any. We defer to the Consultant to check the accuracy of the parameters and trip generation of the planned/committed developments.	Noted.

Response to Departmental Comments of Urban Design and Landscape, PlanD

Comments from the Chief Town Planner/Urban Design and Landscape, PlanD (Contact Person: Ms Nicole LEE; Tel: 3565 3945 (Urban Design Unit)/ Mr Samuel HUI; Tel: 3565 3957 (Landscape Unit))	**Response(s):**
Urban Design and Visual Planning Statement (a) **Section 7.5** – The consultant should clearly highlight and illustrate the visual and wind corridors as proposed under section 7.5 of Planning Statement on plan. It appears that part of the identified building separations are not well aligned and may not form continuous visual corridors and effective air paths/wind corridors within the Project Site.	The section 7.5 in the Planning Statement has been revised to provide clarifications. The VIA will be updated and submitted in the next round of FI submission (Batch 3). The breezeway/ air ventilation corridors are shown in the Air Ventilation Assessment report in Batch 2 of this FI submission.
(b) The visual corridors as mentioned in section 7.5 and Figure 3.1 of Visual Impact Assessment (VIA) do not tally. Please review.	The section 7.5 in the Planning Statement has been revised to provide clarifications. The visual corridor diagram in the MLP has been removed, please refer to the revised MLP **Attachment 4**. The VIA will be updated and submitted in the next round of FI submission (Batch 3). The breezeway/ air ventilation corridors are shown in the Air Ventilation Assessment report in Batch 2 of this FI submission.
(c) **Para. 10.7.1** – the statement of the building disposition and form would contribute to better air ventilation at the pedestrian level is not well justified in accordance to the submitted Air Ventilation Assessment (AVA).	A revised AVA and responses has been submitted in Batch 2 of this FI submission.
(d) **Section 10.7** – Please advise if there is any merits from visual perspective as compared to the previously approved scheme and/or the development intensity as permitted under the OZP.	The utilization of medium rise blocks for the Proposed Scheme instead of the 3-storey houses in the Approved Scheme allows the creation of a more comprehensive open space network and landscape framework at ground level. This includes some 9,998 m^2 of open space and not less than 30% of green coverage compared with 2,210 m^2 for the Approved

	Scheme. This allows for an improved living environment for the future residents while also providing for better integration with the existing and future landscape context.
AVA i. According to the RtC, the applicant claimed that the comments previously provided will be responded in batch 2 of draft FI submission.	Please note, a formal FI submission of Batch 2 is provided, with RtC on the AVA comments.
Planning Statement It is noted that the proposed amendment to the OZP is revised by adding not exceeding 42mPD after previously proposed 10 storeys excluding 1 storey of basement.	Noted.
Landscape Please note the advisory comment below: (a) The applicant is advised that the application does not imply the application for tree works approval, if any, such as pruning, transplanting and felling. The applicant is reminded to seek comments and approval for any proposed tree works from the relevant department.	The advisory comment is noted. Should any tree works be required in the future, the applicant will seek separate approval from the relevant departments.
(b) For the compliance of site coverage of greenery requirements under PNAP APP-152, submission should be made separately to Building Department (BD) for comments and approval.	Noted the advisory comment. To comply with the site coverage of greenery requirements under PNAP APP-152, a separate submission will be made to the Buildings Department (BD) for their comments and approval.
Further comments received from UD&L (Landscape Unit) on 21.05.2025 in response to our (informal) FI made on 02.05.2025 Having reviewed the draft FI, it is noted that no new landscape information is provided for the application. We remain our view of having no adverse comment from landscape planning perspective.	Noted.

Response to Departmental Comments of Director of Electrical and Mechanical Services

Comments from Director of Electrical and Mechanical Services (Contact Person: Mr. Tony TSE; Tel: 2808 3874)	Response(s):
Town Gas Safety 1. Having reviewed the latest layout plan of the proposed development, it is noted that a new RCHE with E&M building is proposed to be erected at the eastern side of the development which fall within 150 m consultation zone of underground high pressure towngas pipeline. As such, a quantitative risk assessment would be required to assess the potential risks associated with the gas installations.	Noted. Upon approval of this S12A rezoning application, the location of the RCHE with E&M building is subject to detailed design and a s16 planning application. The need for a quantitative risk assessment can be confirmed at a later stage. As a mitigation measure in this rezoning application, the RCHE with E&M building in the layout plan has been moved to a location to avoid the 150m consultation zone of the towngas pipeline. Please see the revised layout plan at **Attachment 4**.
2. The applicant shall therefore liaise with the Hong Kong and China Gas Company Limited in respect of the exact locations of existing or planned gas pipes/gas installations in the vicinity of the proposed development and any required minimum set back distance away from them during the design and construction stages of the proposed development.	As this is a rezoning application, the layout plan is subject to detailed design and a s16 planning application; therefore, the applicant will liaise with the Hong Kong and China Gas company Limited then.
3. The applicant is required to observe the following requirements of the Electrical and Mechanical Services Department's Publications via the following web-link for reference" - Guidance Note on Quantitative Risk Assessment Study for High Pressure Town Gas Installations in Hong Kong (https://www.emsd.gov.hk/filemanager/en/content_287/GN_Qntve_Rsk_Asmnt_Study_Hgh_Prsre_Twn_Gas_Instltns_inHK.pdf) - Code of Practice on "Avoidance of Damage to Gas Pipes" 2nd Edition (https://www.emsd.gov.hk/filemanager/en/content_286/CoP_gas_pipes_2nd_(Eng).pdf)	Noted.
Further comments received from EMSD on 17.05.2025 in response to our (informal) FI made on 02.05.2025 With reference to item 1 of response to Town gas safety comment, it is noted that the RCHE cum E&M building	Noted.

would be relocated to be outside the 150m consultation zone of the underground high pressure towngas pipeline. In view of the above, please note that quantitative risk assessment is not a compulsory requirement in this case and we have no further comments from a town gas safety point of view.	

Response to Departmental Comments of Drainage Services Department (DSD)

Comments from Chief Engineer/Mainland North, Drainage Services Department (DSD) (Contact Person: Mr Jacky LEONG; Tel: 2300 1432)	**Response(s):**
Please note the following comments on the drainage impact assessment (DIA):	
1.1 Terminal manholes should be provided near the lot boundary to demarcate the maintenance responsibility for the 2100mm and 1350mm diameter pipe. The drainage facilities, including the box culvert, existing concrete pipes, and outlets, will be maintained by the occupier. Please provide the invert level of the terminal manhole and the corresponding invert level of the existing streamcourse for reference.	The invert levels of the terminal manholes have been provided in S8. (**Attachment 8**)
1.2 **Section 5.5**: Please advise the long form for "ARI Events".	Revised. The long form for "ARI Events" is Average Recurrence Interval Events.
1.3 **Section 5.5.4**: It is not very clear how the adopted A, B and C cases were being specified in the Advice Note No. 1. Please elaborate. Yet, considering the size of the catchment and standard design rainfall was used instead of a point rainfall as suggested under Section 4.3.6 of the Stormwater Drainage Manual. Please review if the application of ARF in the calculation is appropriate.	The worst case of areal reduction factor of 1.0 was already adopted in the model. In addition, as stated in Section S5.5.3," Hydraulic impact incurred by rainfall profiles with areal reduction factors of 0.82 and 1.0 are analysed in consistency with the previous approved DIAs. Areal reduction factor of 1.0 was used for the San Tin Basin to estimate peak flood levels for all areas in the San Tin Basin. Whilst an aerial reduction factor of 0.82 was used for the entire Shenzhen River Basin including the catchments draining from Chinese Mainland to estimate peak flood levels for the Shenzhen River. The worst-case scenario from the two conditions will be used in the analysis for the proposed mitigation measures."

1.4	**Section 8.3.2**: Please supplement the report with photographic records of the existing storage pond and pumping station at WSW Village for reference.	The photographic records of the existing storage pond and pumping station at WSW Village has been supplemented in Appendix.
1.5	**Section 8.3.3**: As an emergency bypass channel is proposed, please ensure it is shown in the drainage layout plan. Additionally, in Section 8.3.2, the invert level of the discharge pipes is stated as +4.2mPD. Please confirm whether pumps will be installed at the bypass channel, given that its invert level is +3.6mPD. Would it be possible to lower the invert level of the bypass channel further to enhance flood mitigation for WSW Village?	The emergency bypass has been removed in the Assessment, because the development of the project site will not lead to malfunction of the pump at WSW village and the drainage arrangement of the WSW village.
1.6	Section 8.3.4: Please advise if flap valve will be provided for the box culvert and the invert level of the box culvert and the existing stream course at the discharge point.	Flap valve will be provided for box culvert
1.7	**Section 9.1.3 and 9.1.4**: It appears counter-intuitive that water level could decrease and there could be "no adverse drainage impact" with the concurrent loss of flood storage and increase in CN value. Please elaborate and supplement on any mitigation works proposed.	As state in Section 8.2.1, "Wetland Restoration Area will attenuate the discharge from the proposed development to mitigate the potential adverse drainage impact due to loss in flood storage volume and increase in CN values."
1.8	**Section 9.2 and 9.3**: Apart from the high existing capacity, please supplement on the relevant change in discharge rate for the confirmation that there will be no adverse drainage impact to the western portion and box culvert.	Appendix G provided the change in discharge rate of the Project Site. Although there is a slight increase in discharge rates of east and west portions, high-capacity drainage system can ensure no adverse impacts to the western portion and box culvert.
1.9	**Section 10**: The temporary drainage arrangement was developed in May 2009 and appears to be outdated, as it may not align with the current site conditions and design standards. Please review the scheme and submit a construction drainage impact assessment before commencing the works.	The temporary drainage arrangement has been revised in S10.
1.10	Section 10.1.1, 10.1.2 and 12.1.6: It is mentioned that the ditch has been filled up while some temporary drainage would be constructed by MTR for flow diversion. Please advise the as-is situation, the relevant	The catchment MTR site does not drain to the system within the Application Site, so there are no any interfaces with the proposed development. Any development of Application

program and if there may be any interface with the proposed development. Please supplement the relevant calculation to demonstrate that the relevant arrangement is adequate to avoid imposing unacceptable flood risk to the adjacent areas.	Site has no impact on the drainage of MTR site.
1.11 Appendix D: It appears that the storm constants b and c for 200 year return period were not consistent with the SDM Corrigendum No. 1/2024. Please review the calculation as appropriate.	Note and revised.
1.12 **Figure 3**: Understanding the proposed site has undergone a lengthy development history. Please elaborate whether the existing drainage shown on the plan is the as-in situation or a snapshot at the specific year as the pre-development situation. If it is the latter case, please also provide the as-in situation today.	Site visit has been carried out on 27th March. Updated existing flow path has been updated in S.3 and Figure 3.
1.13 **Figure 6**: Please indicate the flow direction of the proposed box culvert. Also, it is not clear where the labels "PIPES I.L = +4.20mPD", "WSW_PIPE01_554", "WSW_BC01_283" were pointing to. Please also indicate clearly what the rectangular box at the downstream of the 2100 and 1350 dia. pipes. Please review.	The flow direction of proposed box culvert has been added, and the location of labels has been pointed in Figure 6. In addition, there are no 2100 and 1350 dia. pipes during site visit, so they have been removed in the Figure. In addition, new drainage system outside the wetland has been proposed to convey the runoff from WSW village and east portion of Application Site to Mai Po Tributary, as shown in Figure 6.
Please note the following comments on the sewerage impact assessment (SIA): 2.1 Section 5.5: Please indicate the construction and maintenance responsibilities of the proposed SPS and RM, and also for the sewerage facilities in the fallback options (i.e. or please confirm it all follows section 8.1). DSD would not take up the operation and maintenance responsibility on the sewerage facilities constructed by private developers on government land unless otherwise agreed.	Noted and revised. The proponent will take up the construction responsibilities of the proposed SPS and RM, and the sewerage facilities outside the Application Site to connect San Tin EPP and NSW SPS. The operation and maintenance responsibilities of the facilities outside Application Site boundary are proposed to be hand-overed to DSD after completion of construction subject to their agreement.
2.2 Section 6.9: Relevant discharge should be covered in the DIA for assessment.	The assessment has been included in DIA.

2.3 Please advise at what stage will the sewage disposal method be confirmed for detailed assessment.	When the design info of the EPP and sewerage network is available, the sewage disposal method will be confirmed.
2.4 Please check with CEDD's project team and Environmental Protection Department (EPD) whether the capacity has been reserved for the subject site in the planned San Tin EPP and YLSTW through the Nam Sang Wai SPS.	The capacities and residual capacities to cater the sewage flow from the Application Site of San Tin EPP (S5.2, S5.3 and S5.4), YLSTW (S7.3) and NSW SPS (S7.4) have been elaborated. The results show that all of them has sufficient capacities to cater the sewage flow from the Application Site.
2.5 The SIA report needs to meet the satisfaction of SIG/EPD, the planning authority of sewerage infrastructure.	Noted
2.6 As the option for connection to San Tin EPP and YLSTW remains subject to many uncertainties, we remain cautious about the technical feasibility of the proposal and withhold further comments on the schemes until sufficient information is available from an operation, maintenance, and sewerage planning perspective.	Noted
Further comments received from DSD on 21.05.2025 in response to our (informal) FI made on 02.05.2025 Comments on the Sewerage Impact Assessment 1. R-to-C no. 2.3 - Please indicate in the conclusion that further SIA report to finalize the sewage disposal strategy will be submitted for review when the relevant design information of EPP and ST/LMC development node sewerage network are available. Please liaise with CEDD's project team to ensure the ADWF of the subject site has been reserved/adopted in the design of ST/LMC development node's sewerage network.	Noted. The conclusion has been revised. (Attachment *7*)
2. Please advise if a temporary on-site sewage treatment facility is also required for Option 2.	A temporary on-site STP is not required for this Option 2.
3. The consultant shall note that the acceptance of the SIA does not imply	Noted.

DSD's agreement to operate or maintain the drainage facilities outside the development boundary. While the concern regarding the operation and maintenance responsibilities of drainage facilities on government land by a private party—particularly for lengthy pipelines and with associated facilities—is acknowledged, DSD, in principle, would not maintain drainage facilities that exclusively serve a private development unless otherwise agreed.	
4. Therefore, for the proposal to construct drainage facilities on government land, the developer should note that the final responsibility for the operation and maintenance of these facilities may rest with them, especially in cases where the pumping station is located within the site boundary and discharges through a rising main. For permission to construct on government land, LandsD should be consulted. Under these circumstances, the developer may review and reconsider the option of having their own sewage treatment plant, particularly when existing drainage facilities are not available in the vicinity and the details of future drainage arrangements remain uncertain.	Noted, the applicant will review in later stage and consult LandsD on the construction on government land.
5. Additionally, the developer may be required to submit an O&M manual for their drainage facilities on government land to DSD for agreement, and regular inspections should be conducted by the responsible party. In the event of any damage caused by drainage facilities maintained by the private owner on government land, the government may seek reimbursement from the responsible party. Furthermore, if required by the government, the private owner may also need to divert their utilities at their own expense.	Noted
Comments on the Drainage Impact Assessment: 6. With view of the exceptional long development planning history of the project, please clarify	The pre-development scenario describes the condition before construction of wetland restoration area. (Attachment *8*)

the timeframe when the snapshot of the pre-development scenario was taken. Please remark on the comparison of the as-is situation and the pre-development scenario should there be already any difference.	The difference between the as-is situation and the pre-development is the wetland. In the pre-development scenario, the wetland restoration area (i.e MP02A-a9 in Figure 5) is set as an unpaved area (undeveloped area) in the model, while the development of wetland is completed in the as-is situation. The construction of the wetland restoration area is to offset the increasing flow rate and volume due to the development, in accordance with the town planning approvals, so the constructed wetland cannot be considered as the pre-development scenario. Other areas in the as-is situation remain the same as the pre-development scenario to set as unpaved areas and drain to Mai Po Tributary.
7. For the easy understanding of the situation, please highlight the differences in model setting with a plan or otherwise, in terms of the paving situation comparing the pre-development scenario, post-development scenario and the last-approved post-development scenario.	The modelling settings for the pre-development scenario, post-development scenario and the last-approved post-development scenario in terms of paving situation (CN value) are provided in Appendix F and Table 7-1, Table 7-2 and Table 7-3.
8. Section 8.3.3: The applicant should agree upon the maintenance responsibility at the interface between the existing system and the opening with the responsible party of the WSW Village Discharge and resolve any disputes. While the details of the opening and its arrangement are not described in detail, the applicant is reminded to ensure that the existing pump head is sufficient to accommodate their drainage design.	Noted.
9. Section 8: The information regarding the terminal manhole is not provided. Please be reminded to include the terminal manhole in the drainage plan as part of the BD submission.	The invert levels are 2.91mPD for the proposed terminal drainage pipe (DN2100), and 1.71mPD for the proposed terminal box culvert (3.5m in width x 2.5m in height), which are both higher than the invert level of Mai Po Tributary of 1.38 mPD based on the previous approved DIA. Section 8.12 has been revised. (Attachment *8*)

Response to Departmental Comments of Water Supplies Department

Comments from the Chief Engineer/Construction, Water Supplies Department (Contact Person: Mr Ho Yuan HO; Tel: 2152 5778)	**Response(s):**
Please note our comment below on the Water Supply Impact Assessment: 1. Regarding Para. 3.1.2, Para 3.2.2. and Table 3.1, please adopt 0.040m3 per person per day for fresh water service trade allowance, 0.007m3 per m2 per day for irrigation demand and 0.104m3 per person per day for residential flushing water demand.	Noted. The parameters in calculations have been changed accordingly. Please refer to the Water Supply Impact Assessment (revised) in **Attachment 9**.
2. Regarding Para 4.2.2, the tee-off pipe is proposed to be of 350mm diameter which is an odd size. Please adopt DN400.	Noted, the proposed tee-off pipe diameter have been changed to DN400.
3. Please note that Tsing Lung Tsuen, Fan Tin Tsuen, Wing Ping Tsuen and Tung Chan Wai at San Tin will also source fresh water from DN600 FWM at San Tin Highways. Please include their demand in your demand assessment and hydraulic calculation.	Noted, based on the MRPs obtained from WSD, the populations in the villages mentioned have been estimated and considered in the WSIA. Although demand have increase, the impact was not significant and the conclusion from WSIA have not changed.
Further comments received from WSD on 21.05.2025 in response to our (informal) FI made on 02.05.2025 (1) Section 2.3 - Please review Table 2.2 as some population information is missing in this table. Please also note that "existing developments" should include all customers / premises that would be supplied by the existing DN600 FWM in San Tam Road;	Noted. Thank you for the clarification. The existing development in the Chuk Yuen Tsuen area have been taken into consideration in the revised report. (Attachment *9*)
(2) Further to Item (1), please note that that population and water demand from other "planned developments" (i.e. developments under other ongoing or approved planning applications) should be taken into account in order to assess the overall impact to the existing water supply system, in particular the existing DN600 FWM;	Noted. Thank you for the clarification. The planned development in the area have been taken into consideration in the revised report. (Attachment *9*)

(3) Section 3.1 - For FW unit demand: Please adopt 0.3 m3/head/day instead of 0.39 m3/head/day for the proposed 6 - 10 storey residential towers; Please adopt 0.39 m3/head/day for the proposed houses; Please adopt 0.23 m3/head/day for the proposed RCHE (Please also update the text in Para. 1.2.4 as the unit demand for RCHE is not the same as hospitals);	Noted, the calculation has been updated. (Attachment *9*)
(4) Para. 3.2.3 - Please review if there is any existing RCHE in the existing developments. Please also update the unit demands for RCHE as 0.23 m3/head/day & 0.104 m3/head/day respectively for fresh & flushing water.	Noted, the calculation has been updated. (Attachment *9*)
(5) Para. 3.2.4 and 3.2.5 - Please review the FW unit demand. Please adopt 0.3 m3/head/day for general private multi-storey residential developments. The unit demand of 0.39 m3/head/day would only apply to new private houses;	Noted, the calculation has been updated. (Attachment *9*)

Response to Departmental Comments of Fire Services Department

Comments from the Director of Fire Services, Fire Services Department (Contact Person: Mr Wing Hei CHEUNG; Tel: 2733 7737)	**Response(s):**
Detailed Fire Services requirements will be formulated upon receipt of formal submission of Short Term Tenancy (STT)/ Short Term Waiver (STW), general building plans or referral of application via relevant licensing authority as appropriate. Furthermore, the provision of emergency vehicular access shall comply with the requirements as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011, which is administered by the Building Authority. In addition, height restriction as stipulated in relevant regulations governing the proposed social welfare facilities shall be observed. Licensing requirements will be formulated upon receipt of a formal application via the Licensing Authority	Noted.

Response to Departmental Comments of Social Welfare Department

Comments from the Director of Social Welfare, Social Welfare Department (Contact Person: Ms Doris LEUNG; Tel: 3691 8500)	**Response(s):**
Our comments on the application from services perspective are provided below by making reference to the Residential Care Homes (Elderly Persons) (RCHE) Regulations as well as the Code of Practice for Residential Care Homes (Elderly Persons) June 2024 (Revised Edition) (CoP): 1. The design and construction of the proposed RCHE (including but not limited to the accessibility, building height, ceiling height, barrier free access, passage and doorway, habitation area, all basic facilities, minimum area of floor space for each resident, etc) shall be in full compliance with prevailing statutory and licensing requirements, such as the Residential Care Homes (Elderly Persons) Ordinance (Cap. 459) and its subsidiary legislation, and the latest version of the Code of Practice for Residential Care Homes (Elderly Persons).	Noted. Upon approval of this rezoning application, at the detailed design stage, the design and construction of the proposed RCHE will be in full compliance with prevailing statutory and licensing requirements.
2. The proposed RCHE shall incur no financial implication, both in capital and recurrent, to the Government.	Noted. The proposed RCHE shall incur no financial implication, both in capital and recurrent, to the Government.
Further comments received from SWD on 21.05.2025 in response to our (informal) FI made on 02.05.2025 Regarding the R-TO-C for SWD, we have no further comment.	 Noted.

Response to Departmental Comments of Environmental Protection Department

Comments from the Director of Environmental Protection (Contact Person: Mr Chris WONG; Tel: 2835 1145)	**Response(s):**
1. Having reviewed the information provided, EPD would like to seek further details from the applicant and request revision of the Environmental Assessment (EA) report to determine the environmental acceptability of	Noted.

the development proposal. Our detailed comments are covered in the attached Annex. Please respond to all comments and provide further details and update the EA and Sewerage Impact Assessment (SIA) for our further review.	
2. Please note that the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO. The Applicant should review the EIAO implications at later stage and confirm with the EPD. The Applicant should also observe and ensure the proposed development will comply with all statutory requirements under the EIAO.	Noted.
<u>Planning Statement</u> 1. S.5.3: Please revise as *"Since the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO, the Applicant undertakes to review the EIAO implications at later stage and confirm with the EPD. The Applicant will observe and ensure the proposed development will comply with all statutory requirements under the EIAO."*	S.5.3 has been revised accordingly. (**Attachment 2**)
<u>Environmental Assessment</u> *Background* 2. Please include an indicative location and layout plan of the proposed development. Please also provide a description of the surrounding environ, the current site conditions.	A new Figure 0.1 has been added. A description of the surrounding environs is stated in the 3rd para. of the Background section, further text is added to elaborate on current site conditions. (**Attachment 10**)
3. Please provide description of the proposed development and future landuses.	As stated in the 2nd para. of the Background section, this proposed comprehensive residential development comprises of club house, landscaped open spaces, car parks, residential care homes for elderly. As shown in the Indicative Development Parameters table, the future landuses will comprise a wetland, communal spaces and domestic plots.
4. Please cover Section 5 of the planning statement regarding the EIAO implications of the proposed development in the EA.	Additional text added to cover EIAO implications

5. Please provide a summary of EM&A programme in this report.	Refer to Section 5.
Air Quality 6. Figure 1.1: Please provide clearer figure (i.e. zoom-in) to show the nearby roads and indicate the provision of sufficient buffer distance.	A new Figure 1.2 has been provided.
7. Section 1.2 – 4th paragraph - (a) Please revise "dust control and suppression" in the last line to "air quality control".	Noted and revised.
8. Section 1.2 – 10th paragraph - (a) Please revise "usage" in line 2 to "uses". - (b) Suggest to delete the last sentence.	Revised. The last sentence has been deleted.
9. Section 1.3.1 - (a) Please confirm if there is no concurrent project within 500m assessment area of the project. If affirmative, please revise "in the vicinity" to "within 500m assessment area" in the last sentence and put this sentence under Section 1.5.1.	No concurrent projects were identified. Section 1.5.1 has been updated accordingly.
10. Section 1.3.2 - (a) According to the Planning Statement and Background of this EA, there will be two options for the treatment of the sewage from the proposed development, i.e. (1) a pipe connection to the new STLMC EPP and adopting a temporary on-site sewage treatment plant before STLMC EPP is commissioned (if there is program mismatch and the sewage from the proposed development cannot be treated by STLMC EPP as planned); or (2) a pipe connection to the existing Nam San Wai SPS for discharge to Yuen Long Sewage Treatment Works. Therefore, the potential air quality and/or odour impact should be assessed.	Noted. The planned temporary STP on-site has been included in section 1.3.2, as part of one of the options for sewerage treatment. It has been further elaborated in Section 1.5.2.
11. Section 1.4.1 – 1st paragraph, Table 1.3 and 1.4 - (a) Please revise "background" in line 1 to "ambient". - (b) SAMP v2.1 is now available, please review and update as necessary. - (c) Please note the new AQOs is tentatively to be implemented in early 2025, the study	Noted and updated. SAMP v2.1 is referenced.

may need to adopt the new AQOs if it is finalized after the implementation of new AQOs	Noted. A table with the new AQOs has been included in Section 1.2. The prevailing AQOs will be removed once the new AQOs come into effect.
12. Section 1.4.2 - (a) The locations of ASRs are missing in Figure 1.1., please present their locations in a new figure. Please clarify whether the shortest horizontal distance is measured from the Project Boundary to the ASRs.	Figure 1.1 has been updated. The shortest horizontal distance from the Project site boundary to the ASRs is measured and presented in Table 1.6.
13. Section 1.5.1 - 3rd paragraph - (a) Please revise "reduce" in line 5 to "control". - (b) Suggest to delete "The potential air quality impact is anticipated to be short-term and" in the last sentence. Also please revise "dust" in the 2nd last line to "air quality". - (c) Based on the excavation volume and number of construction trucks, the scale of the excavation works is large. It is unclear adverse air quality impact would not be expected during construction phase. Please remove "with" in Line 8 and replace "adverse air quality impact would not be expected" by "will be implemented" in the last sentence. - (d) Please supplement the duration of the construction activities to support whether the air quality impact would be short term.	(a) Noted and revised. (b) Noted and updated. (c) Noted and revised accordingly. (d) The commencement year of the construction period, i.e. 2027, has been indicated in the first paragraph of Section 1.5.1. The "short-term" reference has been deleted in accordance with comment 13(b).
14. Section 1.5.1 – 5th paragraph - (a) Please add "PM and" before "gaseous" in the 2nd last line. - (b) Since the number of NRMMs to be operated on site is unknown, it is unclear emission from operation of on-site diesel-powered mechanical equipment is minimal. Please replace "are considered to be minimal" by "would be controlled" in the last sentence.	(a) Added (b) Noted and updated accordingly.
15. Section 1.5.1 – 7th paragraph - (a) Please revise "dust" in line 2 to "air quality".	Updated.
16. Section 1.5.1 – 8th paragraph - (a) Please supplement the duration of the pond excavation works to confirm that it is short duration.	(a) Mention of the duration of the ponds excavation works has been removed (b) Added

- (b) Please add "airtight and" before "watertight" in the 2nd bullet. - (c) Please supplement that in case of future complaint against the pond excavation work or if odour is detected during site inspection, the applicant shall be responsible for investigation of the odour or odour nuisance and take remedial actions as appropriate.	(c) Noted and added.
17. Section 1.5.1 – 9th paragraph - (a) Please add "adverse" before "odour" in line 1 and revise "considered to be short-term and controllable" in lines 1-2 to "not anticipated".	Noted and updated with thanks.
18. Section 1.5.2 – 1st paragraph - (a) Please add " - Mai Po" after "Castle Peak Road" in line 3. - (b) Please revise "Project" in line 4 to "air" and add "of the proposed development" after "receivers". - (c) Please supplement the 3rd sentence that 20m buffer distance should be applied for EX and 10m buffer distance should be applied for RR and hence the buffer distance requirements for San Tin Highway and Castle Peak Road – Mai Po can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. - (d) Please supplement the 4th sentence that 5m buffer distance should be applied for local distributor (LD) and hence the buffer distance requirement for Mai Po South Road can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. Please clarify whether "feeder road is similar to a local distributor" is agreed by TD. - (e) Please include a table summarizing the nearby roads and the corresponding buffer distance provided for clarity.	(a) Added. (b) Revised accordingly. (c) Noted and supplemented. (d) The sentence has been supplemented. Feeder Roads and Local Distributors share similar definitions and are therefore considered as LD for the HKPSG buffer distance requirement, i.e.: - Feeder Roads - Roads connecting villages or more remote settlements to Rural Roads. - Local Distributors - Roads within Districts linking developments to the District Distributor Roads. (e) Table 1.7 has been provided for the nearby roads and their buffer distances.
19. Section 1.5.2 – 2nd paragraph - (a) Suggest to delete the 6th sentence in lines 9-11. - (b) Please put the 2nd last sentence before the 3rd last sentence. - (c) Please revise "potential" in the last line to "adverse" and delete "to be significant" at the end.	(a) Deleted (b) Noted and rearranged. (c) Noted and revised. (d) Added

- (d) Please add "subject to no air sensitive uses located within the buffer zones" after "proposed development" in Lines 1-2. - (e) Please remove "Hence, no adverse air quality impact is expected from the proposed basement car park" in Line 16 since it is uncertain no adverse air quality impact from the car park based on the available information and noting the large number of parking spaces of the proposed carpark. - (f) Please supplement the location of the ventilation exhaust of the carpark on a map to confirm that they will be located away from any nearby ASRs. Please also show the location of the ingress/egress on a map. - (g) Please supplement the induced traffic in terms of vehicles per hour expected from the proposed development to confirm that the vehicular emission impact is limited.	(e) Noted and updated. (f) Figure 1.2 has been supplemented with the location of ingress/egress points to the basement carpark. The location of ventilation exhausts of the basement carpark will be determined in the detail design stage. These will be designed to be located facing away from nearby ASRs, as far as practicable. Reference to the vehicular emission impact being limited has been removed. By incorporating the recommended buffer zones into the design of the proposed development, adverse impact from vehicular emission to planned ASRs is not anticipated.
20. 20. Section 1.5.2 – 3rd paragraph - (a) Please add "and food waste pre-treatment facilities" after "STLMC EPP" in line 3. - (b) It is unclear no odour impact from the STLMC EPP to the proposed development based on the 500 m separation distance. Please review the assessment findings of the STLMC EPP in the relevant approved EIA report for San Tin / Lok Ma Chau Development Node and supplement in this section.	(a) Added (b) Noted. Reference is made to the findings of the approved EIA for San Tin / Lok Ma Chau Development Node.
21. Section 1.5.2 – 4th paragraph - (a) According to the Planning Statement and Background of this EA, there will be two options for the treatment of the sewage from the proposed development, i.e. (1) a pipe connection to the new STLMC EPP and adopting a temporary on-site sewage treatment plant before STLMC EPP is commissioned (if there is program mismatch and the sewage from the proposed development cannot be treated by STLMC EPP as planned); or (2) a pipe connection to the existing Nam San Wai SPS for discharge to Yuen Long Sewage Treatment Works. Therefore, the potential air quality/odour impact arising should be assessed. For option (1), please provide details about the temporary on-site sewage treatment plant (e.g. location, capacity, odour treatment facilities, exhaust	Noted. Section 1.5.2 has been supplemented.

location, etc.) to justify if it will give rise to any odour impact to the nearby ASRs.	
22. Section 1.6.1 – 1st paragraph - (a) Please delete "To ensure compliance with the AQOs at the ASRs at all times," in line 1. - (b) Please review if any control measures of malodourous excavated materials specified in the 8th paragraph of Section 1.5.1 can be incorporated in this section.	(a) Noted and deleted. (b) Additional mitigation measures have been incorporated in Section 1.6.1 for malodourous excavated materials.
23. Section 1.6.2 - (a) Please revise the sentence in line 1 as "As the adverse air quality impact during the operational phase is not anticipated,".	Noted and deleted.
24. Section 1.8 - (a) Suggest to delete the last sentence.	Deleted
25. Section 1.9 – 1st paragraph 26. - (a) Please delete "at source to acceptable levels" in line 2.	Deleted
27. Figure 1.1 - (a) As mentioned in Comment #14(c) above, 20m buffer distance should be applied for San Tin Highway and 10m buffer distance should be applied for Castle Peak Road – Mai Po. Please update. - (b) Please update the title of the figure.	A new Figure 1.2 has been provided and updated accordingly.
28. Please highlight all the changes/amendments in the next submission.	All changes have been highlighted in yellow.
Noise 29. Please state clearly in the EA that that there is a mechanism (i.e. land lease or the future s.16 planning application) to require the applicant to submit a proper NIA report to review, explore, demonstrate and implement appropriate noise mitigation measures for full compliance with the relevant noise criteria and requirements under ProPECC PNs, HKPSG and NCO in both construction and operation phases of the proposed developments. Other noise comments are provided as follows.	Noted and revised in S2.1.
30. S.2.2.1 - Suggest reviewing if there are any diagnostic rooms or wards included in the	Please be clarified that there will be no diagnostic rooms or wards in the proposed development.

proposed development. If yes, the road traffic noise criteria should be 55 dB(A).	
31. S.2.5.2 - Please document TD's agreement on the traffic forecast data in the report once available. In case TD has no comment on the methodology for traffic forecast only, the consultant should provide written confirmation from the respective competent party (e.g. traffic consultant) that TD's endorsed methodology has been strictly adopted in preparing the traffic forecast data, and hence the validity of traffic data can be confirmed.	Noted and will be provided once available in the upcoming revisions.
32. S.2.7.2 - Please advise on the minimum thickness of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms (such as dinning rooms, living rooms and bedrooms) within the development and confirm whether these windows (and doors where appropriate) are well-gasketted. If deemed appropriate, please discuss in this sub-section that such windows and doors could offer the future occupier an option for a quieter indoor noise environment. An example is given below, which the proponent or her consultant may adopt if deemed appropriate. *"Glass panes in all windows of all noise sensitive rooms (e.g. living rooms, dinning rooms and bedrooms) within the development have a minimum thickness of X mm. All these windows are well-gasketted, providing the future occupants an option for a quieter indoor noise environment."*	Relevant details of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms within the development will be advised in the NIA report submitted at a later stage of the project.
Water Quality 33. S.3.2 - Please note that ProPECC PN 2/23 has been superseded by ProPECC PN 2/24. Please update relevant sections.	Noted and updated
34. S.3.5.1.2 – Please describe the potential water quality impacts associated with the Project in this report, even though there are no expected significant changes of the impacts from the previous application.	Description of construction phase water quality impacts have been added
35. S.3.5.1.2 and S3.6.2 – For the temporary on-site STP, please add that a discharge licence under the WPCO shall be applied and any	Noted and updated

<table>
<tr><td>discharge should be complied with the term and conditions of the discharge licence.</td><td></td></tr>
<tr><td>36. S.3.6.2 - Please mention and elaborate that appropriate measures recommended in ProPECC PN 1/23 should be followed.</td><td>Noted and added</td></tr>
<tr><td>Waster Management

37. S.4.2: As the requirements of the circular ETWB TC(W) No. 19/2005 shall be applicable to public works contracts, while ADV-19 shall be applicable for private project. Please clarify and update Sections 4.5.1.1 and 4.7.1 if necessary.</td><td>Noted and revised.</td></tr>
<tr><td>38. Table 4.2: It appears that the figures provided in Table 4.2 and the following paragraph do not align with that of Table 4.1. Please review and clarify.</td><td>Table 4.1, Table 4.2 and Section 4.4.1.1 have been revised.</td></tr>
<tr><td>39. S.4.4.1.6 and 4.4.2.3 – Please share the calculation and assumption adopted on the estimation of maximum dump truck trips for transportation of identified waste types, with information including but not limited to (i) dump truck and vessel capacity, (ii) bulk factor assumption, (iii) duration of construction period; (iv) daily quantity of C&D materials at peak, etc.</td><td>To take more conservative approach on vehicle trips estimation, the no. of dump truck trips is revised to present the peak C&D material disposal period in table below. Section S.4.4.1.6 and 4.4.2.3 have been revised as well.
Construction Phase
<table>
<tr><td colspan="2">During Site Clearance, Site Formation and Construction of Infrastructures</td></tr>
<tr><td colspan="2">Inert C&D Material</td></tr>
<tr><td>Inert C&D Material for Disposal</td><td>342,800 m^3</td></tr>
<tr><td>Bulk Factor of Inert C&D Material</td><td>1.7</td></tr>
<tr><td>Tentative Disposal Period</td><td>Year 2027 & 2028 (24 months)</td></tr>
<tr><td>Dump Truck Capacity</td><td>7 m^3</td></tr>
<tr><td>No. of Working Days per Month</td><td>26 days</td></tr>
<tr><td>Vehicle Trips per day (rounded)</td><td>(342,800x1.7)/24 /26/7 = 134 Trip</td></tr>
<tr><td colspan="2">Non-inert C&D Material</td></tr>
<tr><td>Non-inert C&D Material for Disposal</td><td>95,800m^3</td></tr>
<tr><td>Bulk Factor of non-inert C&D Material</td><td>1</td></tr>
<tr><td>Tentative Disposal Period</td><td>Year 2027 & 2028 (24 months)</td></tr>
<tr><td>Dump Truck Capacity</td><td>7 m^3</td></tr>
<tr><td>No. of Working Days per Month</td><td>26 days</td></tr>
</table></td></tr>
</table>

	<table><tr><td>Vehicle Trips per day (rounded)</td><td>(95,800x1)/24/26 /7 = 22 Trip</td></tr><tr><td colspan="2">Chemical Waste</td></tr><tr><td>Total General Refuse per month</td><td>few hundred litres</td></tr><tr><td>Vehicle Trips per day (estimated)</td><td>1 Trip</td></tr><tr><td colspan="2">General Refuse</td></tr><tr><td>Total General Refuse per day</td><td>200 kg</td></tr><tr><td>Bulk Factor of General Refuse</td><td>311.73 kg/m^3</td></tr><tr><td>Vehicle Trips per day (estimated)</td><td>(200/311.73)/7 =1 Trip</td></tr><tr><td>Estimation of maximum dump truck trips for transportation per day</td><td>158</td></tr></table> **Operation Phase** <table><tr><td colspan="2">General Refuse</td></tr><tr><td>General Refuse per month</td><td>14.4 tpd</td></tr><tr><td>Bulk Factor of General Refuse</td><td>311.73 kg/m^3</td></tr><tr><td>Dump Truck Capacity</td><td>7 m^3</td></tr><tr><td>Vehicle Trips per day (rounded)</td><td>(14.4*1000)/311.7 = 7 Trip</td></tr><tr><td colspan="2">Chemical Waste</td></tr><tr><td>Total General Refuse per month</td><td>few hundred litr</td></tr><tr><td>Vehicle Trips per day (estimated)</td><td>1 Trip</td></tr><tr><td colspan="2">Food Waste</td></tr><tr><td>Total General Refuse per day</td><td>6.3 tpd</td></tr><tr><td>Bulk Factor of Food Waste</td><td>311.73 kg/m^3</td></tr><tr><td>Vehicle Trips per day (estimated)</td><td>(6.3*1000)/311.7 = 7 Trip</td></tr></table>
40. S.4.4.2.1 - The Monitoring of Solid Waste in Hong Kong 2023 has been published. Please quote the latest version of the report and update the quantity estimation based on the latest figures.	Noted. Section 4.4.2.1 has been updated according to the Monitoring of Solid Waste in Hong Kong 2023.
Sewerage Impact Assessment 41. S1.6: typo “stories” should read “storeys”.	Revised. Please find the Sewerage Impact Assessment (Revised) in **Attachment 7.**

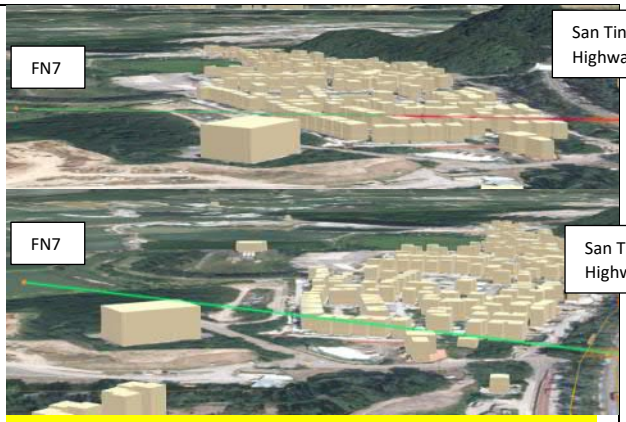
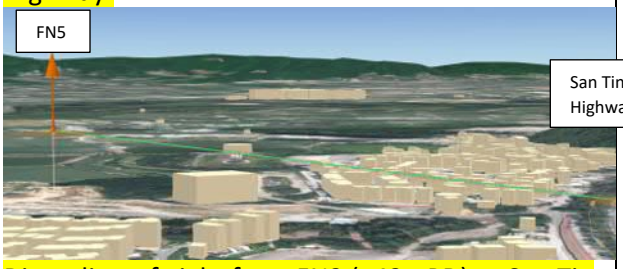
42. S.1.8: Please provide reference for the number of beds and staff for RCHE.	The information on bed numbers and staff is provided by the developer and complies with the Code of Practice for Residential Care Homes for the Elderly
43. S.5.3: typo “Sant” should read “San”. Please site the reference of the reserved capacity of San Tin EPP for additional sewage flow from developments similar to S.5.2.	Revised.
44. S.5.5: Noting that the information of sewerage system to San Tin EPP is not available from CEDD at the moment, the applicant is required to submit a SIA at a later stage to confirm the sewage disposal option that would be pursued. That means, if the option discharging to the sewerage system under San Tin Technopole (STT) is to be implemented, the applicant shall submit an updated SIA assessing the potential sewerage impact to the STT sewerage system based on the latest STT sewerage scheme for conducting the hydraulic assessment and verifying the assumptions adopted in the current assessment. Please revise accordingly.	Noted. If the option discharging to the sewerage system under San Tin Technopole (STT) is to be implemented, the applicant shall submit an updated SIA accordingly.
45. S.7.3: Please consider if findings of Feasibility Study of Sewerage to Unsewered Area/Villages in Northwest New Territories should be quoted, which may have been outdated.	Another reference from EIA of Yuen Long Effluent Polishing Plant – Investigation, Design and Construction has replaced the old one in S7.3, stating that the total projected flow to be conveyed to YLSTW/YLEPP in Year 2030 is 92,000m^3/d
46. S.7.4: To assess the utilisation of NSWSPS, other planned developments utilising NSWSPS are also required to be taken into account in addition to current sewage flow and the sewage flow from the proposed development. Please revise.	Updated residual capacity of NSWSPS has been evaluated in S7.4.
47. Please consult DSD on the responsibility of sewers maintenance.	The maintenance responsibilities of the sewers outside Application Site boundary are proposed to be hand-overed to DSD after completion of construction subject to their agreement.
Further Comments received on 10.04.2025 from EPD 1. In light of the previous comment in the file "20250224 - WSW S12A Presub RtC Dept Comments", it is recommended to supplement a section in the waste management chapter to address the land contamination issue. Please include aerials photos and/or site photos to	The justification of “land contamination assessment in the approved EIA is still valid. And thus no land contamination assessment included in this submission.” has been supplemented in **“Background” Section**.

substantial the findings that "land contamination assessment in the approved EIA is still valid. And thus no land contamination assessment included in this submission".	
2. Section 4.4.1.2 – Please provide the previous ground investigation information to substantiate the findings.	Several representative ground investigation record are appended in the RTC your easy reference. (**Attachment 11**)
3. Table 4.3 – Please elaborate how the figure of 77,300 m^3 was derived.	The estimation of 77,300 m^3 is appended in the RtC for your easy reference. However, this is not recommended to be included report. (**Attachment 12**)
4. Sections 4.4.1.6 and 4.4.2.3 – (i) It is recommended to include the calculation and assumption adopted on the estimation of maximum dump truck trips for transportation in the main text for better clarity. (ii) Regarding Rtc item 8 in "20250224 - WSW S12A Presub RtC Dept Comments", please update the figure from 1.51 kg/person/day, to 1.44 kg/person/day, according to The Monitoring of Solid Waste in Hong Kong 2023. Moreover, please review whether chemical waste and food waste were included in the calculation of the number of truck trips per day during operation.	(i) By making recently approved EIA (i.e. AEIAR-263/2024 - Development of Integrated Waste Management Facilities Phase 2 (I·PARK2)) as a good reference, the calculation of maximum dump truck trips for transportation is not included in the main text of the waste chapter. As such, the calculation of maximum dump truck trips for transportation is not included in this report. Instead, assumption adopted on the estimation has been supplemented as remarks under **Table 4.4** and **Table 4.6**. (ii) The figure has been updated from 1.51 kg/person/day, to 1.44 kg/person/day, according to The Monitoring of Solid Waste in Hong Kong 2023 in **Section 4.4.2.1**. Also, the vehicle trips per day for operation phase in Section 4.4.2.3 have been updated to include the number of vehicle trips of general refuse, chemical waste and food waste.
5. Tables 4.4 and 4.6 – For better clarity, please add a column to indicate the number of truck trips involved for transporting each waste type to the designed outlet.	Noted and revised accordingly.
6. Section 4.7.1 – Previous comment on the file "20250312- WSW S12A RtC (Draft)_waste" has not been duly addressed. Please review if ADV-19 instead of ETWB TWC No. 19/2005, shall be quoted.	Noted and revised accordingly.
Further comments received from EPD on 21.05.2025 in response to our (informal) FI made on 02.05.2025 EA – Background	Noted and revised accordingly. (Attachment *10*)

1. Please revise as "Should this application be approved by TPB, the feasibility of these two sewerage conveyance options will be reviewed. and tThe potential environmental impacts and EIAO implications arising from the proposed options along with the revise development will be assessed in an updated Environmental Impact Assessment report reviewed at later stage and confirm with the EPD to ensure the proposed development complies with all statutory requirements under the EIAO".	
EA – Air quality 2. Section 1.1: Please revise "resulting from" in line 1 to "upon and arising from".	Noted and revised. (Attachment *10*)
3. Section 1.2 – 7th paragraph and Section 1.5.1 – 5th paragraph: Please note that the Air Pollution Control (Fuel Restriction) (Amendment) Regulation 2024 commenced on 1 April 2025. The sulphur content of liquid fuel is tightened to 0.001% by weight.	Noted and revised. (Attachment *10*)
4. Section 1.4.1 – 1st to 3rd paragraphs, Tables 1.3 and 1.4: Please compare the pollutant concentrations with the updated AQO criteria and parameters.	Table 1.3 has been updated to the new AQO and parameters.
5. Section 1.5.1 – 3rd paragraph: Suggest to revise "effectively minimized" in line 1 to "controlled".	Noted and updated. (Attachment *10*)
6. Section 1.5.1 – 7th paragraph: It is supportive to carry out an EM&A programme to monitor the air quality impact during the construction phase of the project. Since the site is relatively large, please supplement more details about the monitoring, for example, the potential locations of the continuous dust monitoring, which will be selected at some representative locations such as those ASRs with close proximity of the project site.	The EM&A Manual of the approved EIA report will be followed, including the same monitoring locations. Continuous dust monitoring will only be considered should there be a new EIA for the development.
7. Section 1.5.1 – 8th paragraph: Suggest to delete "for a short duration" in line 3.	Noted and deleted. (Attachment *10*)

8. Section 1.5.1 – 10th paragraph: Please advise if the identification of concurrent project is carried out by site surveys, desktop review and/or approved planning/EIA applications, etc.. Please supplement. Please cover a review of San Tin Technopole as a concurrent project considered under the EA.	Potential concurrent projects were reviewed and identified accordingly. Air, noise and water sections have been updated. (Attachment *10*)
9. Section 1.5.2 – 1st paragraph: Please review the separation distances between the nearest air-sensitive uses of the proposed development and San Tin Highway and Castle Peak Road – Mai Po, since the distances are different from those shown in Figure 1.2.	The separation distance between the nearest air-sensitive uses of the proposed development and San Tin Highway and Castle Peak Road – Mai Po has been revised to 107m.
10. Section 1.5.2 – Table 1.6: Please supplement the buffer distances of the private roads surrounding the proposed development as mentioned in the 1st paragraph of Section 1.5.2 to the table.	The buffer distances of the private roads have been supplemented in Table 1.6.
11. Section 1.5.2 – 3rd paragraph: Suggest to delete the last sentence.	The last sentence has been deleted.
12. Section 1.5.2 – 4th paragraph: i. Please confirm if the temporary on-site STP will be abandoned, demolished, and/or no longer in use after the STLMC EPP commences to collect the sewage generated from the proposed development, in order to justify that it will no longer give rise to any odour impact after the sewage is handled by the STLMC EPP.	Revised accordingly. (Attachment *10*)
ii. Please delete "and will" in line 10, and add "for the treatment of exhaust before discharge to the atmosphere" after "hydrogen sulphide)" in line 11.	Revised accordingly. (Attachment *10*)
iii. Please provide more information about the design and control measures of STKSTW to support they are comparable to the temporary on-site STP besides the treatment capacity.	Control measures have been provided.
iv. The potential odour impact arising from the second option of the sewage treatment should also be assessed. Please supplement.	It has been supplemented.
v. Also please advise when the options of the sewage treatment will be confirmed (e.g. at a later detailed design stage, EIA stage, etc.). In any case,	The option for sewage treatment will be confirmed at a later detailed design.

please specify if the odour impact will be further assessed when it is confirmed.	
13. Section 1.5.2 – 5th paragraph: Please provide the shortest separation distances between the exceedance zones and the nearest air-sensitive use of the proposed development at different elevations to justify no air-sensitive use of the proposed development is within the exceedance zones. Please review and update accordingly.	The shortest distances between the exceedance zones and the nearest air-sensitive use at different elevations have been provided.
14. Section 1.6.1 – 1st paragraph: i. Please revise "minimize" in line 2 to "control". ii. Exempted NRMM should be avoided. Please delete "as far as practicable" in the 14th bullet. iii. Please add "airtight and" before "watertight" in the 17th bullet. iv. Please update the 19th bullet to tally with the 4th bullet of the 8th paragraph of Section 1.5.1.	i. Revised accordingly. ii. Noted and deleted. iii. Noted and added. iv. 19th bullet has been updated.
15. Section 1.9 – 2nd paragraph: Please add "air quality" after "adverse".	Noted and added.
EA – Noise 16. Please remove "To be updated" from the title.	Noted and revised in this updated revision.
17. Figures 2.1 to 2.8 have been missing. Please rectify.	Inserted in this updated revision.
18. S.2.2.2 (RtC item 30): The consultant has advised in the RtC that there will be no diagnostic rooms or wards included in the RCHE under the proposed development area. As a result, the stricter noise criterion for road traffic of 55 dB(A) for L10 (1hr) will not be adopted. Such development design should be explicitly stated in s.2.2.2. Since diagnostic rooms and wards are typically common in RCHEs, if it is determined that they are necessary in future, the applicant shall commit to update the noise assessment accordingly.	The road traffic noise criterion of the RCHE was revised to 70 dB(A) for L10 (1hr) in this updated revision. The Proposed use of the RCHE is listed in appendix 2.6. Please be clarified that there will be no diagnostic rooms or wards in the proposed development.
19. S.2.2.2: Please clarify the statement on "Error! Reference source not found"	Noted and revised in this updated revision.
20. S.2.2.2 – last 2 paragraphs: Most of the site will be separated from San Tin Highway by more than 300m with Royal Palms lying	Line-of-sight from FN7 (~21mPD) to San Tin Highway is partially screened:

	between. Therefore, most of the site is unlikely be affected by San Tin Highway. Please justify the application of ASR "B" for the whole development. Besides, for the assessment of the planned fixed noise source, it is necessary to measure the background noise level for the determination of the appropriate noise criteria.	 Direct line-of-sight from FN5 (~42mPD) to San Tin Highway:  Direct line-of-sight from FN2 (~42mPD) to San Tin Highway:  Please note that all representative NSRs for fixed noise assessment are within 300m from San Tin Highway and most of them have direct line-of-sight to San Tin Highway. Considering there are few NSRs with line-of-sight being partially screened, it is conservatively assumed that the site would be indirectly affected" by IF. Noise measurement is considered unnecessary as quantitative fixed noise assessment for planned fixed noise source was not conducted.
21.	S. 2.5.2 (RtC item 31): Please document TD's agreement on the traffic forecast data in the report once available. In case TD has no comment on the methodology for traffic forecast only, the consultant should provide written confirmation from the respective competent party (e.g. traffic consultant) that TD's endorsed methodology has been strictly adopted in preparing the traffic forecast data, and hence the validity of traffic data can be confirmed.	Noted. The TD's agreement will be provided in the upcoming revisions.

	22. Table 2.12 & Figure 2.3a: Table 2.12 presented the traffic noise assessment results at 25 assessment points (i.e. TN1 to TN25), while Figure 2.3a indicates that there are 33 assessment points (i.e. TN1 to TN33). Please check and clarify. Besides, a traffic noise assessment models shall be provided for checking.	Noted and revised in this updated revision. Traffic noise assessment model has been appended.
	23. Table 2.13: Please provide excel spreadsheet for checking the calculation of planned fixed noise source impacts at representative NSRs.	Noted and appended.
	24. S.2.7.2 (RtC item 32): The consultant referenced ProPECC PN4/23 to indicate the effectiveness of mitigation measures, specifically stating that a reduction of at least 6 dB(A) is required to minimize the impact of road traffic noise on noise-sensitive rooms. Since ProPECC PN4/23 is based on ProPECC PN5/23, with the thickness of the window panes specified. Therefore, Please advise on the minimum thickness of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms (such as dinning rooms, living rooms and bedrooms) within the development and confirm whether these windows (and doors where appropriate) are well-gasketted. If deemed appropriate, please discuss in this sub-section that such windows and doors could offer the future occupier an option for a quieter indoor noise environment. An example is given below, which the proponent or her consultant may adopt if deemed appropriate."Glass panes in all windows of all noise sensitive rooms (e.g. living rooms, dinning rooms and bedrooms) within the development have a minimum thickness of X mm. All these windows are well-gasketted, providing the future occupants an option for a quieter indoor noise environment."	Noted and revised in S.2.7.2. Relevant details of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms within the development will be advised in the NIA report submitted at a later stage of the project.
SIA		
	25. For the Option 2 under sewage treatment/ disposal options, the applicant should be reminded that Option 2 involves construction of long rising mains (or sewers) and the sizing of the rising mains/ sewers may need to incorporate the sewage flow from the existing and planned	Noted.

developments near the sewer alignment due to limited underground space for accommodating other new sewers/ utilities. An updated SIA is required to be submitted to our satisfaction if Option 2 is pursued. Such updated SIA should also assess the potential sewerage impact when San Tin Technopole sewerage system is confirmed and becomes available.	
On noise, please be advised to require a mechanism (i.e. land lease or the future s.16 planning application) for the applicant to submit a proper NIA report to review, explore, demonstrate and implement appropriate noise mitigation measures for full compliance with the relevant noise criteria and requirements under ProPECC PNs, HKPSG and NCO in both construction and operation phases of the proposed developments. Similarly for sewerage infrastructure, an updated SIA report should be submitted by the applicant under such mechanism to assess the potential sewerage impact when San Tin Technopole sewerage system is confirmed and becomes available, and the implementation of mitigation measures, if required.	Noted.
Please note that the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO. The Applicant should review the EIAO implications at later stage and confirm with the EPD. The Applicant should also observe and ensure the proposed development will comply with all statutory requirements under the EIAO.	Noted.
Please provide full set of revised EA and SIA with change highlighted in the next submission for our review.	Noted.

Response to Departmental Comments of Lands Department

Comments from the District Lands Officer/ Yuen Long, Lands Department (Contact Person: Mr Jason Chan; Tel: 2443 3075)	**Response(s):**
Part A: General Comments 1. The application site comprises 2 private lots namely Lot 50 s.A and 77 in D.D. 101. Lease modification for wetland restoration area at Lot 50 s.A in D.D. 101 and land exchange for private residential	Noted.

development at Lot 77 in D.D. 101 based on the approved scheme under Application No. A/YL-MP/229 were both executed in 20.1.2021.	
2. Lot 50 s.A in D.D. 101 is held under the Block Government Lease as modified by a Modification Letter dated 29.1.2021 which requires the Lease to maintain and manage the lot in accordance with the Maintenance and Management Plan for the conservation of the lot as restored wetland area in all respect to the satisfaction of Director of Agriculture, Fisheries and Conservation.	Noted.
3. Lot 77 in D.D. 101 is held under New Grant No. 22875 dated 29.1.2021 ("the Conditions"). The Conditions contains, inter alia, the following conditions: (a) Building covenant: On or before 30.6.2027 (b) User Restriction: Private residential purposes (c) Total GFA: Not less than 49,778m^2 and not exceeding 82,963m^2 (d) Vehicular Access: Between the points X and Y through Z (e) Such parking, loading and unloading requirements in connection with the aforesaid permitted purposes.	Noted.
4. The proposal would contravene the Conditions, including but not limited to the total GFA and vehicular access. Should the Town Planning Board approve the application, the applicant has to apply for a Lease Modification to implement the planning scheme. However, there is no guarantee at this stage that the Lease Modification application would be considered and approved. Such application, if submitted, will be dealt with by this department acting in the capacity of the landlord at our discretion, and if it is approved, the approval would be subject to such terms and conditions including amongst others, the payment of premium and administrative fee as may be imposed by this department.	Noted.

Part B: Advisory Comment for the Applicant 1. Please be reminded that the Conditions contains a Building Covenant that requires the Grantee to develop Lot 77 in D.D. 101 that fit for occupation on or before 30.6.2027. Non-completion of the development is a breach of the said Conditions and will amongst other remedies render the lot liable to re-entry by the Government.	Noted.
2. The technical assessments as enclosed at Appendices 4-11 of the Planning Statement should be subject to comments of relevant Government departments.	Noted.

Response to Departmental Comments of Civil Engineering and Development Department

Comments from the Project Manager (North), Civil Engineering and Development Department (Contact Person: Mr Kelvin Au; Tel: 3917 0937)	**Response(s):**
The subject site is located in close proximity to the project boundary of the Sam Po Shue Wetland Conservation Park (SPS WCP), with proposed ecologically enhanced fishponds adjacent to it. The applicant is strongly recommended to enhance the project interface between the subject site and the SPS WCP, addressing various aspects such as environmental, traffic, ecological, landscape, and visual considerations, all aimed at facilitating the establishment of the SPS WCP.	The subject site contains an existing Wetland Restoration Area (WRA) in operation for over a decade, which presents a buffer distance between the residential portion of the comprehensive development and the project boundary of the SPS WCP. In addition, a 50m height band from the edge of the WRA into the residential portion is provided, to ensure that the developments there are low-density and 3-storey high.

Response to Departmental Comments of Secretary for Environment and Ecology

Comments from the Secretary for Environment and Ecology (Contact Person: Ms Sophia Hui; Tel: 3151 7190)	**Response(s):**
In the planning statement and ecological impact assessment, the applicant stated the following: - "no change is proposed to the design or operation of the WRA with reference to the Wetland Restoration Plan (WPR) in the approved EIA"; - "the approved and completed WRA component will not be affected by this application and will continue to meet the requirements of this Guideline";	Noted.

- "with the implementation of all mitigation measures, no additional ecological impact is predicted compared to the approved scheme and that the findings of the approved EcoIA under planning Application No. A/YL-MP/229 remain valid"; and - "on 25 January 2021, the Applicant made a one-off lump sum donation to the Environment and Conservation Fund ("ECF"). An agreement between the Applicant and the ECF was made on 26 January 2021. The conservation agent of the Applicant has been carrying out the maintenance and management plan and the funding agreement is fully applicable to this application."	
On the other hand, AFCD commented that: - "the design and operation of the WRA aim to mitigate the ecological impacts from the original development scheme. The proposed increase in no. of storeys will potentially bring additional disturbance impacts to the WCA during the construction phase and operation phase. There is currently not sufficient information to demonstrate that the WRA could mitigate the additional impacts from the revised development scheme. The applicant should quantify such potential additional impacts, elaborate clearly how the existing WRA and other measures proposed in the original EcoIA could mitigate the additional impacts, and list out clearly any additional measures required under the new scheme.	Noted.
The current Application Site at Wo Shang Wai ("WSW Project") had previously obtained s.16 planning approvals, with planning application no. A/YL-MP/229 (MP229) approved in February 2015 and planning application no. A/YL-MP/291 (MP291) approved in July 2020. The two planning applications have the same domestic GFA and plot ratio but different numbers of blocks and building height. Under the aforesaid s.16 planning applications, the applicant proposed to follow the funding arrangements of the original option under the Public-Private-Partnership Scheme of the New Nature Conservation Policy, i.e. project proponent to make a lump sum contribution to the Environment and Conservation Fund (ECF) sufficient to generate recurrent incomes to support the pledged conservation programmes (in the case of the WSW	Noted.

Project, the long-term maintenance and management of the WRA). Conditions pertaining to the aforesaid funding arrangements were imposed for the concerned planning approvals.	
On 26 January 2021, ECF received a lump sum contribution of $75M from the applicant for the purpose of supporting the long-term maintenance and management of the WRA, and a relevant funding agreement was signed between the applicant and the ECF Trustee on the same date for fulfilling the relevant approval conditions of planning application no. MP291.	Noted.
Subject to the applicant's responses to AFCD's comments, if there is need for the applicant to implement any additional measures to mitigate any additional ecological impacts, this may have an implication on the amount of funding needed so as to sufficiently support the long-term maintenance and management of the WRA, and hence there may also be a need to review and/or adjust the amount of funding that has to be made to the ECF to support the long-term maintenance and management of the WRA as well as the signed funding agreement.	The AFCD's comments will be responded to in our Batch 3 FI submission.

Attachment 1: Landscape Function Analysis Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Functions Analysis Plan

Dwg. No. : 2023202-LFP-01

Date : JAN 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-01-06 LMP\2023202-LFP-01

Attachment 2: Replacement pages of Planning Statement

2.2 ***Existing Site Conditions***

2.2.1 The Site has been underutilized for years and is currently in a vacant land with wild grass and partly paved. It is capable of speedy implementation as it is ready for construction. **Figure 2** shows the current site condition.



Figure 2: Photo of the existing site condition

2.3 ***Site Constraints***

2.3.1 The major site constraints of the Site that has restricted its development intensity, include (**Figure 3**):

a) MTRCL railway protection zone to the east of the Site.
b) The completed Wetland Restoration Area portion in the Site.
c) The proposed Sam Po Shue Wetland Conservation Park (SPS WCP) to the north of the Site.
d) The existing low-density private residential developments in the surroundings.

2.3.2 In view of these major site constraints, the residential portion has been designed to a scale and form to be compatible to, and mitigate the impact to the surroundings.

2.4.3 To the north of the Application Site is the proposed SPS WCP, made up of mainly large areas of continuous fishponds and wetlands.

2.5 ***Statutory Planning Context***

2.5.1 The Application Site is currently zoned "OU(CDWRA)". The planning intention of the zone states that:

"This zone is intended to provide incentive for the restoration of degraded wetlands adjoining existing fish ponds through comprehensive residential and/or recreational development to include wetland restoration area. It is also intended to phase out existing sporadic open storage and port back-up uses on degraded wetlands. Any new building should be located farthest away from Deep Bay."

2.5.2 The Remarks to the Notes states that:

(a) Application for permission of use or development… shall be in the form of a comprehensive development scheme to include wetland restoration proposal. An applicant shall prepare a layout plan and other documents showing the following information for consideration of the Town Planning Board:

(i) the proposed land uses, development parameters, the nature, position and heights of all buildings to be erected in the area;

(ii) an environmental impact study report, including but not limiting to an ecological impact assessment and a visual impact assessment, to examine any possible environmental, ecological and visual problems that may be caused to or by the proposed development or redevelopment during construction and after completion and the proposed mitigation measures to tackle them;

(iii) landscape proposals;

(iv) a traffic impact study report to examine any possible traffic problems that may be caused by the proposed development or redevelopment and the proposed measures to tackle them;

(v) a drainage and sewerage impact study report to examine any possible flooding, drainage, sewerage and associated problems that may be caused to or by the proposed development or redevelopment and the proposed mitigation measures to tackle them;

5. Environmental Impact Assessment Ordinance

5.1 The WRA has been completed under a previously approved application, and its conservation management plan has been implemented and put in place since 2010. The main ecological function of the WRA is to provide habitat for bird species in the surrounding wetland area.

5.2 The residential portion in the site is subject to the Environmental Impact Assessment Ordinance (EIAO). Approvals pertinent to EIAO include:

i. Environmental Impact Assessment (Register No.: AEIAR-120/2008) for the development at the site approved on 31 July 2008.

ii. Environmental Permit (No. EP-311/2008) for the construction and operation of the development issued on 9 September 2008, the latest one being 19 December 2017 (EP-311/2008/E).

iii. Variations to the Environmental Permit reflecting the approved development schemes have been approved, the latest one being 19 December 2017 (No. VEP-538/2017).

5.3 Since the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO, the Applicant undertakes to review the EIAO implications at later stage and confirm with the EPD. The Applicant will observe and ensure the proposed development will comply with all statutory requirements under the EIAO.

6. Development Context

6.1 ***The Increase in Development Intensity of Comprehensive Residential Developments in the Vicinity***

6.1.1 The Northern Metropolis covers a total area of 30,000 hectares, which is about one third of the total area of Hong Kong. It comprises various existing new towns in the New Territories North, some NDAs, and some expanded areas. In the Policy Address 2022, the development of Northern Metropolis is one of the policy priorities as it is the new engine for growth. The Policy Address 2023 further suggested that the Northern Metropolis will become a major hub for Hong Kong to integrate into the overall development of China.

Table 2: Similar Approved Comprehensive Developments in the District

Item No.	Application No.	Type	Zoning	Date Approved	Maximum Parameters	
1	Y/YL-NSW/7	Private Housing	OU CD(WRA)	2023 November	PR 1.5	15-storeys
2	N/A	Sha Po Public Housing	R(A), R(C)3 & GIC	2023 (agreed by TPB)	PR 6.7	185 mPD
3	A/YL-KTN/663	Private Housing	CDA	2020	PR 1.67	17-storeys
4	A/YL-KTN/118	Park Yoho - Existing Private Housing	CDA	2012	PR 1.25	11 to 17-storeys (62.5 mPD)
5	A/YL-KTN/604	Private Housing	CDA(1)	2019	PR 1.254	12 to 18-storeys
6	N/A	LSPS Tung Shing Lei	R(D)	2022	PR 3.23	26-storeys
7	A/YL-NSW/274	Private Housing	U	2021	PR 2.29	21-storeys (75mPD)
8	Y/YL-NSW/3	Commercial (Hotel)	OS	2016	PR 1.5	11-storeys
9	A/YL-NSW/242	Private Housing	OU CD(WEA) & SSSI(1)	2021	PR 2.76 (based on development site area)	26-storeys
10	A/YL-NSW/241	Private Housing	OU CD (WRA)	2017	PR 0.4	4-storeys
11	A/YL-MP/287	Private Housing	R(D)	2020	PR 0.2	2-storeys
12	A/YL-MP/205	Private Housing	R(D)	2013 2017 EOT	PR 0.2	3-storeys
13	A/YL-MP/247	Private Housing	OU CD(WPA)	2016 2020 EOT	PR 0.2	3-storeys
14	A/YL-MP/341	Light Public Housing	R(C)	2023	PR 0.64	3-storeys
15	A/YL-NTM/310	Private Housing	R(C)	2014	PR 0.48	3-storeys
16	A/YL-NTM/470	Transitional Housing	R(D)	2024	PR 1.29	4-storeys
17	Y/YL-NSW/8	Private Housing	OU CD(WRA)	2025 Feb	PR 2.3	29-storeys 115mPD
18	Y/YL-NSW/9	Private Housing	I(D), OS and Road	2025 Feb	PR 2.73	29-storeys 115mPD
19	A/YL-NSW/314	Private Housing	OU CD(WRA)	2025 Feb	PR 0.4	5-storeys 19.6mPD

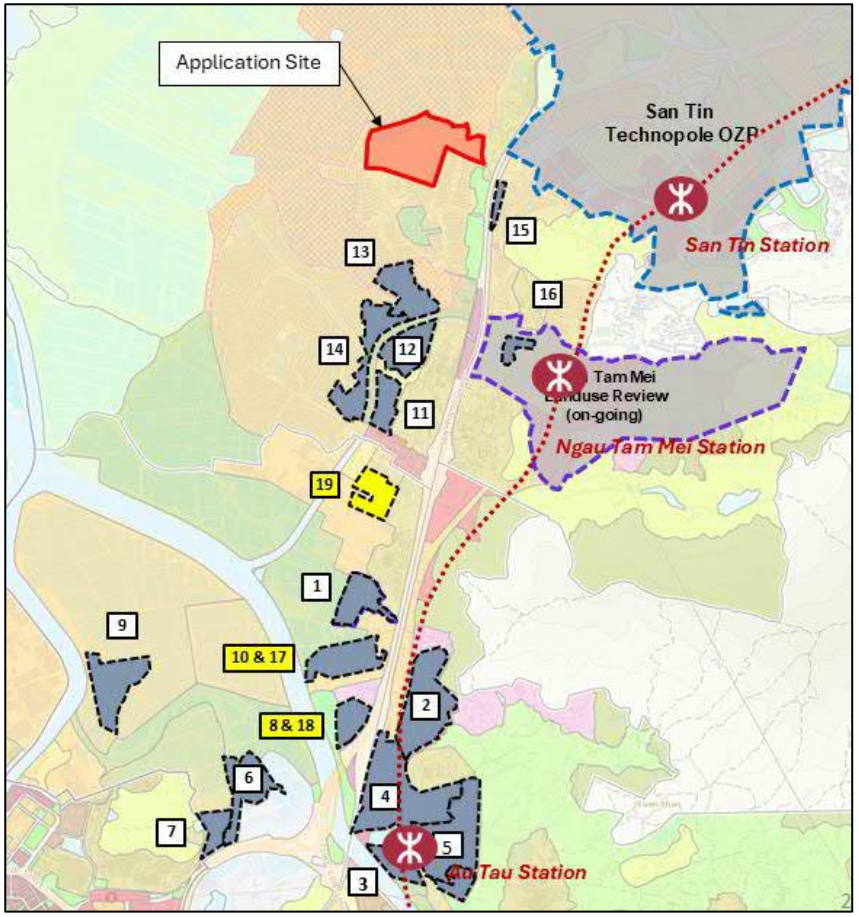


Figure 4: Indicative Locations of Similar Approved Comprehensive Developments in the District

6.2 ***On-going Applications for Upzoning Private Residential Development***

6.2.1 There have been many submitted and on-going applications that are being processed by the TPB, for upzoning private housing sites into medium-density developments in the district. These applications have proposed plot ratios of between 1.23 to 5 and building heights of 16 to 35 storeys. Similar to this current application, many of them have already obtained planning approval for lower-density housing developments. This reveals the development trend in the New Territories North and demonstrates how the underutilized sites in the district could be used for residential developments. A list of submitted and on-going upzoning private residential applications is provided **Table 3** in below. Please refer to **Figure 5** for the locations of the applications.

Table 3: On-going TPB Applications for Upzoning Private Residential Developments

Item No.	Application No.	Type	Proposed Zoning	Maximum Parameters	
C	Y/YL-MP/8	Private Residential	R(C)1	PR 1.23	16-storeys
D	Y/YL-MP/7	Private Residential	R(C)1	PR 1.28	16-storeys
E	Y/YL-ST/1	Private Residential	OU (CDWRA)1	PR 1.53	18-storeys
F	Y/YL-NTM/5	Private Residential	R(C)	PR 5	35-storeys

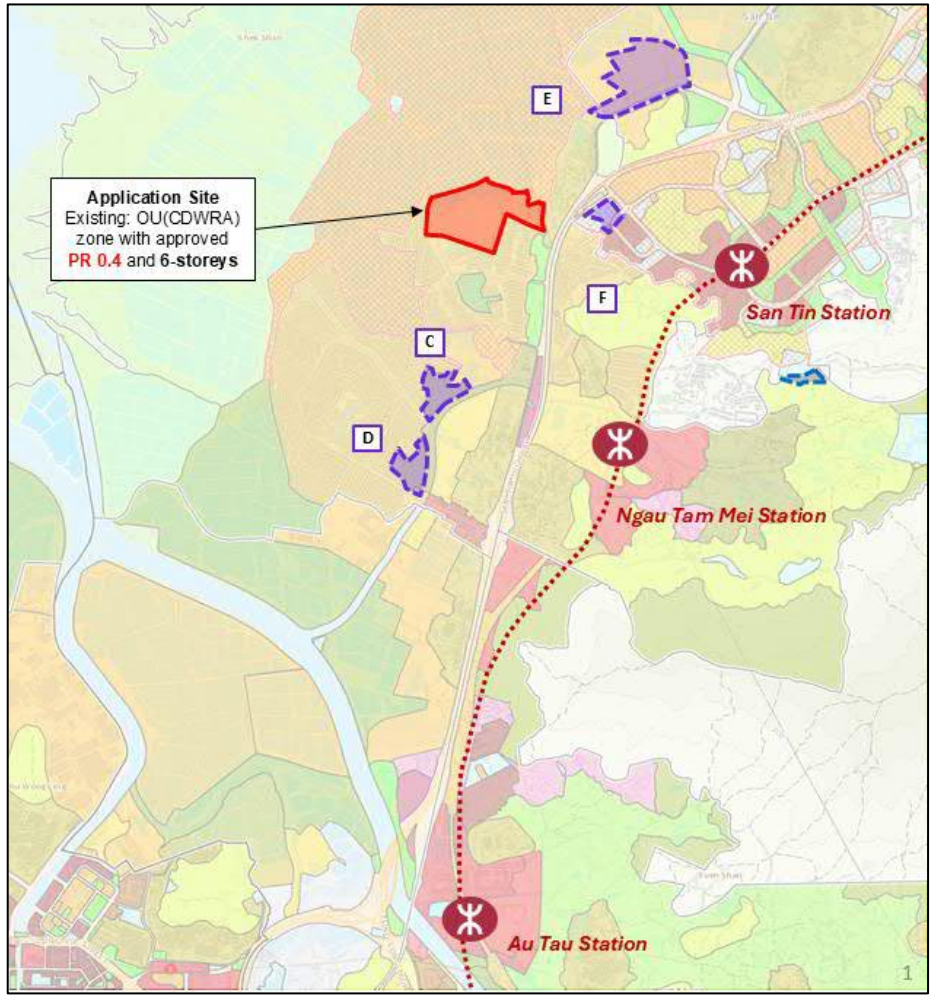


Figure 5: Locations of the On-going Upzoning Applications

6.3 ***The High-density Developments of San Tin Technopole***

6.3.1 On 8 March 2024, a new draft San Tin Technopole Outline Zoning Plan No. S/STT/1 was gazetted to support the development of the San Tin/Lok Ma Chau area ("STLMC area") of the San Tin Technopole, which has replaced the previous San Tin OZP. The north-west portion of San Tin Technopole is right adjacent to the "SPS WCP". The development intensity and building height of future developments in the San Tin Technopole will be progressively stepped towards the south-east from 15mPD, 35mPD, 75mPD, to 105mPD and higher. The area will be transformed from rural setting to sub-urban mixed use new town. This standard configuration enables the development intensity closest to the WCP to be at the lowest, and gradually increases to high-density developments further away, so to create a balanced form of development that minimize impact to the WCP, while allowing optimal development potential of the scarce land resources. (**Figure 6**)

6.3.2 With reference to the revised Recommended Outline Development Plan ("RODP") for the land use proposal of the San Tin Technopole published in February 2024, the public and private housing sites will have a domestic plot ratio of 6 to 6.5. There will be high-rise development clusters in the south-western part of the San Tin Town Centre. These housing sites are about 450m away from the Application Site and the area will be transformed into a high-density residential neighbourhood. Similar to the stepped building height profile of the San Tin residential developments, the north-west portion of the Application Site is right next to and directly interfacing with the WCP, hence it will also adopt building height bands that decreases towards the south-east. With the evolving strategic planning context, the proposed increase in plot ratio and building height of the Application Site is deemed appropriate.

6.3.3 The Application Site is located at the periphery of the San Tin Technopole, accessible to the San Tin Highway, and is within 1.2km from the planned San Tin MTR Station. While the San Tin Technopole is an example of striving for co-existence of development and conservation, the proposed development is in line with such principle.

(a) Responsive building heights, where disposition and orientation of proposed blocks are designed to minimize the potential impact on the visual amenity of the wetlands and fishpond areas to the north and west.

(b) The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.

(c) Introduction of three visual corridors, and building separation to break up the combined development frontage and avoid potential wall effect.

(d) Location of car parking in the basemen to maximize the area available for landscaping amenities.

7.5 ***Visual and Breezeway Corridors***

7.5.1 The orientation and disposition of the residential buildings are arranged to provide sufficient space in between to allow visual and breezeway corridors, running north-south across the site to the surroundings. These visual corridors are explained and shown in the VIA, while the breezeway corridors are explained and shown in the AVA report.

7.6 ***Cycling Facilities***

7.6.1 The proposed development will promote the sustainable traveling mode of cycling to its residents and visitors. There will be a total of 173 bicycle parking spaces provided in the Site, and the existing and planned cycling network of the North West New Territories can be accessed at the entrance of the site via Mai Po South Road.

7.7 ***Residential Care Home for the Elderly***

7.7.1 The proposed development would provide a 100-place Residential Care Home for the Elderly (RCHE) and supporting facilities, in a 4-storey building at the east of the Site, next to the access road. The RCHE cum E&M Building would be designed to comply with the specifications and requirements under the planning standards and relevant regulations. The RCHE would cater to the shortfall against the planned provision for such community facilities in the wider context.

7.8 ***Internal Roads or Driveways***

7.8.1 The entrance of the Site on the access road connecting to Castle Peak Road – Mai Po will be an east-west two ways main driveway running through the Site, which also serves as the Emergency Vehicular Access. It will lead to access ramps to the basement carpark. The internal driveways are aligned to branch out and serve the frontages of the houses, residential, and other buildings for drop off movements.

7.9 ***Basement Carparking***

7.9.1 The carpark will be underground in the basement level, and will be extended to serve all the houses and residential buildings in the Site. Internal transport facilities including car parking spaces and loading/unloading bays have been increased in accordance with the changes in unit sizes and numbers. The provision is in accordance with the Hong Kong Planning Standard and Guidelines ("HKPSG"). The Basement Carpark Plan is provided in **Appendix 3.**

7.10 ***Preliminary Phasing Plan***

7.10.1 The development will be constructed and occupied in six phases. This is indicated in **Figure 8**. The anticipated completion year of the entire development (including all the phases) is 2031.

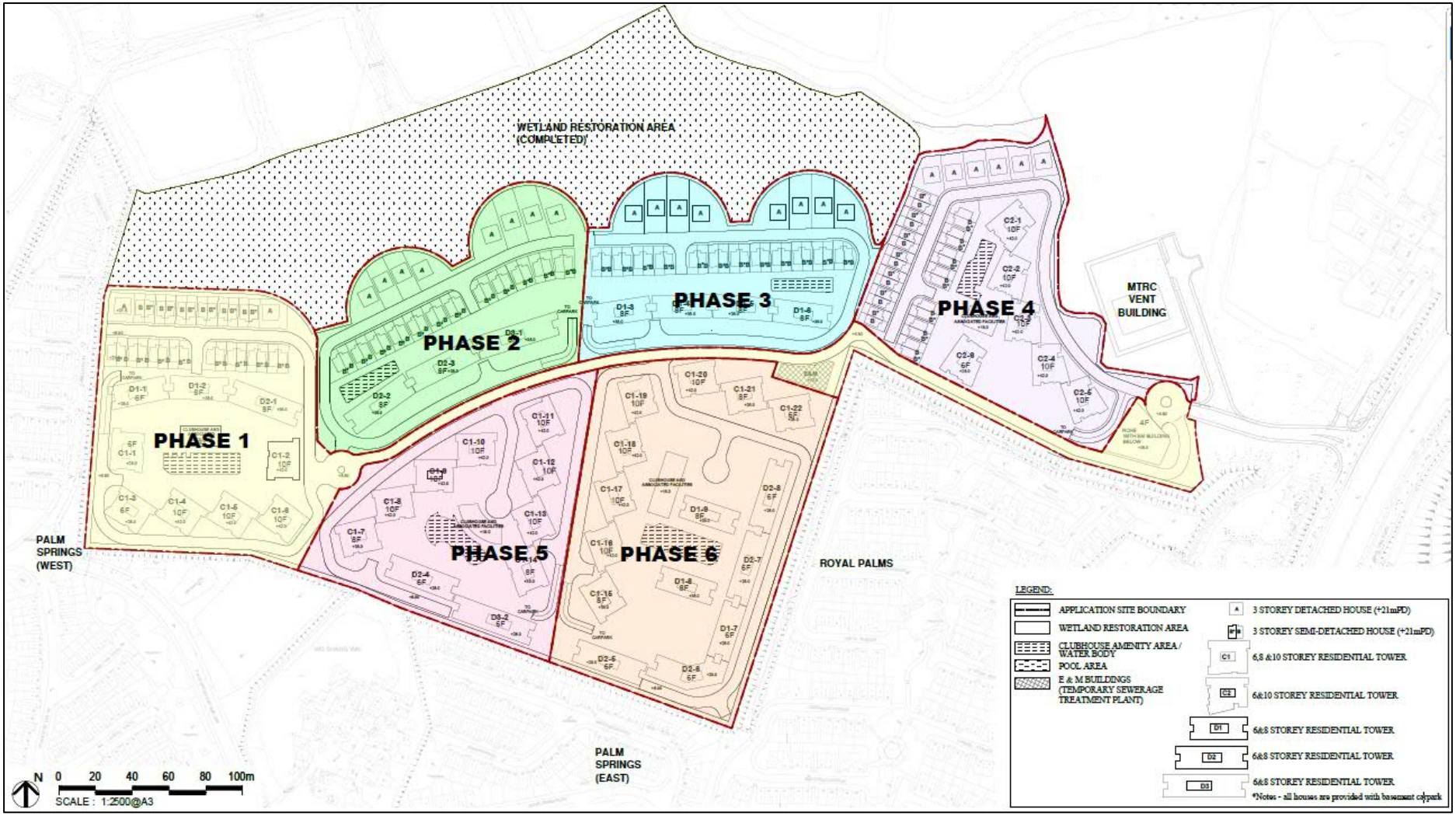


Figure 8: Preliminary Phasing Plan

(b) Landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds).

(c) Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

(d) A 5m buffer planting within the residential portion of the Site, with 1 to 2 rows of trees to screen residential development and prevent disturbance to the WRA. This is an increased buffer planting area compared to the previous approved s16 scheme, with a 2.5m buffer planting within the residential portion.

(e) Only low-rise buildings (about +21mPD) adjacent to the WRA and within 50m buffer from the nearest fishponds (i.e. land zoned as "OU(WCP)" so that the proposed development would not lead to adverse ecological impacts.

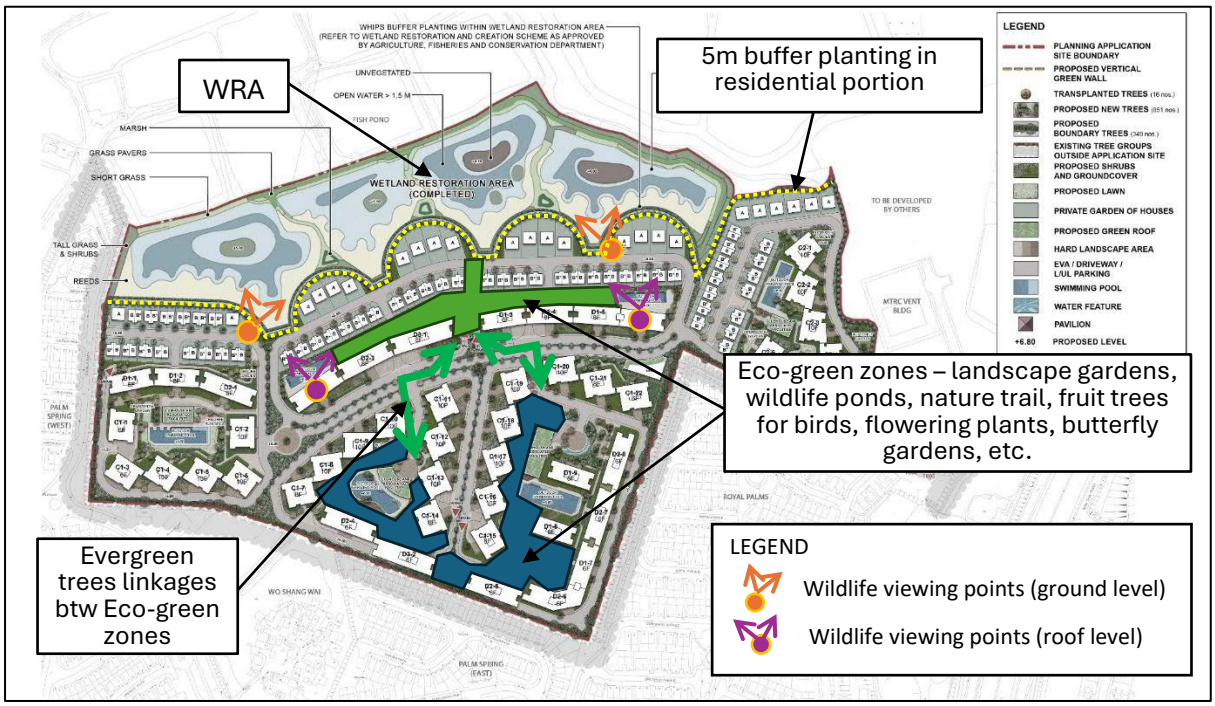


Figure 9: Extra Ecological Merits of the Proposed Scheme (indicative)

8.6 ***Traffic Impact Assessment***

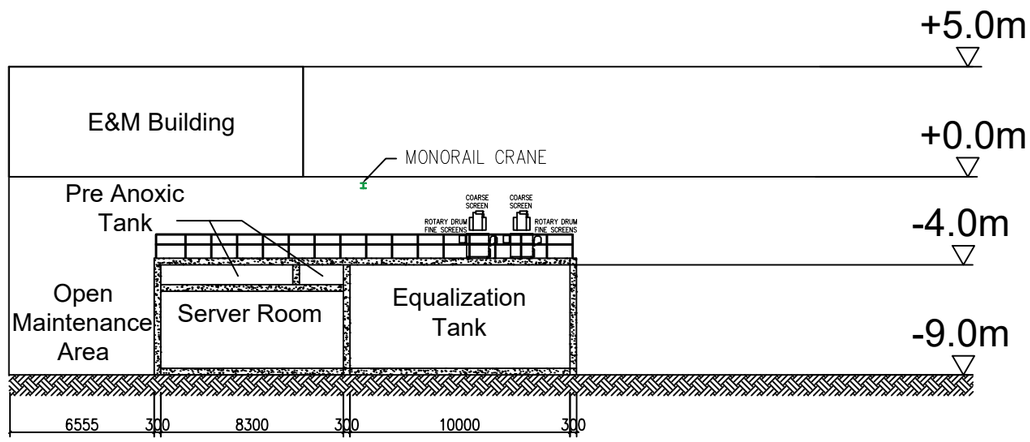
9. Proposed Amendment to the OZP

9.1 The proposed amendment to the Plan to meet this proposal at the Application Site would not require any changes to the existing zoning of "OU(CDWRA)" in the OZP per se (note that the "OU(CDWRA)" zone in the OZP only contains the Application Site). As such, the change required to meet our proposal is to update the Notes of the OZP, in the "OU(CDWRA)" zone, Remarks (c) and explanatory statement para. 9.9.3, as follows (with changes shown in bold, strikethrough, and highlighted texts):

- Remarks (c): No new development, or addition, alteration and/or modification to or redevelopment of an existing building (except developemnt or redevelopment to 'New Territories Exempted House') shall result in a total development and/or redevelopment in excess of a maximum plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park and not exceeding 42mPD**, or the plot ratio, site coverage and height of the building which was in existence on the date of the first publication in the Gazette of the notice of the interim development permission area (IDPA) plan for Mai Po and Fairview Park, whichever is greater.

- Explanatory Statement, Paragraph 9.9.3: To be in line with the rural setting which is mainly village houses, to minimize visual impact and to take into account the capacities of local road network and infrastructure in this area, development or redevelopment shall not result in a total development or redevelopment intensity in excess of a total plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park and not exceeding 42mPD**. Minor relaxation of the plot ratio and/or building height restrictions may be considered by the Board on application under section 16 of the Ordinance. The criteria given in paragraph 8.5 above would be relevant for the assessment of minor relaxation of building height restrictions. Each application will be considered on its own merits.

Attachment 4: Section and Layout Plans of Temporary Sewerage Treatment Plant



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4. All Pipe Sizes refers to inner diameter in millimeters.

wsp

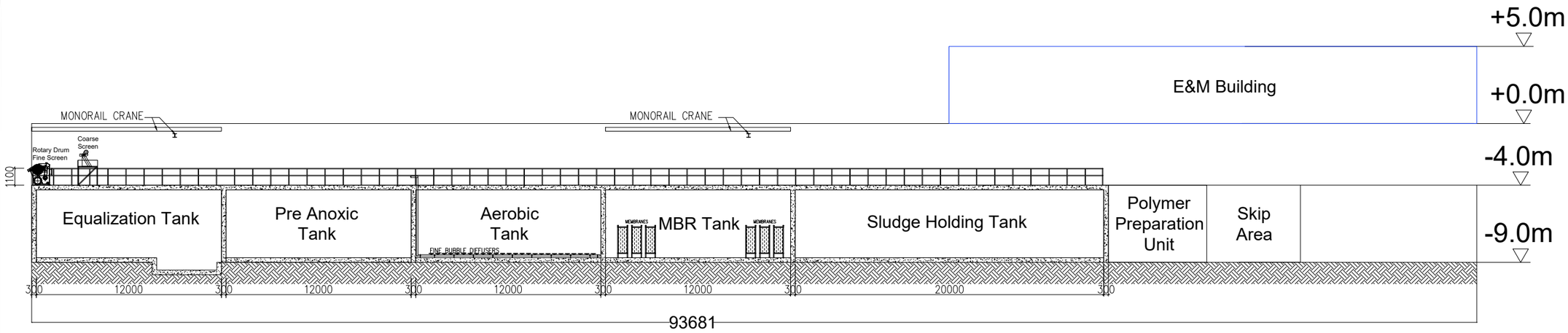
Project title

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

Sewage Treatment Plant, Section View (Section A-A)

-		



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Project title

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

Sewage Treatment Plant, Section View (Section B-B)

EM

&MRC

M

MOTOR /BIKE PARKING

EM

EM

EM

A

B

Server Room

Switch Room

Open Maintenance Area

Blowers Area

MBR Maintenance Area

Equalization Tank

Pre Anoxic Tank

Aerobic Tank

MBR Tank

Pre Anoxic Tank

Aerobic Tank

MBR Tank

Screen

Pumps and C/P Area

Deodorization Unit

Dissolved Air Floatation

Disinfection Unit

Storage Area for Spare Parts and Chemicals

E&M

Sludge Holding Tank

Filter Press

Polymer Preparation Unit

Skip

A

B

EM

EM

up

-	-	-	-	-

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Project title

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

Sewage Treatment Plant, Plan View

-		

Attachment 6: Master Layout Plan (Revised)

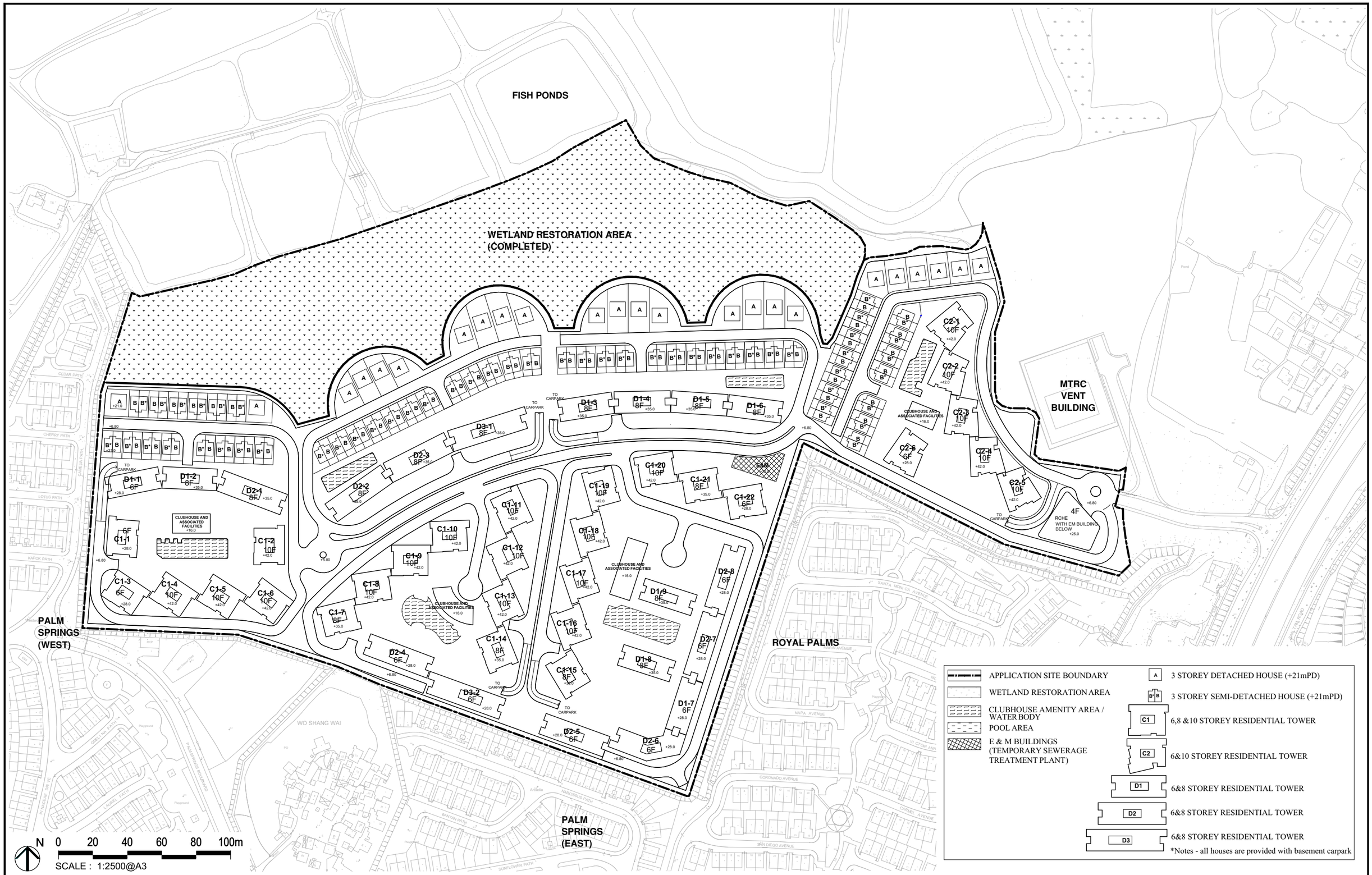

Figure 3: Revised Master Layout Plan in this Amendment Application

1:2500 in A3
DWG. No. : 3809-003

LWK +PARTNERS

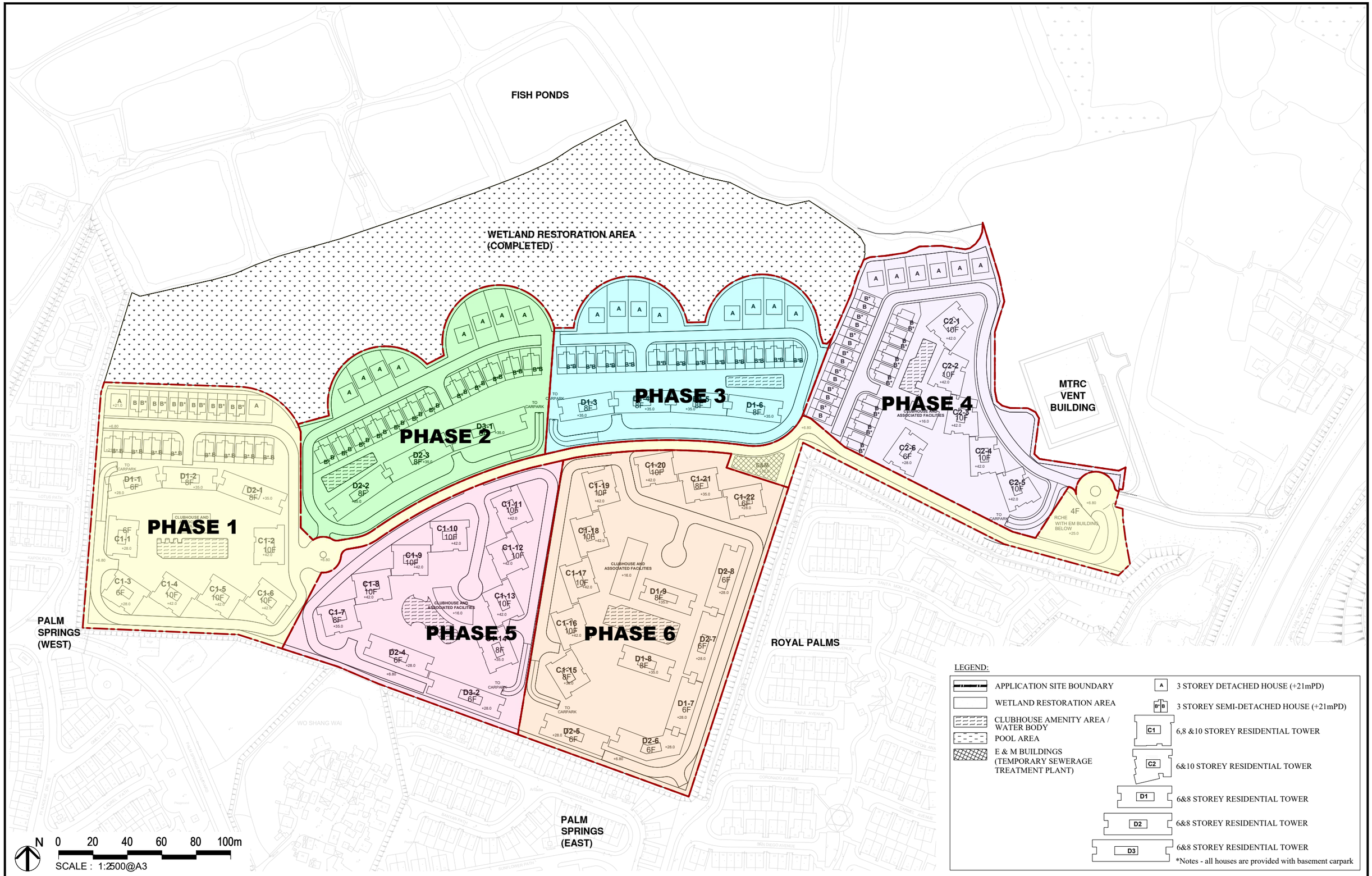

Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

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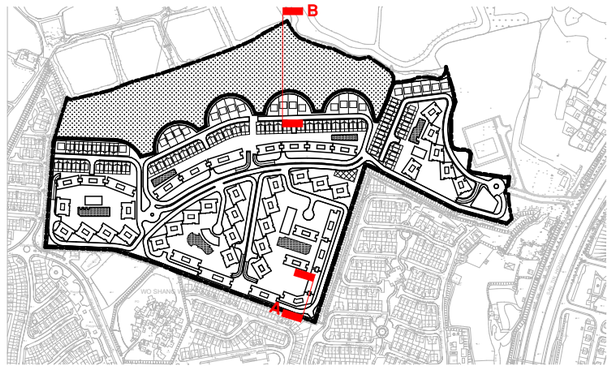
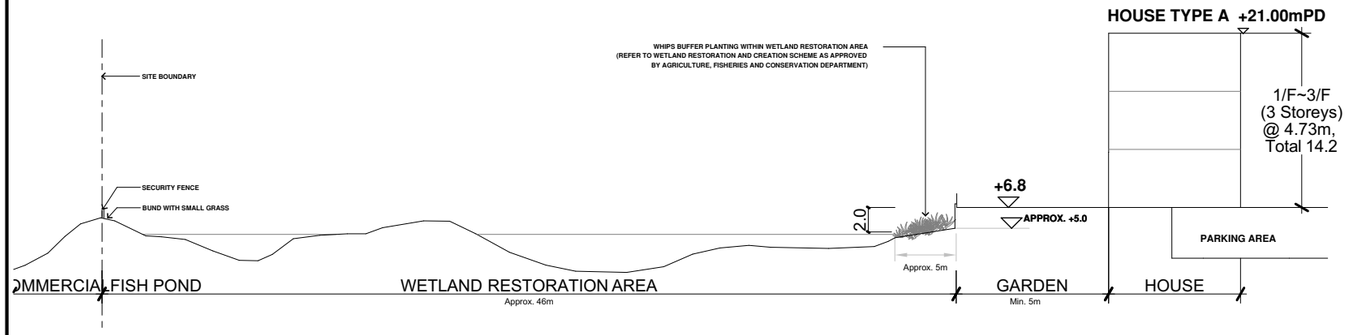
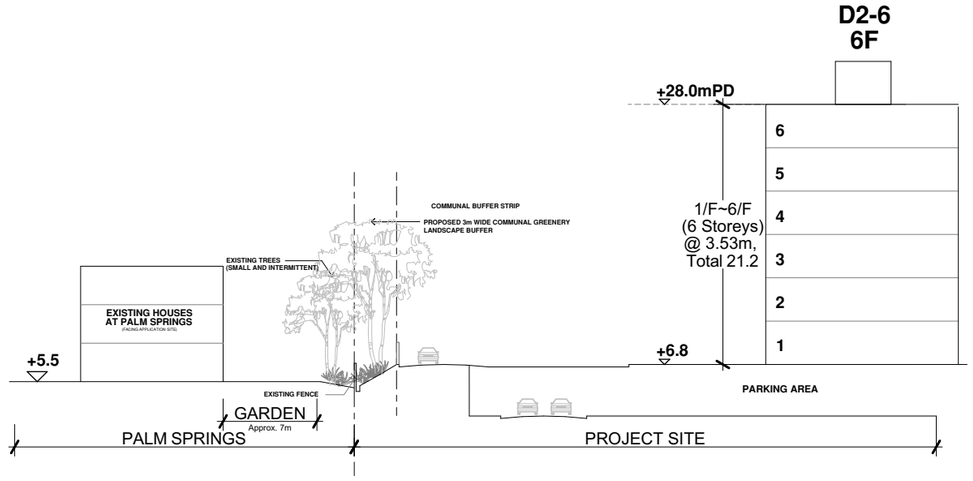
DWG. No. : 3809-003



KEYPLAN



SECTION B - THROUGH INTERFACE OF WETLAND BUFFER AND RESIDENTIAL AREA (TYPICAL)



SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:500 @ A3
November 2019 Submission

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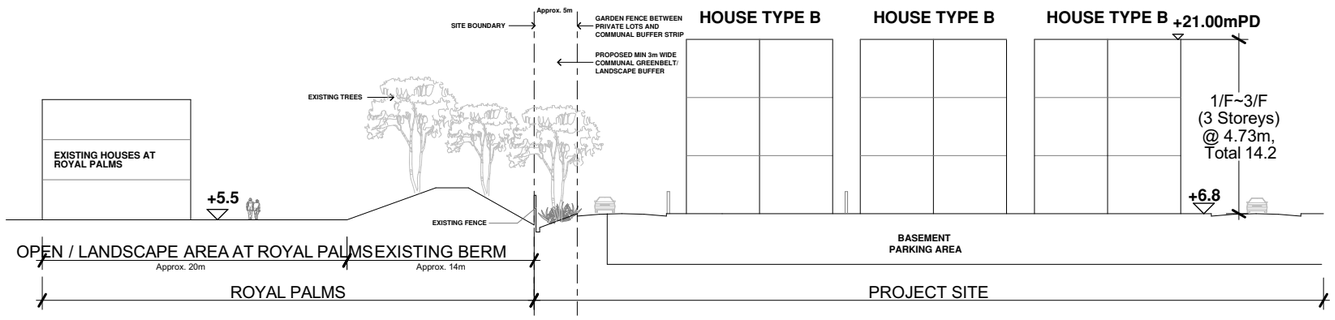
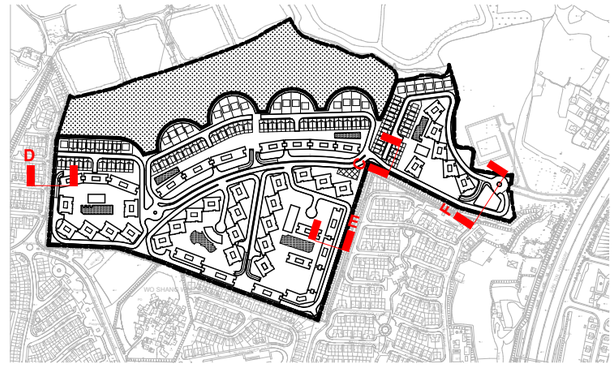


SECTION C - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA



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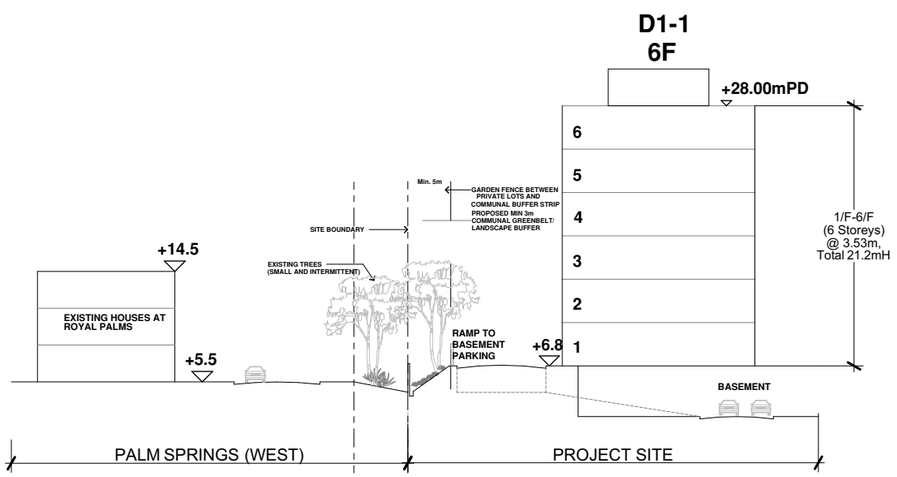
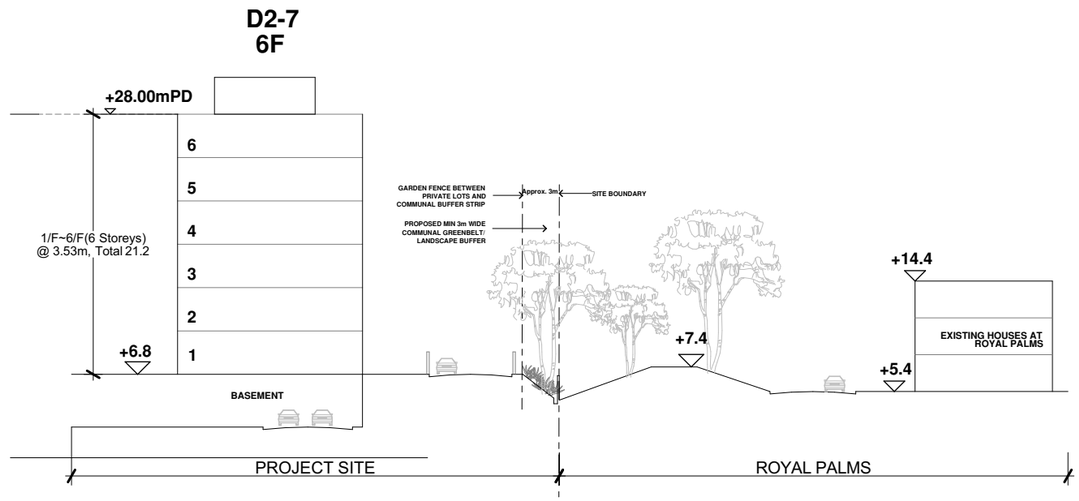
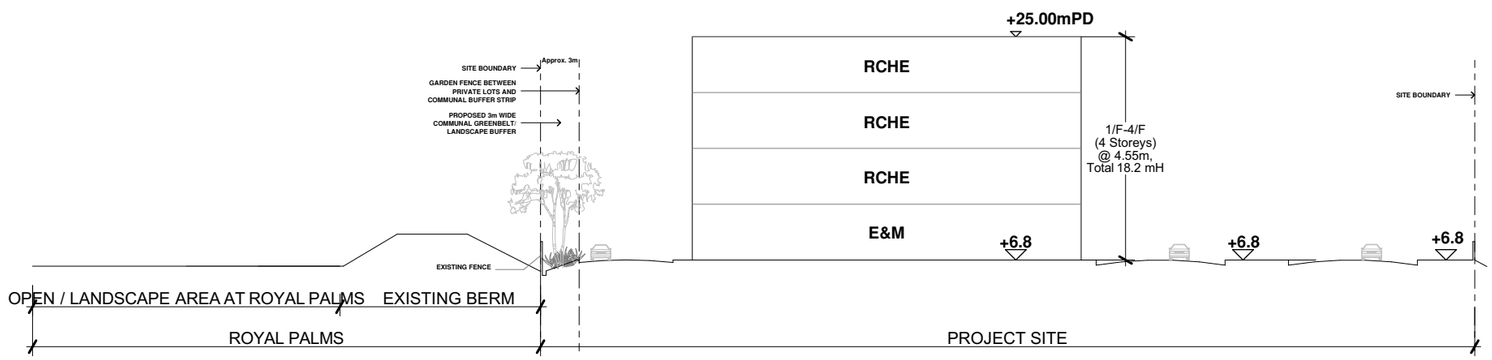


SECTION D - SECTION THROUGH PALM SPRINGS (WEST) / PROJECT AREA (APPROXIMATE)



SECTION E - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)



SECTION F - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:500 @ A3
November 2019 Submission

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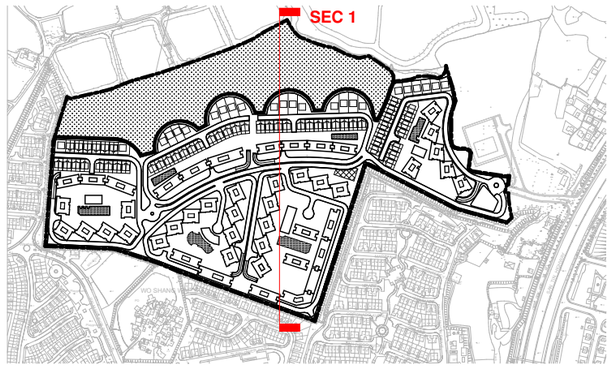
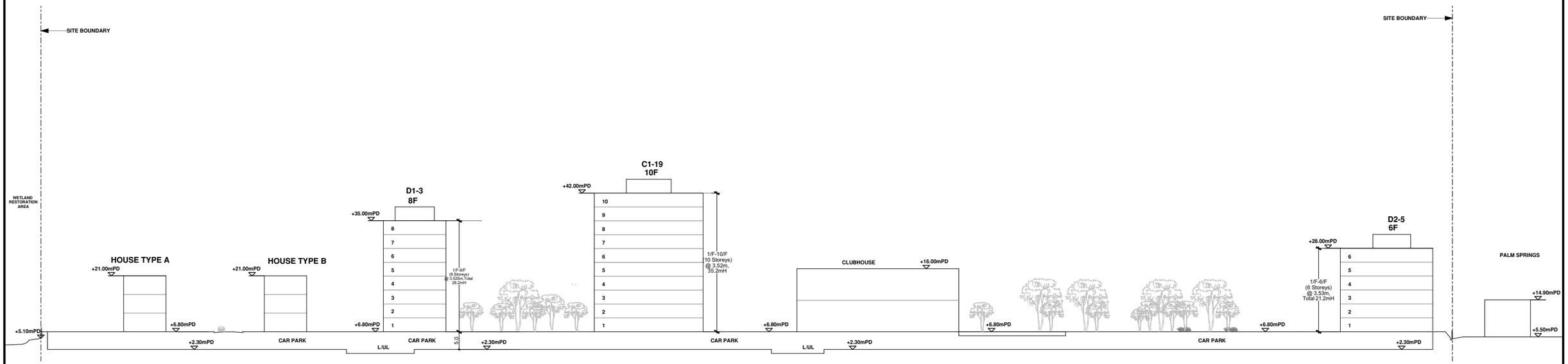


KEYPLAN



SECTION 1 - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

1:1000 @ A3
November 2019 Submission

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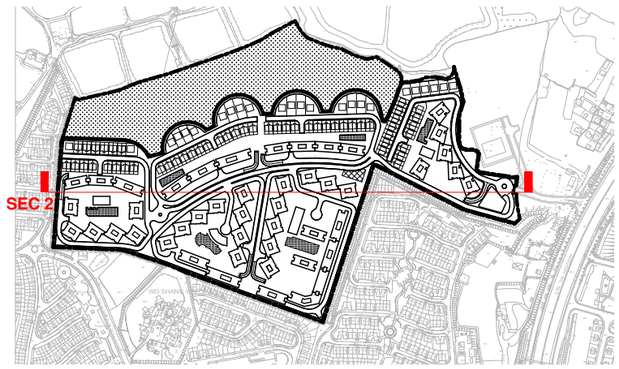

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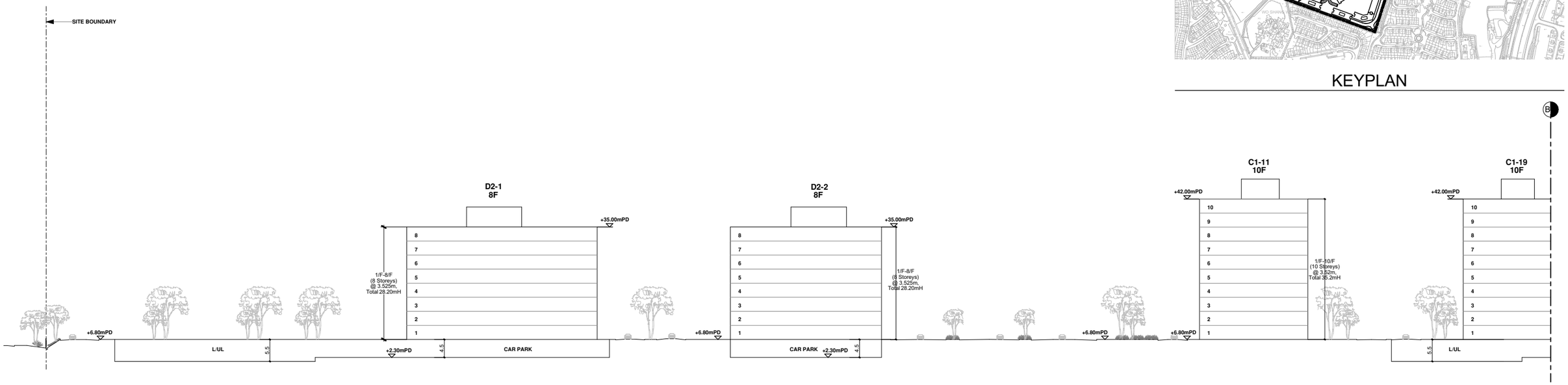
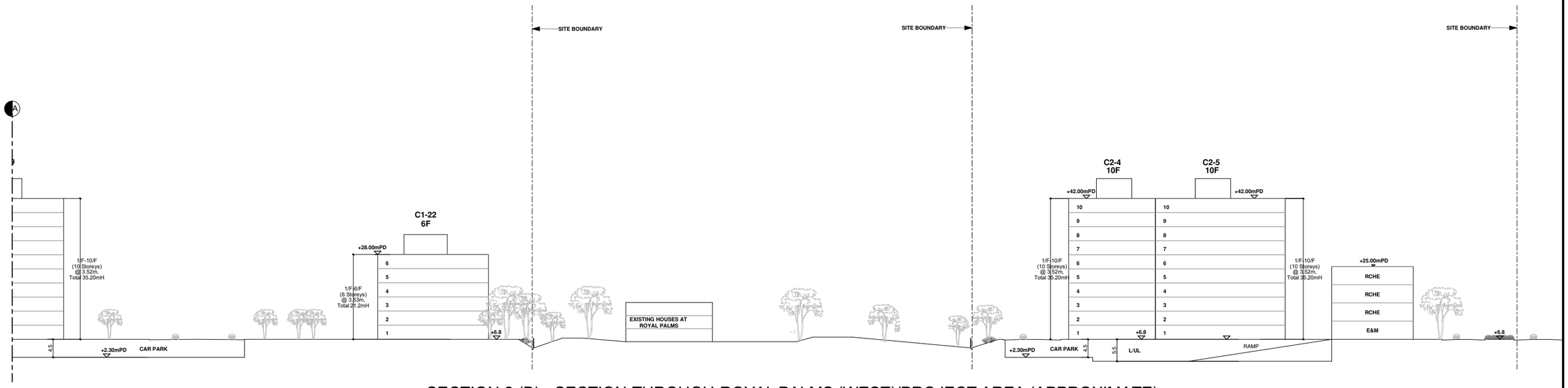


SECTION 2 (A) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)



SECTION 2 (B) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)

Proposed Comprehensive Development at Wo Shang Wai, Yuen Long
Site Sections

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November 2019 Submission

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Attachment 7: Phasing Plan (Revised)

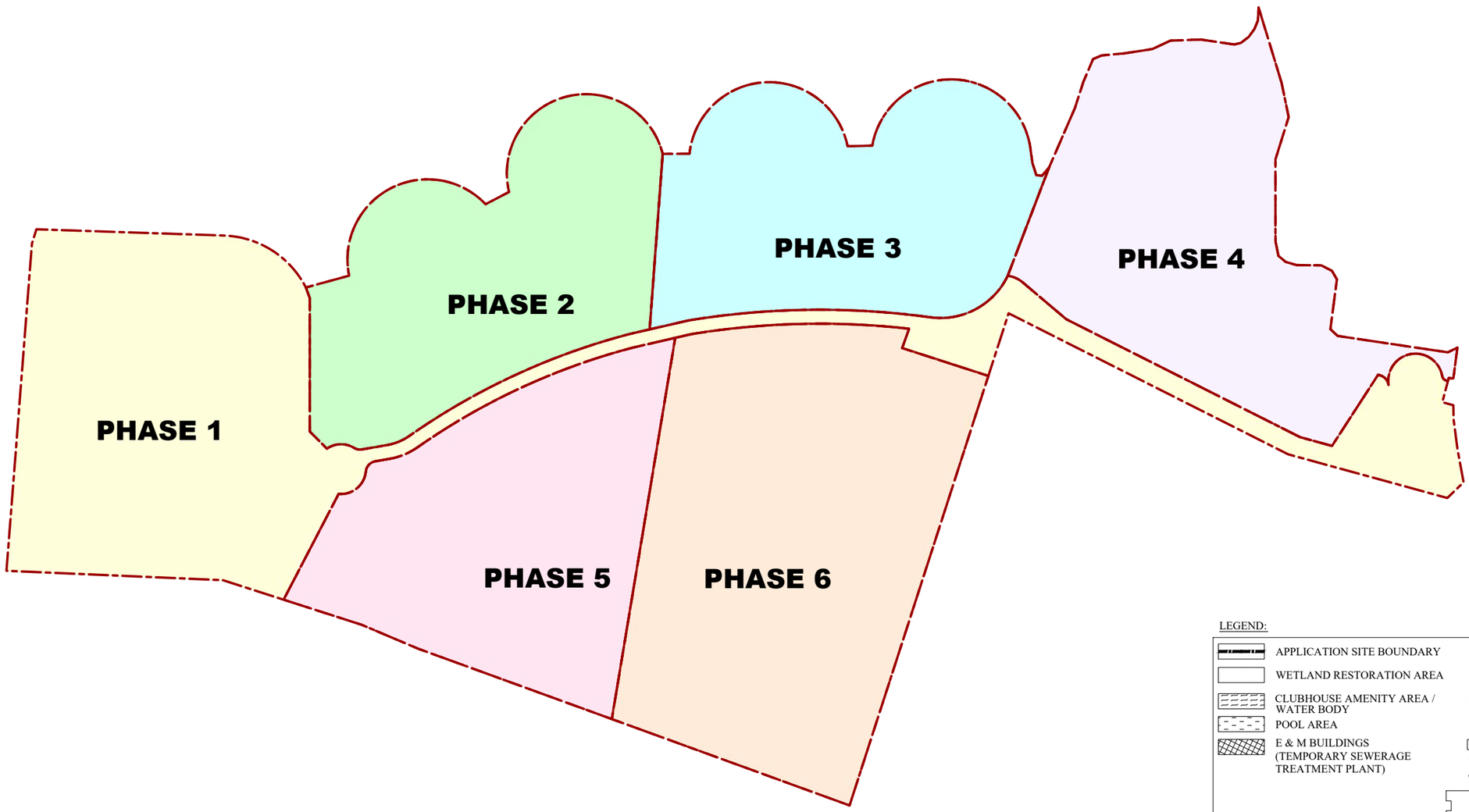

Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

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DWG. No. : 3809-003

Attachment 8: Comparison Table of Current Scheme and Previous Approved S16

Summary Table Comparing Development Parameters of Current and Original Scheme

	Original Scheme (Application No. A/YL-MP/344) [A]	**Current Scheme (Application No. Y/YL-MP/9) [B]**	**Difference [B – A]**
Application Site Area	**207, 408 m^2**	**207, 408 m^2**	No Change
Wetland Restoration Area	47,400 m^2	47,400 m^2	No Change
Communal Open Space	12,221 m^2	21,203 m^2	+8,982 m^2
Communal Landscape and Communal Perimeter Landscape	16,202 m^2	39,072 m^2	+22,870 m^2
Private Garden	49,827 m^2	15,444 m^2	- 34,383 m^2
Residential Portion			
Total Plot Ratio (PR) Domestic PR Non-Domestic PR	0.4 0.4 Nil	1.30 1.28 0.02	+0.9 +0.88 +0.02
Total GFA Max Domestic GFA Max Non-Domestic GFA	82,963 82,963 Nil	269,647 m^2 265,847 m^2 3,800 m^2	+186,684 m^2 +182,884 m^2 +3,800 m^2
Site Coverage	25%	25%	No Change
Total Number of Units	789	3,571	+4,360
Average Unit Size	105.2 m^2	74.5 m^2	- 30.7
Ancillary Recreational Facilities (Clubhouse GFA)	3,000 m^2	11,581 m^2	+8,581 m^2
Estimated Population	2,210	9,998	+7,788
Building Height			
2-storey House	+16.8mPD	Nil	N/A
3-storey House	+21.3mPD	+21mPD	- 0.3mPD
6-storey Residential Tower	Nil	+28mPD	N/A
8-Storey Residential Tower	Nil	+35mPD	N/A
10-storey Residential Tower	Nil	+42mPD	N/A
Clubhouse	+17mPD	+16mPD (2-storeys)	- 1mPD
Residential Care Home for Elderly cum E&M Building	Nil	+25mPD (4-storeys)	N/A
E&M Building (STP)	+12mPD	+12mPD	No Change
No. of Blocks			
2-storey House	749	Nil	N/A
3-storey House	40	128	+88
6-storey Residential Tower	Nil	12	N/A
8-Storey Residential Tower	Nil	15	N/A
10-storey Residential Tower	Nil	20	N/A
Clubhouse	1	4	+3
Residential Care Home for Elderly cum E&M Building	Nil	1	N/A
E&M Building (TSTP)	1	1	No Change

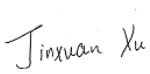
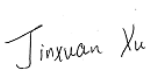
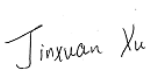
Sewerage Impact Assessment (SIA)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Date: 27 May 2025

Revision 3

Quality Management

Issue/revision	0	1	2	
Remarks				
Date	23 Jul. 2024	20 Jan. 2025	15 April 2025	
Prepared by	Jinxuan Xu	Jinxuan Xu	Jinxuan Xu	
Signature				
Checked by	Alex Cheung	Chan, Connie Lai-Shan	Chan, Connie Lai-Shan	
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Authorised by	Kau, Paul	Kau, Paul	Kau, Paul	
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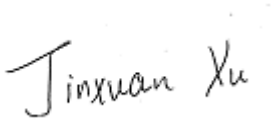
Project number				
Report number	0	1	2	

Signatures

Prepared by



Jinxuan Xu
Consultant

Reviewed by

Chan, Connie Lai-Shan

Senior Associate

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Appendix B Estimation of Sewage Flow from Planned and Committed Developments

1 INTRODUCTION

1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Sewerage Impact Assessment (SIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the sewage generated due to the proposed comprehensive residential development.

1.2 The purpose of this application is to propose amendments to the previously approved application No. A/YL-MP/344.

1.3 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.4 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.5 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.6 The proposed development consists of a mix of 3 storeys detached and semi-detached house and 6, 8 and 10 storey residential tower. 48,716 m^2 of land are reserved for landscaping purpose as open greenery area.

1.7 The proposed development consists of 3,571 housing unit in total with a plot ratio of 1.28 and an average unit gross floor area of 74.5 m^2.

1.8 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff. For assessment in this report, the land use is considered hospital, and the staff are assumed to be non-residential.

2 OUTLINE OF APPLICATION SITE AND PLANNED SEWERAGE CONDITIONS

2.1 The Application Site is classified as unsewered area with respect to the Yuen Long and Kam Tin Sewerage Master Plan (YLKT SMP).

2.2 According to the approved EIA report for the Project "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation" (EIA-302/2023), a new tertiary effluent polishing plant, namely San Tin Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m3/day by 2031, and 125,000 m3/day by 2035. The San Tin EPP is less than 500m northeast to the Application Site, and has plan to collect sewage from nearby developments and villages in Yuen Long.

2.3 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. The sewerage system within the Application Site will be designed to facilitate the future connection to the San Tin EPP.

2.4 In case of mismatching with the implementation program of San Tin EPP, two alternative sewerage discharge options are proposed for the proposed development:

- Alternative Option 1: Construct a temporary onsite Sewage Treatment Plant (STP) and discharge treated effluent from the STP to Mai Po Tributary as a temporary measure before the operation of the San Tin EPP.
- Alternative Option 2: Convey the sewage from the Application Site to Yuen Long Sewage Treatment Works (YLSTW) via Nam Sang Wai sewage pumping station (SPS) by a proposed twin rising mains.

3 ASSESSMENT METHODOLOGY

3.1 The assessment has been carried out in accordance with the guidelines set out in EPD Report No. EPD/TP 1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 ("GESF").

3.2 The projected demand for the sewerage system was identified to estimate the potential sewerage impact on the San Tin EPP, YLSTW, Nam Sang Wai SPS and the proposed temporary sewerage system serving the Application Site.

3.3 With reference to Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF), the Global Unit Flow Factors indicated in **Table 3-1** and the Global Peaking factors shown in **Table 3-2** are adopted for estimation of population and sewage flow generated from the Application Site.

Table 3-1 Global Unit Flow Factor (UFF)

Type	**Units Flow Factors (m^3/person/day)**
Private Housing (R3)	0.37 (Planning)
Staff of Housing (General)	0.28
Domestic (Institutional and special class)	0.19
Staff of RCHE (Commercial J11)	0.28

Table 3-2 Global Peaking Factor

Population	**Global Peaking Factor (excluding stormwater allowance)**
More than 50000	$\text{Max}(\frac{6}{N^{0.175}}, 1.6)$
10,000 – 50,000	3
5,000 – 10,000	4
1,000 – 5,000	5
Less than 1,000	6

4 POPULATION AND SEWAGE FLOW PROJECTION

4.1 The expected amount of sewage generated from the amended comprehensive residential development of this application is tabulated in **Table 4-1** as follow:

Table 4-1Comparison of Flow Projection Between the Last Approved Scheme and the Amended Scheme of This Application

Scenario	Design Population		Unit Flow Factor [(i)] (m^3/head/day)	ADWF (m^3/day)	Total ADWF (m^3/day)	Peaking Factor	Peak Flow (m^3/day)
Approved Scheme in 2024	Resident	2210 [(ii)]	0.37	817.7	830.3	4	3291.8
	Staff	10	0.28	2.8		4	
	Pool [(ii)]			9.8[(iii)]		N/A	
Amended Scheme of this Application	Resident of Housing	9998 [(iv)]	0.37	3699.26	3788.04	3	11277.76
	Staff of Housing	80	0.28	22.4		3	
	Pools [(ii)]			43.18[(v)]		N/A	
	Resident of RCHE	100	0.19	19		3	
	Staff of RCHE	15	0.28	4.2		3	

Note:

(i) The Unit Flow Factor for the resident and staff are extracted from GESF. The Unit Flow Factor for commercial activities type J11, community, social & personal services are adopted for estimating the flow generated by the staff.

(ii) Assumes 2.8 family members in each of the 789 houses in the approved scheme in 2024 based on the 2021 population census for Yuen Long District.

(iii) The sewage flow generated from the pools in clubhouse and individual houses is estimated to be 9.8 m^3/day in the last approved scheme, and 43.18 m^3/day in the amended scheme of this application. The estimation of the sewage flow from pools in the amended scheme of this application is attached in ***Appendix A***.

(iv) Assumes 2.8 family members in each of the 3571 houses in the amended scheme of this application based on the 2021 population census for Yuen Long District.

(v) Flow from the pools is considered as peak flow.

5 SEWERAGE IMPACT ASSESSMENT for SAN TIN EPP

5.1 It is proposed that sewage generated from the Application Site will be discharged to proposed San Tin EPP, which is less than 500m northeast to the Application Site, via a proposed sewer. The proposed possible sewage disposal scheme inside and outside the Application Site is shown in **Figure 2**.

5.2 According to the approved EIA "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation", a new tertiary effluent polishing plant, namely San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m^3/day by 2031, and 125,000 m^3/day by 2035. The San Tin EPP has plan to collect sewerage from nearby developments.

5.3 Although San Tin EPP is designed for the project of San Tin / Lok Ma Chau Development Node, it still has flexibility of 26,377 m^3/day ADWF for receiving additional sewage flow from developments, existing villages, reject water from Water Reclamation Plant and centrate from Food-Waste Pre-treatment Facilities, as stated in the approved EIA "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation".

5.4 As such, the San Tin EPP have sufficient capacity to cater for the additional flow of 3,788.04 m^3/day ADWF from the Application Site. There will not be any adverse impact on the existing and planned sewerage system due to the Application Site.

5.5 Currently, there is no information indicating the depth and exact location of proposed connection point to the San Tin EPP, because the San Tin EPP is at very early design stage. Therefore, the type, length, slope and size of the sewerage system from the Application Site to the San Tin EPP cannot be determined at this stage. Meanwhile, area for an internal sewerage pumping station has been reserved, if a twin rising mains is needed in the future, as shown in **Figure 2**. The proposed internal sewerage pumping station will be constructed and maintained by the applicant.

6 SEWERAGE IMPACT ASSESSMENT for OPTION 1

6.1 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. In case of mismatching with the implementation program of San Tin EPP, alternative schemes are proposed.

6.2 Option 1 is the provision of a temporary on-site sewage treatment facility with tertiary treatment technology as an interim measure to handle the sewage generated from the WSW Development before the availability of San Tin EPP. The treated effluents will be discharged to Mai Po Tributary. The proposed possible sewage disposal scheme is shown in **Figure 3**.

Standards and Regulations on Water Quality

6.3 Water quality in Hong Kong is subject to the provisions of the Water Pollution Control Ordinance (Cap 358), 1980 (WPCO). Territorial Water has been subdivided into ten Water Control Zones (WCZ) and four supplementary water control zones. The Application Site is located in the Deep Bay Control Zone. As such, the sewage disposal scheme would have to comply with the Zero Discharge Policy in accordance to Town Planning Board Guidelines (i.e. TPB PG-No. 12C) that there will be no net increase in the pollution loads into the Deep Bay Water Control Zone.

6.4 However, "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach and for this temporary sewage treatment plant, it was not applicable. Besides designing the temporary onsite STP to Group C Inland Waters' discharge standards as a minimum requirement, the design of temporary onsite STP will also follow the below tertiary effluent standards.

Table 6-1 Water Quality Standards of Treated Sewage Effluent to Deep Bay

Parameter	Unit	Tertiary Effluent Standards (Upper Limit)
BOD_5	mg/L	10
TSS	mg/L	10
TN	mg/L	20
TP	mg/L	2

Ammonia-N [(1)]	mg/L	5
E. coli	count/100mL	100 [(2)]

Note:

(1) Ammonia-N standard is applicable for discharge to be made into inland waters of Deep Bay.

(2) *E. coli* standards are set based on the Water Pollution Control Ordinance-Technical Memorandum and receiving water body.

Temporary Onsite STP

6.5 Membrane bio-reactor wastewater treatment technology will be adopted for the temporary with capacity of 3,788.04 m^3/day. The treated effluent will be discharged to the Mai Po Tributary.

6.6 The MBR plant is a combined system of biological treatment and microfiltration process, which is capable of generating high quality effluent. The MBR process operates at a higher biomass concentration than conventional activated sludge system. The pores on the membrane surface have a diameter of 0.04 micrometres, separating bacteria, solid and *E. Coli* in accordance with tertiary effluent standards. The MBR process will be operated at optimum conditions with sufficient retention time in order to reduce BOD_5 and ammonia nitrogen to the tertiary effluent standards.

6.7 Furthermore, operation conditions and quality of the effluent will also be real-time monitored. Immediate maintenance will be carried out if any parameter is found to approach or exceed its pre-set limits. Samples of effluent will also be taken regularly and tested to ensure compliance with the tertiary effluent standards.

6.8 This temporary on-site MBR plant shall be designed with the excess flow (PDWF – capacity of temporary onsite STP, i.e., ADWF = 7489.72 m^3/day) being equalized in an equalization tank of adequate volume to store up at least such flow for 2 hours (i.e. 624.14 m^3).

6.9 The production of sludge is estimated to be 56 m^3/day for solid content of 1% w/w. The sludge will be screened and dewatered, with a minimum solid content of 30%. The dewatered sludge will be collected by a licensed collector at regular intervals and disposed at the landfill. As an alternative, the dewatered sludge could also be transferred to nearby Government's Sewerage Treatment Works for off-site treatment

due to its small quantity.

6.10 The quantity of treated effluent to discharged to Mai Po Tributary is estimated to be 3,788.04 – 56 = 3,732.04 m^3/day.

7 SEWERAGE IMPACT ASSESSMENT for OPTION 2

7.1 In terms of option 2, it is proposed that the sewage generated from the proposed development will be collected at the proposed internal sewage pumping station and then pump through a proposed twin rising main to Nam Sang Wai SPS for disposal at YLSTW. The proposed possible sewage disposal scheme is shown in **Figure 4**.

7.2 In general, within the Application Site, manholes will be located at various points along the sewers either to accept a connection from individual building or at a change of horizontal or vertical alignment. The manholes will provide access for cleaning and maintenance purposes. The sewer will be designed in accordance with the Sewerage Manual published by Drainage Services Department (DSD) and the Building Ordinance.

7.3 The EIA of Yuen Long Effluent Polishing Plant – Investigation, Design and Construction (AEIAR-220/2019) revealed that the total projected flow to be conveyed to YLSTW/YLEPP in Year 2030 is 92,000m^3/d, which includes existing and planned developments from Kam Tin and Ngau Tam Mei, where the Application Site is located, whilst the design capacity of the planned YLSTW will be upgraded from 70,000m^3/d to 100,000m^3/d under the ongoing project of effluent polishing scheme. Therefore, even the total projected flow does not include the flow from the Application Site, the YLEPP will still have sufficient capacity of 8,000m^3/d (100,000 m^3/d - 92,000 m^3/d) to handle the flow generated from the proposed development of 3788.04 m^3/d.

7.4 As stated in the approved EIA Study for Northern Link (Register No. AEIAR-259/2024), the design capacity of Nam Sang Wai SPS is 42,921 m^3/day, while the average daily flow in 2022 was approximately 3,970 m^3/day. In addition to the current flow, the planned and committed developments are expected to contribute an additional ADWF of 22,925.24 m^3/d (as shown in **Appendix B**). After accounting for sewage flows from these developments and the Application Site (3,788.04 m^3/d), the Nam Sang Wai SPS retains a residual capacity of 12,237.72 m^3/d.

7.5 As such, both the Nam Sang Wai SPS and the YLSTW have sufficient capacity to cater for the additional flow from the proposed development. There will not be any adverse impact on the existing and planned sewerage system due to the proposed development.

7.6 Due to the Application Site in unsewered area, a twin rising main will be proposed to connect the internal SPS to Nam Sang Wai SPS along the cycling track next to the

Castle Peak Road-Mai Po, Kam Pok Road, the cycling track next to the Kam Pok Road-Pok Wai South Road, as shown in **Figure 4**.

8 MAINTENANCE RESPONSIBILITIES

8.1 The sewerage system within and outside the development site will be constructed by the applicant. The system within the site will be maintained by the applicant. For sewers outside the application site boundary, maintenance responsibilities are proposed to be transferred to DSD after construction completion, subject to DSD's agreement.

9 CONCLUSION

9.1 A sewerage impact assessment has been conducted for the comprehensive residential development at Wo Shang Wai to confirm that the proposed San Tin EPP is adequately able to take up the sewerage discharge of the Application Site.

9.2 However, the implementation program of San Tin EPP may be postponed and cannot meet the anticipated first population intake of the proposed development in 2031. Two alternative proposed sewerage schemes for the comprehensive residential development at Wo Shang Wai were also proposed and assessed.

9.3 For alternative Option 1, a temporary on-site sewage treatment facility with the tertiary treatment process of MBR will treat the 3788.04 m^3/day sewage from the development to achieve effluent quality meeting tertiary effluent standards before discharge to Mai Po Tributary. Since "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach, it was not applicable in this temporary sewage treatment plant.

9.4 For alternative Option 2, the YLSTW and Nam Sang Wai SPS have sufficient capacity to cater for the sewage flow from the Application Site. No adverse sewerage impact will be incurred as a result of occupation of the Application Site.

9.5 The Application Site is located at the unsewered area, so the applicant will be responsible for the construction of new sewerage systems within the Application Site and outside the Application Site to San Tin EPP or the Nam Sang Wai SPS.

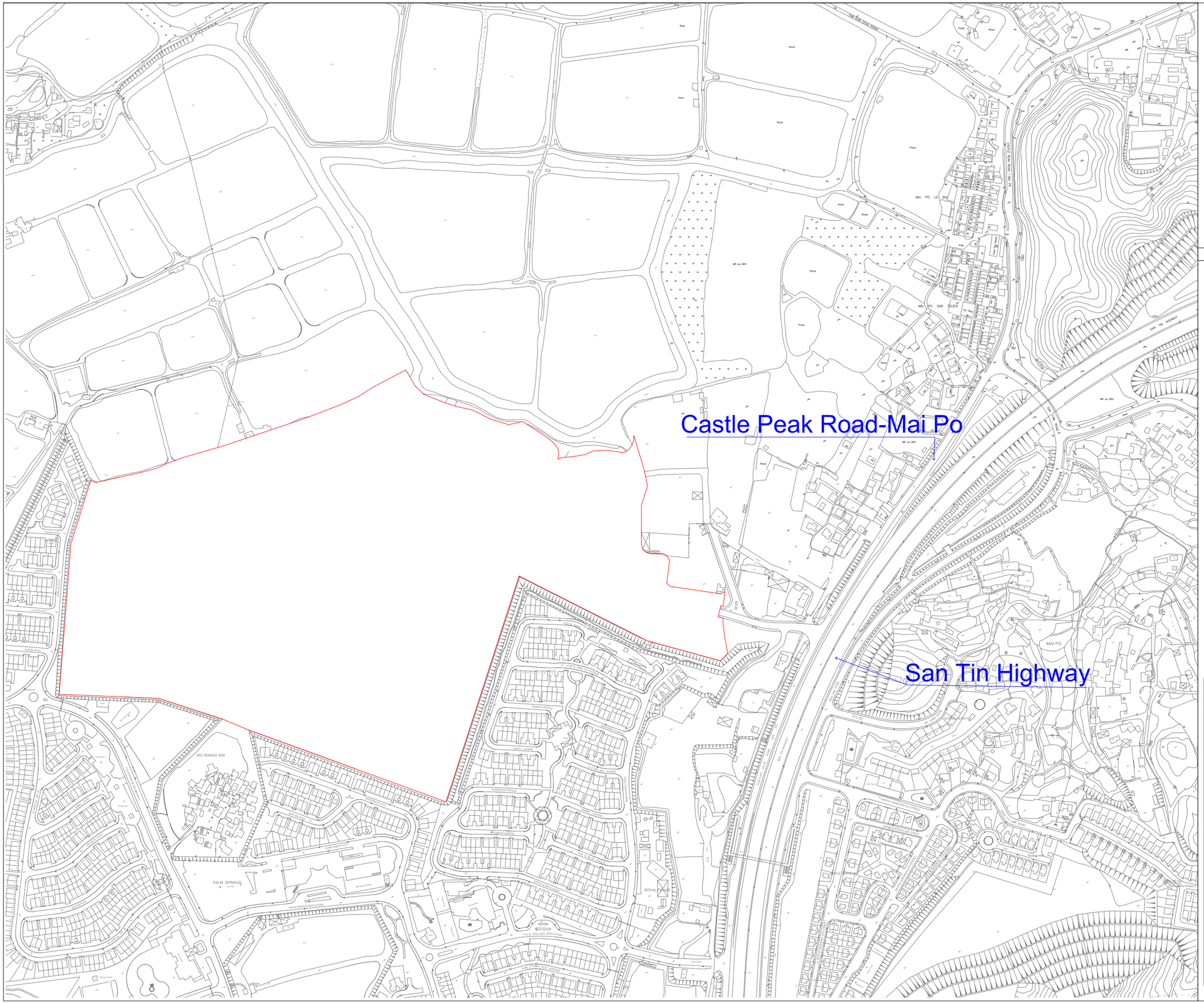
9.6 New sewers constructed outside site boundary connecting to the San Tin EPP or the Nam Sang Wai SPS will be transferred to DSD after construction completion, subject to DSD's agreement.

9.7 An updated SIA report to finalize the sewage disposal strategy will be submitted when the relevant design information of San Tin EPP and ST/LMC development node sewerage network are available.

9.8 For Option 1, the updated SIA will assess the potential sewerage impact to the STT sewerage system based on the latest STT sewerage scheme for conducting the hydraulic assessment and verifying the assumptions adopted in the current assessment.

9.9 For Option 2, the updated SIA will assess the sizing of the rising mains / sewers considering the sewage flow from the existing and planned developments.

Figures



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LOCATION PLAN

LEGENDS:

PROJECT SITE BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

AMENDMENTS TO APPROVED APPLICATION NO. A/YL-MP/229 FOR A COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing title

PROJECT SITE LOCATION AND ITS SURROUNDINGS

Drawing no.			Rev.
Figure 1			0
Drawn: JX	Date: MARCH2023	Checked: –	Approved: –
Scale: 1:2000		Status	

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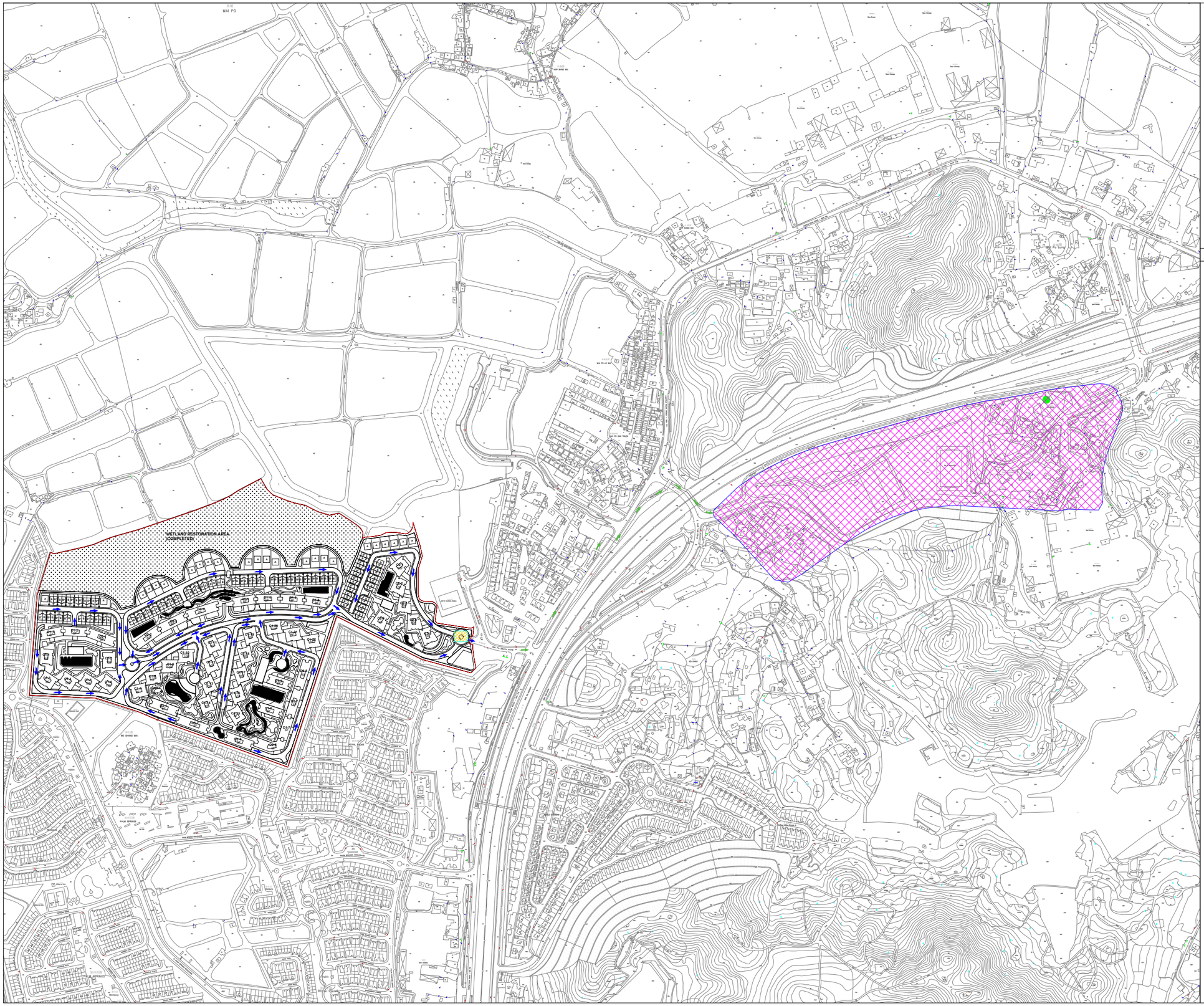

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED LOCATION OF San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP)
- PROPOSED INTERNAL FOUL SEWERAGE
- PROPOSED PUBLIC FOUL SEWERAGE SYSTEM
- RESERVED FOR INTERNAL SEWAGE PUMPING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND SEWERAGE SYSTEM OUTSIDE APPLICATION SITE TO SAN TIN EPP

Drawing no.			Rev.
Figure 2			1
Drawn	Date	Checked	Approved
JX	JAN2025	–	–
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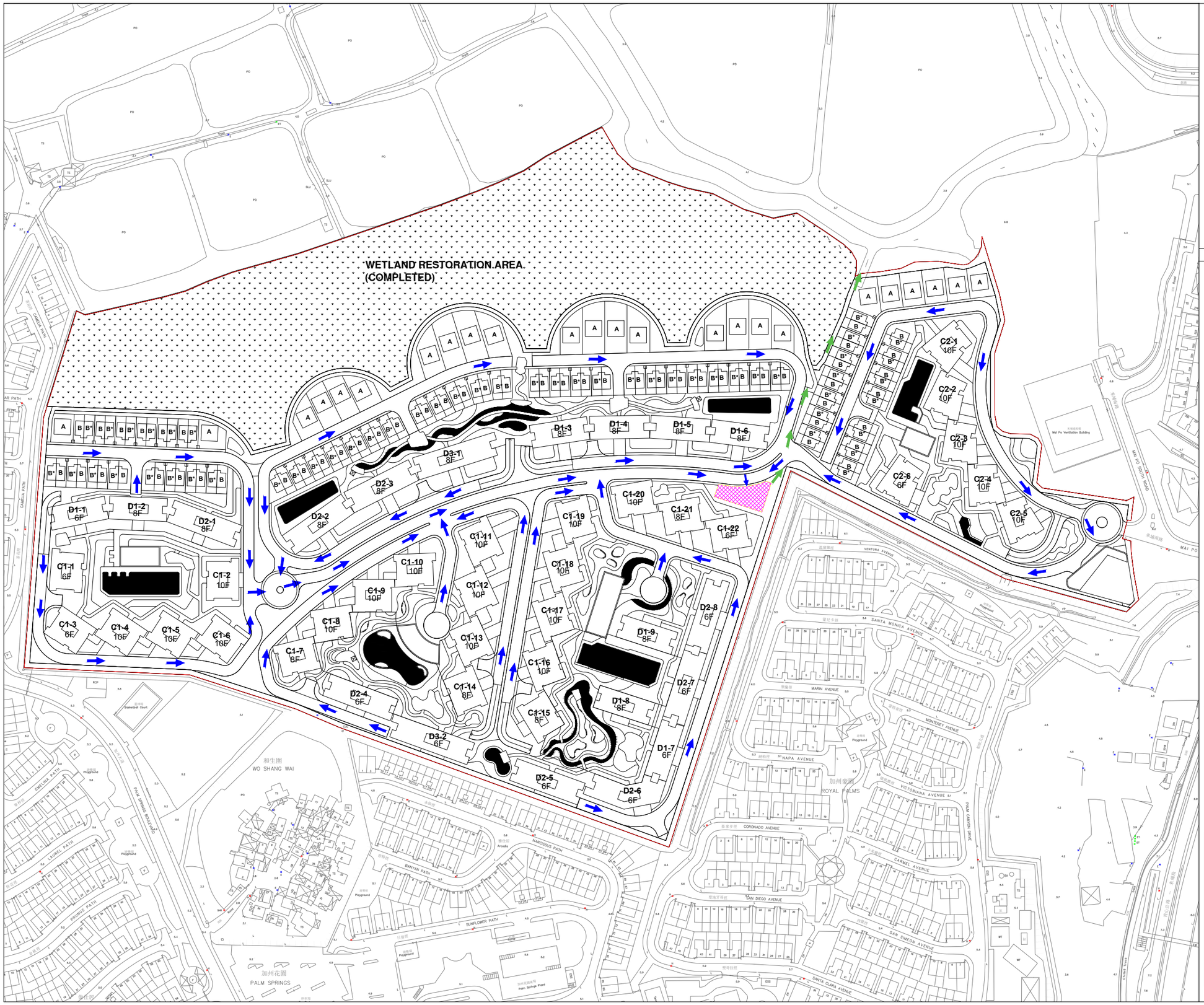

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LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- LOCATION of PROPOSED TEMPORARY ONSITE SEWAGE TREATMENT PLANT
- PROPOSED FOUL SEWERAGE
- PROPOSED TREATED EFFLUENT DISCHARGE PATH

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND TREATED EFFLUENT DISCHARGE SYSTEM

Drawing no.			Rev.
Figure 3			–
Drawn	Date	Checked	Approved
JX	JAN2025	–	–
Scale		Status	
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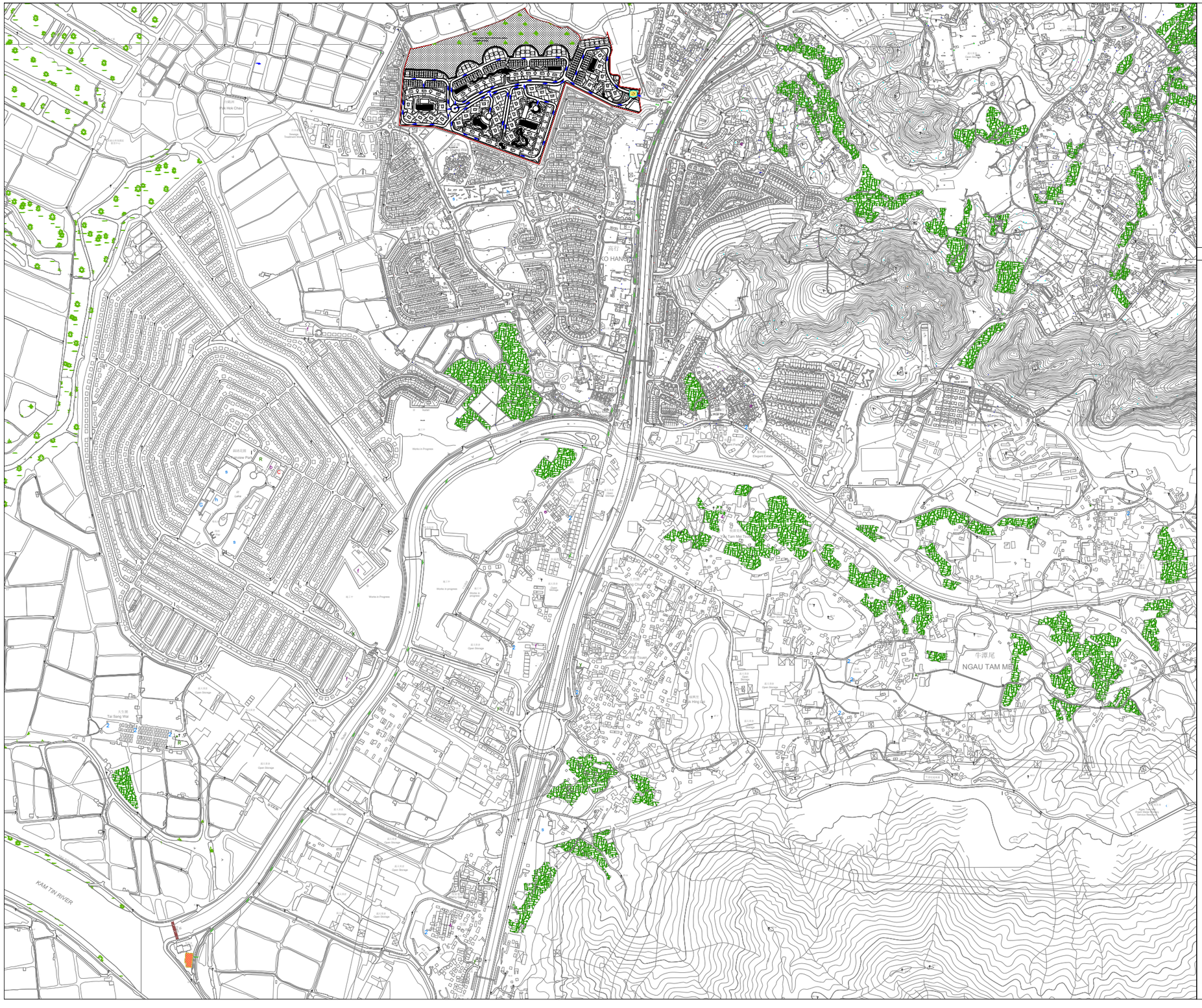

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LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED INTERNAL SEWAGE PUMPING STATION
- PROPOSED INTERNAL FOUL SEWERAGE
- PROPOSED FOUL SEWERAGE OUTSIDE APPLICATION SITE
- NAM SANG WAI SEWAGE PUMPING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED SEWERAGE SYSTEM OUTSIDE APPLICATION SITE TO NAM SANG WAI SEWAGE PUMPING STATION

Drawing no.	Rev.
Figure 4	–

Drawn	Date	Checked	Approved
JX	JAN2025	–	–

Scale –

Status

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Appendices

Appendix A

Estimation of Sewage Flow from Swimming Pool

Appendix A - Estimation of Sewage Flow From Swimming Pool and Water Features					
Flow from Swimming Pool					
Pool (Phase1)			Pool (Phase2)		
Pool area	712.17	m^2	Pool area	418.14	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	854.60374	m^3	Pool volume	501.76255	m^3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	39.56	L/s	Flow Rate	23.23	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	7.1216978	m^3/day	Volume of backwash	4.1813546	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	7.1216978	m^3/day	Total Pool (house)	4.1813546	m^3/day
Pool (Phase3)			Pool (Phase4)		
Pool area	377.12	m^2	Pool area	490.55	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	452.5396	m^3	Pool volume	588.66438	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	20.95	L/s	Flow Rate	27.25	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	3.77	m^3/day	Volume of backwash	4.91	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool	3.77	m^3/day	Total Pool	4.91	m^3/day
Pool (Phase5)			Pool (Phase6)		
Pool area	666.41	m^2	Pool area	868.90	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	799.69	m3	Pool volume	1042.68	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	37.02	L/s	Flow Rate	48.27	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	6.66	m^3/day	Volume of backwash	8.69	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	6.66	m^3/day	Total Pool	8.69	m^3/day
Water Features					
Pool area	1569.78	m^2			
Pool depth	0.6	m			
Pool volume	941.86719	m3			
Turn over rate	6	hr			
Flow Rate	43.60	L/s			
Duration of Backwash fr	3	min/day			
Volume of backwash	7.85	m^3/day			
No. of pool	1	nos			
Total Pool	7.85	m^3/day	**All Pools**	**43.2**	**m^3/day**

Appendix B

Estimation of Sewage Flow

from Planned and Committed Developments

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. RESIDENTIAL DEVELOPMENT R(D) AT KAM POK ROAD (TO THE WEST OF CHUK YUEN TSUEN), A/YL-MP/205.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 14S.B. RP (PART), 45 AND 1740 S.A. RP IN D.D. 107 AND ADJOINING GOVERNMENT LAND TO THE SOUTH OF POK WAI AND WING KEI TSUEN, YUEN LONG, A/YL-NSW/241.
6. CASTLE PEAK ROAD - TAM MEI: COMMERCIAL, Y/YL-NSW/3.
7. VARIOUS LOTS IN D,D, 103 AND D,D, 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293,
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A-YL-KTN/663.
13. LOT 2206 In D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3054 S.A RP (PART), 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (PART), 3250 S.B SS.23 RP (PART), 3250 S.B SS.33 RP (PART) IN D.D. 104, AND ADJOINING GOVERNMENT LAND, YUEN LONG, Y/YL-MP/3.
15. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
16. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
17. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
18. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY

CASTLE PEAK ROAD

SAN TAM ROAD

MAI PO

NGAU TAM MEI ROAD

CHUN SHIN ROAD

CHUK YAU ROAD

CASTLE PEAK ROAD - TAM MI

SAN TIN HIGHWAY

SAN TAM ROAD

FAIRVIEW PARK BOULEVARD

KAM POK ROAD

KAM TIN ROAD

APPLICATION SITE

SPS

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
.	.	.	.
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

LOCAL PLANNED AND COMMITTED DEVELOPMENTS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A3)	JUN 2024	4.3	-

SYSTRA MVA

CHK50800610/TIA/F43.DGN/LHO/02/JAN25

Original Size : A3

No.	Developments Location and Application No.	Parameters	Design Population		ADWF (m^3/d)	Note
1	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	71 units (average flat size of about 186 m^2)	199		73.56	
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	182		67.34	
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	5592		2068.89	
		Retail (900 m^2)	32		8.82	
		Kindergarten / Child Care Centre (2,200 m^2)	73		20.33	
4	Sha Po Public Housing Development, N/A	16,300 units	45640		8671.60	
5	Lots 8 RP (Part), 145.B. RP (Part), 45 and 1740S.A. RP in D.D.107 and adjoining government land to the south of Wing Kei Tsuen, Yuen Long, A/YL-NSW/241	37,171 m^2 GFA	1299		480.67	
6	Castle Peak Road – Tam Mei, Y/YL-NSW/3	Hotel 700 beds	Residents	700	133.00	
			Staffs	64	100.61	
		Retail 38,300 m^2	1341		375.34	
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	2,811 units (average flat size of about 50 m^2)	7871		3984.00	From SIA
		Eating place / Shop & Services (5,358 m^2)	182			
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	Sewage to be discharged to Au Tau Sewage Pumping Station			
		Public Housing 1,868 units (average flat size of about 50 m^2)				
		Retail 3,045 m^2				
9	Lots 592 S.C. ss.1 S.A, 592 S.C. ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	Sewage to be discharged to Au Tau Sewage Pumping Station			
		Retail / Commercial (1,800 m^2)				
		Wellness Centre				
		Special Child Care Centre				
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home	Staffs	178	50	
			Residents	142	26.98	
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	10895		4031.08	
		Eating Place/Shop and Services (5,500 m^2)	187		295.46	
		Social Welfare Facility (788 m^2)	Staffs	26	7.28	
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	3231		1195.54	
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	924		341.88	

14	Lots 3054 S.A RP (Part), 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (Part), 3250 S.B ss.23 RP (Part), 3250 S.B ss.33 RP (Part) in D.D. 104 and Adjoining Government Land, Yuen Long, Y/YL-MP/3	106 Houses (average house size of about 163 m²)		297	109.82	
		Retail 607 m²		21	5.95	
15	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m²)		1722	637.14	
		Retail 1,165 m²		41	11.42	
16	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units, 100 Beds (senior hostel, average flat size of about 66 m²)		100	19.00	
		residential care home for the elderly 127 Beds	Staffs	178	49.90	
			Residents	127	24.13	
17	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m² residential care home for the elderly 530 Beds	Staffs	303	84.81	
			Residents	530	100.70	
				Subtotal	22925.24	m^3/d
				Application Site	3788.04	m^3/d
				Consumption in 2022	3970.00	m^3/d
				Total	30683.28	m^3/d
				Capacity of NSW PSP	42921.00	m^3/d
				Residual Capacity	**12237.72**	m^3/d

Note:
1.Population density of residents adopts 2.8 family members in each unit based on the 2021 population census for Yuen Long District.
2. Population density of workers adopts 3.5 for "Retail Trade", 3.3 for "Community, Social & Personal Services", 5.1 for "Restaurant" and 3.4 for other economic activities per 100 sqm. referring to the Table 8 of CIFSUS.
3. Unit flow factors refer to Table T1 and Table T-2 of GESF.

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

(REVISION 1)
DATE: May 2025

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1 INTRODUCTION

1.1 BACKGROUND AND PREVIOUS APPROVED DIAS

1.1.1 WSP (Asia) Limited (hereinafter "WSP") was commissioned by Profit Point Enterprises Limited to carry out a Drainage Impact Assessment (DIA) for the proposed Comprehensive Residential Development at Wo Shang Wai, Yuen Long.

1.1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan (**"**OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio (**"**PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height (**"**BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current **"**Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" (**"**OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.1.5 Under the approval condition (d) of the approved Section 16 Planning Application (Planning Application No. A/YL-MP/229) for proposed comprehensive development at Wo Shang Wai, DIAs were considered to have satisfactorily discharged the condition requirement in Town Planning Board's letters dated 13 March 2015, 12 May 2021 and 1 March 2024 (**Appendix A**).

1.1.6 The proposed comprehensive residential development comprises a revised mixture of residential buildings and ancillary residential facilities including swimming pools, car parks, club house and landscaped open spaces. The total site area is approximately 20.74ha. The revised MLP of the development is shown in **Appendix B.**

1.1.7 According to the latest MLP, the key data for the proposed development on the Application Site is summarized in **Table 1-1** below.

Table 1-1 Key Data for the Application Site

1. Site Data	
Application Site Area	207,408 m^2 (approx..)
Paved Area plus Pool Area (53.6%) [incl. Residential Houses, Club House & Roads]	111,292 m^2
As-Built Restored Wetland (22.9%)	47,400 m^2
Vegetated Area +(23.5%) [incl. Amenity Planting & Garden]	48,716 m^2
2. Residential Development	
Domestic Plot Ratio	1.28
Domestic GFA	265,847 m^2

2 OBJECTIVES OF THIS DRAINAGE IMPACT ASSESSMENT REPORT

2.1.1 The purpose of this DIA is to review the previous approved DIAs with respect to the revised MLP and the previous agreed drainage mitigation measures. This DIA also includes the followings:

a) Review the existing drainage condition and flooding susceptibility of the Application Site, which is a requirement introduced subsequent to the previous approval.

b) Outline the methodology for the assessment.

- Susceptibility to flooding of neighbouring areas of the Application Site;
- Exacerbation to existing flooding issue during the construction period;
- Exacerbation to existing flooding issue upon completion of the development; and
- Effect on existing drainage conditions.

c) Outline changes to the drainage characteristics and potential drainage impacts in the following aspects.

d) Propose drainage impact mitigation measures, if necessary, to mitigate the potential drainage impact due to the revision of the MLP.

e) Discuss the responsibility of the maintenance aspects of the proposed drainage system and drainage impact mitigation measures.

3 EXISTING DRAINAGE CHARACTERISTICS

3.1 EXISTING DRAINAGE CONDITION WITHIN THE APPLICATION SITE

3.1.1 The Application Site is located at two drainage basins, namely San Tin Basin and Ngau Tam Mei Basin as shown in **Figure 2**. However, as concluded in the previous approved DIAs, the runoff generated from the Application Site is discharged merely to San Tin Basin through a ditch along the Application Site's perimeter and thus no runoff is discharged to Ngau Tam Mei Basin. In this regard, the drainage impact to Ngau Tam Mei Basin will not be assessed.

3.1.2 The runoff from the western periphery of the Application Site is collected in a depression with lower elevation before being discharged into a tributary of the Mai Po River (thereafter named as the Mai Po Tributary) via a pipe. According to topographic data, the Mai Po Tributary is trapezoidal in shape with average dimensions of 2m deep by 10m base width. Mai Po Tributary joins Mai Po River at its downstream end. Mai Po River further merges with Shenzhen River and then discharges into Deep Bay.

3.1.3 No formal drainage system exists for runoff generated from the eastern portion of the Application Site. The runoff either infiltrates into the ground or discharges directly into the Mai Po Tributary. In additional to the site runoff, three 1350mm dia. pipes in the eastern portion of the Application Site. t serves conveying runoff from the vacant lots between Castle Peak Road and Royal Palms as shown in **Figure 3**.

3.1.4 San Tin basin is characterized by flat agricultural land with a large amount of fishponds at the downstream portion with some village developments along San Tin Highway. Hilly vegetated areas exist on the upland in the basin. The existing drainage features and the overland flow path within the Application Site are shown in **Figure 3**.

3.2 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – WO SHANG WAI VILLAGE

3.2.1 To the south of the Application Site is Wo Shang Wai Village (i.e. sub-catchment MP02A-a4 as shown in **Figure 4**). Wo Shang Wai Village is a low-lying area with ground level ranges from 2.4mPD to 2.8mPD. It is surrounded by Royal Palms, Palm Springs and the Application Site. According to drainage record plans and building record plans, runoff from Royal Palms and Palm Springs are intercepted and discharged to Ngau Tam Mei Basin. Runoff from the surroundings developments will not drain into Wo Shang Wai Village therefore it is independent from the surrounding developments.

3.2.2 As shown in **Appendix C**, the drainage system in Wo Shang Wai utilizes an existing flood storage pond and an associated pumping system. The system lifts stormwater through two 200mm dia. rising mains and discharges it into four 400mm dia. aboveground pipes that

extend eastward along the boundary of the Application Site. Subsequently, these pipes merge into two 200mm dia. underground pipes in the eastern portion of the Application Site, directing flow northward before final discharge into the Mai Po Tributary.

3.3 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS

3.3.1 The stormwater from the vacant lots between Castle Peak Road and Royal Palms is drained to the Mai Po Tributary via 3 x 1350mm dia. pipes through Application Site while runoff from the northern portion of Royal Palms is discharged to Ngau Tam Mei Basin. The runoff from the said vacant lots eventually discharges into Mai Po Tributary via the eastern ditch across the Application Site. The inlet of 3 x 1350mm dia. pipes through the Application Site can be seen on the south boundary of the Application Site's eastern portion, as shown in **Appendix C**.

3.4 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – NORTH-EASTERN SIDE OF THE APPLICATION SITE

3.4.1 The runoff from the northeastern areas to the Application Site (i.e., sub-catchments MP02A-a7 and MP02A-a8 as shown in **Figure 4**) dips northward to the Mai Po Tributary.

3.5 FLOODING BLACKSPOTS AROUND THE APPLICATION SITE

3.5.1 According to the Drainage Services Department (DSD) – Location of DSD Flooding Blackspots in **Appendix D**, no flooding blackspots exists in the sub-catchment of the Mai Po River for which the Application Site is located in. The nearest flooding blackspot in the same basin as the proposed development is at Shek Wu Wai (ID No.1) of San Tin which was recorded to be a medium[1] flooding blackspot. Moreover, this village is located within the "San Tin Western Drainage Channel" catchment, which is independent from Mai Po Tributary and Mai Po River, therefore it will not be discussed in this DIA.

[1] Definition of Medium as per DSD - affecting area of more than 10 hectares or resulting in significant property damage or serious traffic disruption

4 POTENTIAL ADVERSE DRAINAGE IMPACTS

4.1.1 The potential adverse drainage impacts incurred by the proposed development in relation to the previous approved DIAs which have addressed the following:

- Loss in flood storage volume due to filling up the Application Site;
- Increase in total runoff and peak discharge due to change in land use and the corresponding increase in CN value; and
- Blockage of existing drainage flow paths through the Application Site.

4.1.2 The proposed mitigation measures recommended in the previous approved DIAs are detailed in **Section 8** of this report and the adequacy of the previous agreed mitigation measures is discussed in **Section 9**.

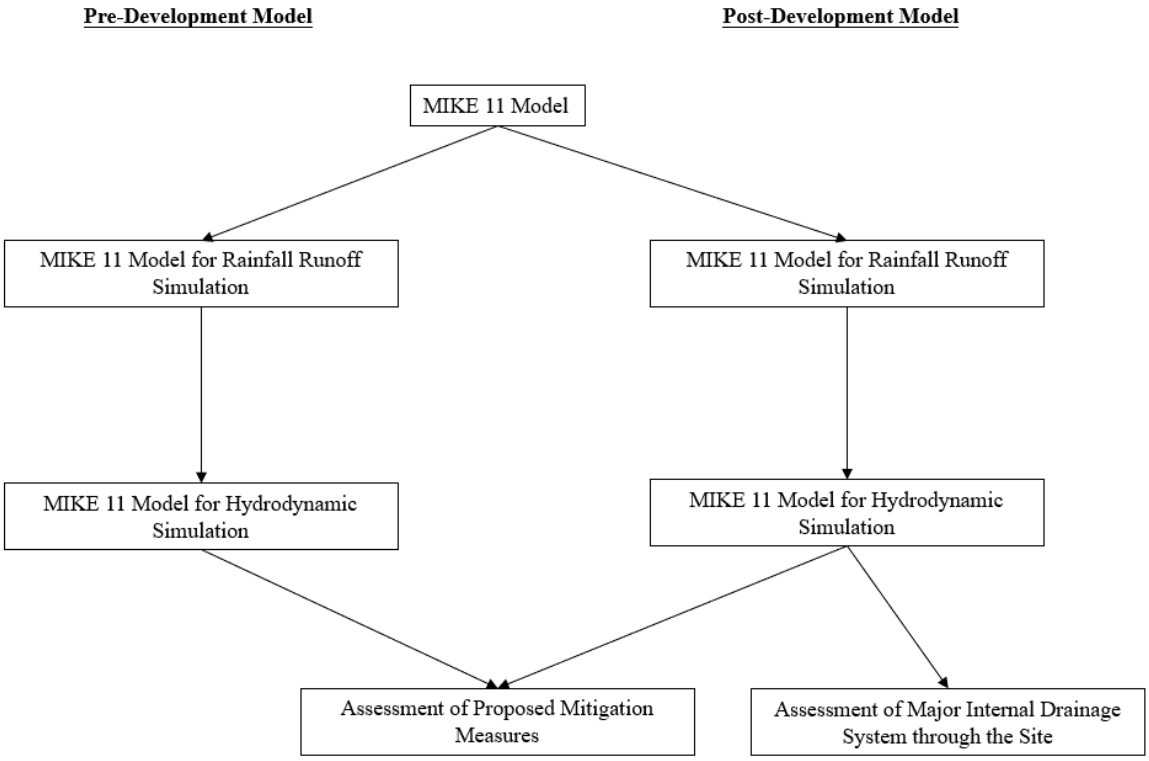
5 METHODOLOGY FOR ASSESSMENT

5.1 OVERVIEW OF METHODOLOGY

5.1.1 This DIA is carried out in accordance with the requirements of "Advice Note No. 1 – Application of the Drainage Impact Assessment Process to Private Sector Projects" issued by DSD, as well as the Stormwater Drainage Manual - Fifth Edition (SDM).

5.1.2 The methodology for the hydrological and hydraulic assessment has been established and agreed in the previous approved DIAs. In this regard, the same methodology and principle are adopted in this assessment for the sake of consistency.

5.1.3 The logic flow of the analysis which agreed in the previous approved DIAs is illustrated by the following flow chart diagram:



5.2 UPDATE THE MODEL SETTING

5.2.1 This assessment follows the approach of the previous approved DIAs, takes the previous approved model as a basis and refines to facilitate hydraulic assessment for the proposed development in the San Tin Basin.

5.2.2 Having reviewed the aerial photos and property information of San Tin Basin, the land use of this area is almost unchanged from last approved DIA in March 2024. The areas in the

Santin Basin, such as Wo Shang Wai, Rolling Hills, Noble Villas, Maple Gardens, Mai Po San Tsuen and Mai Po Lo Wai, are mostly developed 20 years ago, which is much earlier than the approval of last DIA. Meanwhile, the developments in the San Tin Basin mostly are low-density, which suggests the minor changes in runoff generation between pre-development and post-development. In addition, there should not be many changes to the Mai Po Tributary and Mai Po River since last approved DIA which was completed this year. Thus, the previous approved model is still reliable for this drainage impact assessment.

5.2.3 The catchment boundary with sub-catchment delineation for the pre-development and post-development scenarios are shown in **Figure 4** and **Figure 5**, respectively. Sub-catchments MP02A-a2 and MP02A-a3 under pre-development as shown in are delineated to MP02A-a9, MP02A-aa, -ab, -ac, -ad and -ae to simulate the drainage condition of the proposed development under post-development scenario. The sub-catchments under post-development scenario are refined based on the land use change within the Application Site as mentioned in the **Section 7** and **Appendix B**.

5.2.4 To simulate the flood plains, the approved assessment model used virtual side branches which have connections to river courses. The virtual side branches and the connections were named STS and STW in their prefixes, respectively.

5.2.5 For the pre-development model, due to the existing topography, the Application Site would become a flood plain under extreme rainfall and tidal events. To reflect the flood storage characteristics of the Application Site, the virtual side branches mentioned above is extended and connections are made to ch690 and ch490 in the pre-development model. These side branches and the connections at ch490 and ch690 are removed in the post-development scenario since the Application Site will be filled up by the proposed development and therefore will not be characterized as a flood plain.

5.3 RAINFALL – RUNOFF SIMULATION

5.3.1 In this DIA, a 4-hr synthetic rainfall profile, as shown in **Appendix E** was updated using the formulation mentioned in Section 4.3.5(b) in the DSD-SDM with parameters specified for HKO area referring to the Table 3a in the Stormwater Drainage Manual-Corrigendum No. 1/2024.

5.3.2 In addition, the potential drainage impact will consider the climate change effects up to end of 21st century. Referring to the Table 28 and 31 in the Stormwater Drainage Manual-Corrigendum No. 1/2022, 28.1 % rainfall increase due to climate change, including 16% rainfall increase and 12.1% design allowance, has been added into the 4-hr synthetic rainfall profiles.

5.3.3 The catchment MP02A-a2 and a3 under the pre-development scenario is re-delineated for the purpose of this development to develop the pre-development scenario to incorporate the latest information as mentioned below.

5.3.4 The increase in CN value due to the proposed development is reflected in the post-development model.

5.4 HYDRODYNAMIC SIMULATION

5.4.1 The hydrodynamic model performs the hydrodynamic run to assess the hydraulic performance of river courses and drains.

5.4.2 The boundary condition (i.e. Tide level) adopted in this assessment is referred to the Table 8, Table 29, Table 30b and Table 31 in the Stormwater Drainage Manual- Corrigendum No. 1/2022, as shown in the following table:

Table 5-1 Design Tide level at Tsim Bei Tsui

Return period (Years)	Design extreme sea level (mPD)	Mean Sea Level Rise due to Climate Change (mPD)	Storm Surge Increase in End of 21st century (mPD)	Design Allowance in End of 21st century (mPD)	Design extreme sea level considering climate change effect (mPD)
	A	B	C	D	E=A+B+C+D
2	3.07	0.47	0.09	0.20	3.83
10	3.52	0.47	0.15	0.23	4.37
50	4.09	0.47	0.20	0.25	5.01
200	4.78	0.47	0.26	0.27	5.78

5.5 SCENARIOS FOR IMPACT ASSESSMENT

5.5.1 It is confirmed in the previous approved DIAs that the impacts to river courses other than Mai Po Tributary and Mai Po River are very minimal and therefore only the impacts to Mai Po Tributary and Mai Po River are assessed in this assessment.

5.5.2 The high antecedent moisture conditions (AMC3[2]) are adopted in this assessment model in consistency with the previous approved DIAs. The worst-case scenario amongst the two conditions will be used in the analysis for the proposed mitigation measures.

5.5.3 Hydraulic impact incurred by rainfall profiles with areal reduction factors of 0.82 and 1.0 are analysed in consistency with the previous approved DIAs. Areal reduction factor of 1.0

[2] AMC3 = heavy rainfall occurred within last 5 days; saturated soil

was used for the San Tin Basin to estimate peak flood levels for all areas in the San Tin Basin. Whilst an aerial reduction factor of 0.82 was used for the entire Shenzhen River Basin including the catchments draining from Chinese Mainland to estimate peak flood levels for the Shenzhen River. The worst-case scenario from the two conditions will be used in the analysis for the proposed mitigation measures.

5.5.4 Hydraulic performance for 2, 10, 50 and 200yr Average Recurrence Interval (ARI) events for the Application Site, Mai Po Tributary and Mai Po River will be assessed in accordance with the requirement stipulated in the Advice Note No.1. A, B and C scenarios under respective ARI event are simulated according to the following table:

Table 5-2 Summary of Assessment Scenarios

ARI Event	Abbreviation	Areal Reduction Factor	Rainfall	Tide Level
2	2A	0.82	2 yr	2 yr
	2C	1.00	2 yr	2 yr
10	10A	0.82	10 yr	2 yr
	10B	0.82	2 yr	10 yr
	10C	1.00	10 yr	2 yr
50	50A	0.82	50 yr	10 yr
	50B	0.82	10 yr	50 yr
	50C	1.00	50 yr	10 yr
200	200A	0.82	200 yr	10 yr
	200B	0.82	10 yr	200 yr
	200C	1.00	200 yr	10 yr

Note: same as the previous approved DIAs

6 DESIGN ASSUMPTIONS AND PARAMETERS

6.1.1 Design assumptions and parameters agreed in the previous approved DIAs would be adopted in this assessment. The rationale of adopting the set of parameters in the assessment is reiterated in the sections below.

6.1.2 The manning's n to be adopted in this assessment is referred to the previously approved DIAs while the Colebrook White K_S roughness is referred to DSD-SDM. The surface roughness coefficients adopted in this assessment are summarized in:

Table 6-1 Surface's Roughness Coefficient

Surface Type	**Manning's n**	**CW's ks**
Engineered channels (Smooth Concrete surfacing)	0.015	N/A
Engineered channels (Rough Concrete surfacing)	0.020	N/A
Engineered channels (Smooth Natural bed)	0.020	N/A
Engineered channels (Rough Natural bed)	0.025	N/A
Natural Channel	0.035	0.6
One culvert system with rough natural bed in MAI PO River CH1625	0.040	1.5
Concrete Pipe (Fair Condition)	0.015	N/A
Concrete Pipe (Bad Condition)	0.016	3.0

Note: same as the previous approved DIAs

7 PROPOSED CHANGES TO THE DRAINAGE CHARACTERISTICS

7.1 CHANGES IN LAND USE

7.1.1 The Application Site is a vacant lot with a combination of greenfield, access road and other impervious areas. The approved developments will lead to increase in paved surface and thus the CN value. The current amendment scheme will largely maintain the impervious and pervious coverage. The CN value for the Application Site under post-development scenario is estimated to be 90. The land use coverage and the corresponding CN values are detailed in **Table 7-1**.

Table 7-1 CN Values of Pre & Post Developments for the Application Site

Land Use	Area (m^2)	CN Value
Pre-Development		
Vacant Lot (Northern portion of Application Site – MP02A-a2)		
Wetland Restoration Area	47,400	100
Vacant Lot	98,000	85
- Sub-total	145,400	90
Vacant Lot (Southern Portion of Application Site – MP02A-a3)	62,000	85
Total	207,400	88.4
Post-Development (Previous Approved DIA in 2015)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	82,700	95
Vegetated Area	74,300	80
Pool Area	3,000	100
- Sub-total	160,000	88
Total	207,400	90.8
Post-Development (Previous Approved DIA in 2021)		
Wetland Restoration Area (MP02A-a9)		

Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	83,098	95
Vegetated Area	71,475	80
Pool Area	5,435	100
- Sub-total	160,008	88
Total	207,408	91.1
Post-Development (Previous Approved DIA in March 2024)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	97,776	95
Vegetated Area	62,232	80
Pool Area	730	100
- Sub-total	160,008	90
Total	**207,408**	**92**
Post-Development (Current Arrangement)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	106,189	95
Vegetated Area	48,716	80
Pool Area	5,103	100
- Sub-total	160,008	91
Total	**207,408**	**93**

7.1.2 CN value of abandoned ponds adopted in both the pre-development and post-development models is revised to 100 to reflect its hydrological characteristic. **Table 7-2 and**

Table 7-3 present the detailed CN values applied for both the pre- and post-development model.

Table 7-2 CN Values Applied for the Pre-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m^2)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a2	Vacant Lot and Wetland Restoration Area – Northern Portion of proposed Development	18.8%	145,400	90
MP02A-a3	Vacant Lot – Southern Portion of proposed Development	8.1%	62,000	85
MP02A-a4	WSW Village	1.8%	13,700	90
MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**93.4**

Table 7-3 CN Values Applied for the Post-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m^2)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a4	WSW Village	1.8%	13,700	90
MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
MP02A-a9	Wetland Restoration Area	6.2%	47,400	100
MP02A-aa	Western Residential Portion of the Application Site	3.6%	27,283	91
MP02A-ab	Southern Residential Portion of the Application Site	7.8%	57,174	91
MP02A-ac	Mid-Western Residential Portion of the Application Site	2.8%	23,698	91
MP02A-ad	Mid-Eastern Residential Portion of the Application Site	2.7%	22,387	91
MP02A-ae	Eastern Residential Portion of the Application Site	3.9%	29,444	91
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**95**

Note: The land-use information for post-development is the same as the previous approved DIAs

7.1.3 The model network illustrating the chainage along Mai Po River is shown in **Figure 1**. The hydrological model parameters for the re-delineated MP02A-a for both the pre- and post-development models is attached in **Appendix F.**

8 PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1 OVERVIEW OF PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1.1 Following the previous approved DIAs, the proposed drainage system will mainly comprise of an approximate 350m long 3.5m(W) x 2.5m(H) box culvert and a drainage pipe network of pipe size ranging from 1050mm to 2100mm dia as shown in **Figure 6**. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) as well as the runoff from the vacant lots between Castle Peak Road and Royal Palms while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ab, ac and ad).

8.1.2 The invert levels are 2.91mPD for the proposed terminal drainage pipe (DN2100), and 1.71mPD for the proposed terminal box culvert (3.5m in width x 2.5m in height), which are both higher than the invert level of Mai Po Tributary of 1.38 mPD based on the previous approved DIA.

8.1.3 All these drains will be discharged to Mai Po Tributary at the northern site boundary. This drainage arrangement within the Application Site is indicated in **Figure 6**.

8.2 DETENTION BY THE AS-BUILT WETLAND RESTORATION AREA

8.2.1 Wetland Restoration Area (WRA) has been constructed, in accordance with the town planning approvals. It will attenuate the discharge from the WRA itself to mitigate the potential adverse drainage impact due to the CN values increase in the development. The drainage system of Wetland Restoration Area (i.e.MP02A-a9) is totally independent from the drainage system of the residential areas of the development.

8.2.2 The Wetland Restoration Area only collects runoff generated within itself. No runoff generated from residential areas of development is discharged to WRA or vice versa even during the severe rainstorm event.

8.2.3 To attenuate the discharge from Wetland Restoration Area, it is designed to be a large detention pond. The attenuation effect of the Wetland Restoration Area has been achieved by its large buffer volume in conjunction with the outlet structures that control the discharge flow rate.

8.2.4 The outlet structures compose of twin 225mm pipes and a 4m wide emergency bypass spillway with invert level at 4.2mPD and 4.65mPD respectively. The twin 225mm pipes are for control of normal water level and the spillway is for relieving excessive flow. The rating

curves for outlet structures and discharge hydrographs under various scenarios are shown in **Appendix G**. As illustrated on the hydrographs, the runoff from Wetland Restoration Area has been significantly attenuated and the peak discharges from WRA will be trimmed to more than 18% of the peak inflow.

8.2.5 According to the assessment result, the freeboards of Wetland Restoration Area (i.e., measured from the embankment level at 5.0mPD) under 50yr and 200yr ARI events are both more than 200mm.

8.2.6 After passing of a 50yr ARI rainstorm, it would take approximate 1 day to drain back to normal water level which is at 4.2mPD. Penstocks will be installed, so that the drain-off process can speed up if necessary.

8.3 RE-PROVISION OF DRAINAGE PATH – WO SHANG WAI VILLAGE

8.3.1 The runoff within WSW Village is currently discharged to the Application Site via a storage pond and pumping system maintained by the local villagers, then discharges to Mai Po Tributary through 2×200mm dia. drainage pipes in the Application Site, as shown in **Figure 3**. Upon completion of the development, the existing pipes will be demolished and a designated drain with diameter 1050mm to 2100mm will be re-provided for conveying the flow from the outlets of the pump to Mai Po Tributary. This drainage pipe will also convey the runoff from western and central portions of the Application Site (MP02A-aa, ab, ac and ad). The arrangements of the inlets and outlets are the same as the previous approved DIAs.

8.3.2 The discharge from WSW Village will be collected by an inlet chamber within the Application Site. Openings will be provided at the existing invert level of the discharge pipes, which is at +4.2mPD, for connection. The runoff will be conveyed to Mai Po Tributary by a designated drainage system mentioned above. Therefore, the proposed development would not change the discharge pattern of Wo Shang Wai Village drainage system as approved.

8.3.3 If the existing pumps at Wo Shang Wai Village become malfunction during severe rainstorm event, the runoff from Wo Shang Wai Village cannot discharge to the surrounding area and will be cumulated within the village. According to Table 4 of Stormwater Drainage Manual, a total of 446mm depth of rainfall will be incurred under a 200yr return period 4-hour rainfall event. In this connection, the water level at Wo Shang Wai Village will reach approximately +3.3mPD. However, the water will not overflow to the Application Site as there is a bund at the northern boundary of Wo Shang Wai Village which at the level of more than +5mPD, as shown in **Appendix C** and **L**. Therefore, based on the current conditions, overflow cannot enter the Application Site, and this status will remain unaffected by future development.

8.3.4 A flap valve will be installed at the outfall of the designated pipe to prevent backwater effect from Mai Po Tributary. Since no proposed measures will be carried out in Wo Shang Wai Village, the existing pumping configuration from WSW Village will be unchanged.

8.4 RE-PROVISION OF DRAINAGE PATH - VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS, SAME AS PREVIOUS APPROVED DIAS

8.4.1 A 3.5m(W) x 2.5m(H) box culvert is proposed in the previous approved DIAs to convey the runoff from the area between Royal Palms and Castle Peak Road – Mai Po (MP02A-a5), a section south of Royal Palms (MP02A-a6) and east parts of the Application Site. The box culvert will have a larger hydraulic capacity than the existing three 1350mm dia. pipes.

8.4.2 The box culvert is sized for the 1 in 50-year design return period according to the recommendation in Table 10 of the DSD-SDM. The box culvert has been designed to capture the discharge from the existing triple 1.35m diameter culvert as discussed in **Section 3.3**. This arrangement is the same as the previous approved DIAs. A trash grille and flap valve will be provided at the final discharge point of the box culvert that connects to Mai Po Tributary.

8.5 MISCELLANEOUS, SAME AS PREVIOUS APPROVED DIAS

8.5.1 Bank protection measures will be provided at the outfalls of the proposed drainage system to minimize the risk of scouring and erosion of the riverbed.

9 ASSESSMENT ON DRAINAGE IMPACT

9.1 ASSESSMENT OF MAI PO TRIBUTARY AND MAI PO RIVER

9.1.1 With the incorporation of the proposed mitigation measures stipulated in **Section 8** following the previous approved DIAs, hydraulic performance of the Application Site, Mai Po Tributary and Mai Po River is assessed according to the methodology stipulated in **Section 5**. The results of peak runoff, total runoff and max water level under 50ARI event are summarized in **Table 9-1**, **Table 9-2** and **Table 9-3**, respectively.

Table 9-1 Change in Peak Discharge from the Application Site

Rainfall return-periods (Yr)	Pre-development peak discharge (m^3/s)	Post-development peak discharge (m^3/s)	Change in peak discharge (m^3/s)
2yr	9.76	7.98	-1.78
10yr	12.78	10.33	-2.46
50yr	14.76	11.47	-3.29
200yr	16.10	12.90	-3.20

Note: Values based on scenario C, AMC 3

Table 9-2 Change in Total Runoff from the Application Site

Rainfall return-periods (Yr)	Total Runoff from Pre-Developed Application Site (m^3)	Total Runoff from Post-Developed Application Site (m^3)	Change in Total Runoff (m^3)
2yr	34,456	39,624	5,168
10yr	55,381	60,586	5,205
50yr	73,530	76,784	3,254
200yr	89,269	94,497	5,228

Note: Values based on scenario C, AMC 3

Table 9-3 Change in Water Level along Mai Po River and Mai Po Tributary under 50yr ARI

River chainage (m)	Water level(mPD) Pre-development			Water level(mPD) Post-development			Change in water level(m)		
	50A	50B	50C	50A	50B	50C	50A	50B	50C
0	3.778	3.934	3.835	3.771	3.937	3.835	-0.007	0.003	0.000
690	3.772	3.929	3.827	3.765	3.931	3.827	-0.007	0.002	0.000
980	3.767	3.926	3.822	3.761	3.929	3.822	-0.006	0.003	0.000
1150	3.757	3.922	3.812	3.750	3.925	3.811	-0.007	0.003	-0.001

1620	3.750	3.927	3.809	3.743	3.930	3.809	-0.007	0.003	0.000
1880	3.574	3.890	3.657	3.565	3.893	3.652	-0.009	0.003	-0.005

9.1.2 The change in water level along Mai Po Tributary and Mai Po River under 2yr, 10yr, 50yr and 200yr ARI events are summarized in **Appendix I**.

9.1.3 Although there will be increase in CN value causing increasing total runoff, by the detention effect of the as-built Wetland Restoration Area at the northern part of the Application Site independent from the drainage system of the residential areas, the peak discharge from the Application Site will be significantly attenuated, as shown in **Appendix H** and there will be no adverse drainage impacts to the Application Site, Mai Po Tributary and Mai Po River under 50yr ARI event. This arrangement is the same as the previous approved DIAs.

9.1.4 The water level at Mai Po River and Mai Po Tributary would not increase due to the change, as shown in **Table 9-3**. It is concluded that the recommendation made in the previous approved DIAs is adequate to mitigate the potential drainage impact due to the revised master layout.

9.2 ASSESSMENT OF DESIGNATED DRAIN FOR WESTERN PORTION

9.2.1 As revealed by the model simulation results in **Appendix J**, the water level at the outlet of the designated drain for Wo Shang Wai and the west portion of Application Site is much lower than the ground level of the Application Site (6.8mPD). In this regard, the designated drain will not incur adverse impact to the Application Site.

9.3 ASSESSMENT OF PROPOSED 3.5M(W) X 2.5M(H) BOX CULVERT

9.3.1 Since the current proposal following the previous approved DIAs will have a larger hydraulic capacity than the existing triple pipes, there will be no adverse drainage impact to Application Site. The freeboard of the outlet of the box culvert is shown in **Appendix K**.

9.4 ASSESSMENT OF IMPACT OF ADDITIONAL TREATED EFFLUENTS

9.4.1 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,732.04m^3/day of treated water after tertiary treatment of Membrane Bioreactor process by a temporary on-site sewage treatment plant which will be discharged to Mai Po Tributary. Assume the worst case that this water will

be discharged to Mai Po Tributary in 4 hours per day (same as the rainfall duration under assessment), so the additional flow rate of the treated water is 0.26m^3/s. The flow rate of the treated water from the on-site sewage treatment plant has been included in the simulation model.

10 TEMPORARY DRAINAGE ARRANGEMENT

10.1.1 Large scale site formation works will be included in the construction stage of the proposed development. During the rainstorm events, construction site runoff would come from all over the works site. The principal drainage impacts which are associated with construction of the works have been identified as follows:

- Erosion of ground materials;
- Sediment transportation to existing downstream drainage system, and
- Obstruction to drainage systems.

10.1.2 Construction runoff would cause impact to the stormwater drainage system. Runoff with concrete and cement-derived material would cause blockage of drainage channels and increase of suspended solid levels in the downstream drainage system. Sediment deposition rate would be increased and hence lower the capacity of the downstream drainage.

10.1.3 Since large area of soil will be exposed during the construction, in order to eliminate the source of contamination, the exposed soil, especially for the open stockpiles area, shall be covered properly by suitable material such as geotextile or tarpaulin to minimize the amount of soil being washed into the downstream drainage system.

10.1.4 The construction runoff which is contaminated by suspended solids, dust and waste shall be properly treated before discharging to the public drainage system. Sedimentation tank, sand/silt traps or other desilting facilities shall be provided to collect debris and silt and allow sedimentation before discharge. Channels / earth bunds / sand bag barriers shall be provided on site to properly direct the runoff to the desilting facilities. Those desilting facilities should be adequately designed and be inspected and cleaned out in a regular basis to maintain its functionality.

10.1.5 Moreover, temporary drainage system designed with sufficient capacity should be provided to prevent the flood risk within the Application Site. For example, perimeter channels should be provided at site boundary to intercept surface runoff from outside the Application Site so that overland flow across the Application Site can be avoided.

10.1.6 Further guidelines and site practices outlined in EPD's Practice Note ProPECC PN1/94, DSD Technical Circular No. 14/2000 – Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage System, and DSD Practice Note No. 1/2004 – Design Rainfall Depth for Temporary Works within the Dry Season shall be followed as far as practicable to minimize the adverse drainage impact caused by the construction works.

11 MAINTENANCE RESPONSIBILITIES

11.1.1 Following the previous approved DIAs, the Applicant will be responsible for the maintenance of all surface channels, underground drainage system and stormwater retention facilities within the Application Site, including designated drainage facilities for conveying runoff generated from Wo Shang Wai Village and the area between Royal Palms and Castle Peak Road – Mai Po.

11.1.2 The designated drainage system serving Wo Shang Wai Village within the Application Site will be maintained by the Applicant while the storage pond and the pumps within Wo Shang Wai Village will be maintained by the villagers.

11.1.3 The maintenance responsibility of all drainage facilities outside the Application Site will remain unchanged.

12 SUMMARY AND CONCLUSIONS

12.1.1 The previous approved residential development comprises of residential buildings, a communal garden area, a restored wetland and residential facilities. The total site area is approximately 207,408m².

12.1.2 To offset the increase in pavement area after development, a Wetland Restoration Area has been built, which has a sufficient detention effect to mitigate the potential drainage impacts. The drainage system of the Wetland Restoration Area (i.e.MP02A-a9) is totally independent on the drainage system of the residential areas of the proposed development.

12.1.3 The permanent drainage system for the proposed development will comprise of an approximately 300m (L) x 2.5m(H) x 3.5m(W) box culvert and a drainage pipe network of pipe sizes ranging from 1050mm to 2100mm in diameter. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) and the runoff from the vacant lots between Castle Peak Road and Royal Palms, while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ab, ac and ad).

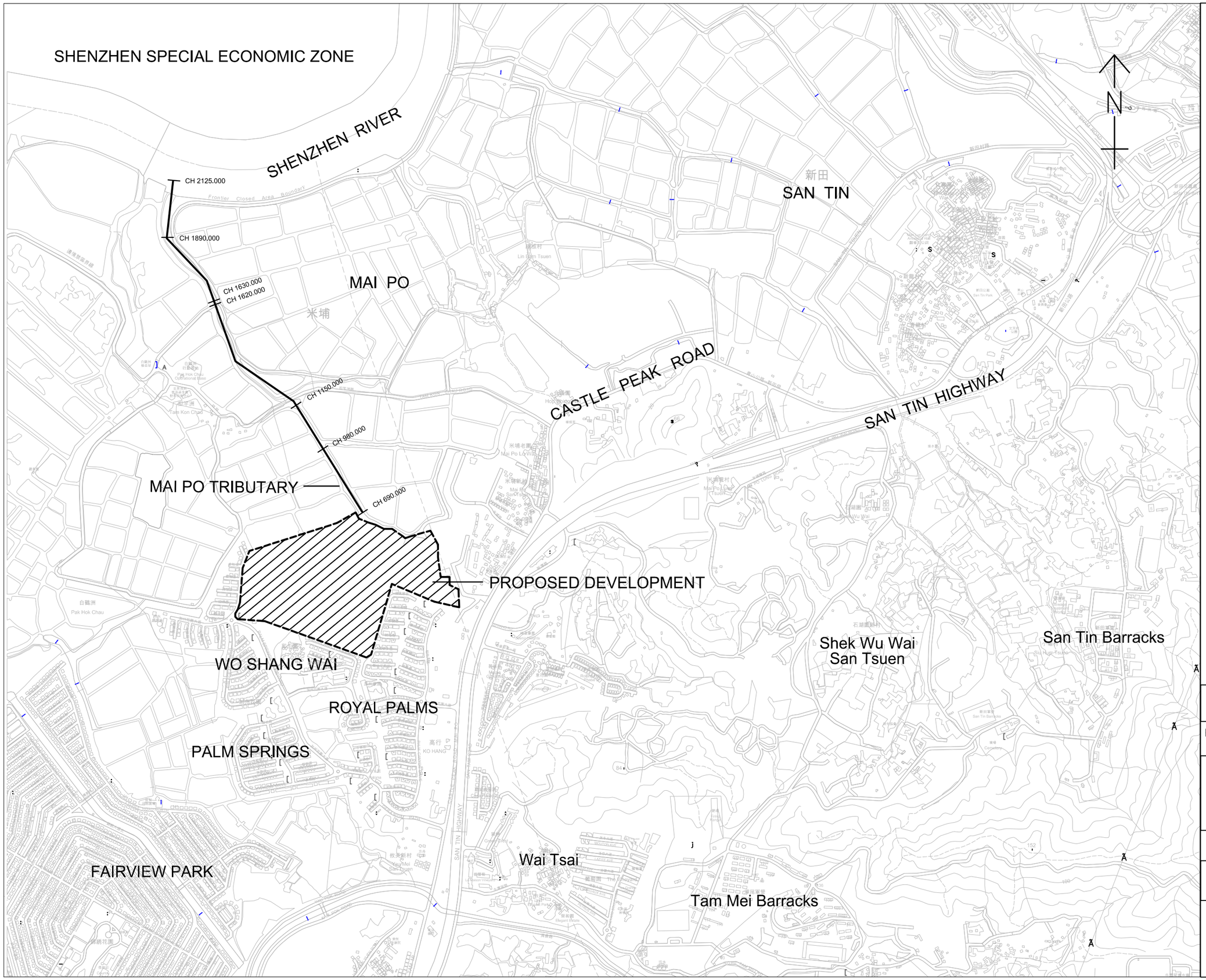
12.1.4 The DIA for the previously approved Section 16 Planning Application was approved for all the groundwork. The mitigation measures outlined in **Section 8** above are in line with the previous approved DIAs. Subsequent to the currently proposed revision of the Master Layout Plan, the DIA has been updated, and the same mitigation measures are incorporated. These proposed mitigation measures are sufficient to mitigate the potential drainage impacts of the change in master layout. It is concluded that the completion of the proposed development will not aggravate the flooding conditions around the Application Site.

12.1.5 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,732.04m^3/day of treated water from a temporary on-site sewage treatment plant within the Application Site will be discharged to Mai Po Tributary. Even under the worst case that this water will be discharged to Mai Po Tributary in 4 hours per day, the flow rate of the treated water of 0.26m^3/s from the on-site sewage treatment plant is included in the simulation and has no adverse impact on assessment results and water level of Mai Po River.

12.1.6 Temporary drainage arrangement within the site will be implemented during construction stage to avoid imposing unacceptable flood risk to the adjacent areas.

12.1.7 The Applicant will take up the maintenance responsibilities for the proposed drainage system inside the Application Site including the proposed main trunk box-culvert and designated drainage system for WSW Village and outfall structures.

Figures



LEGEND

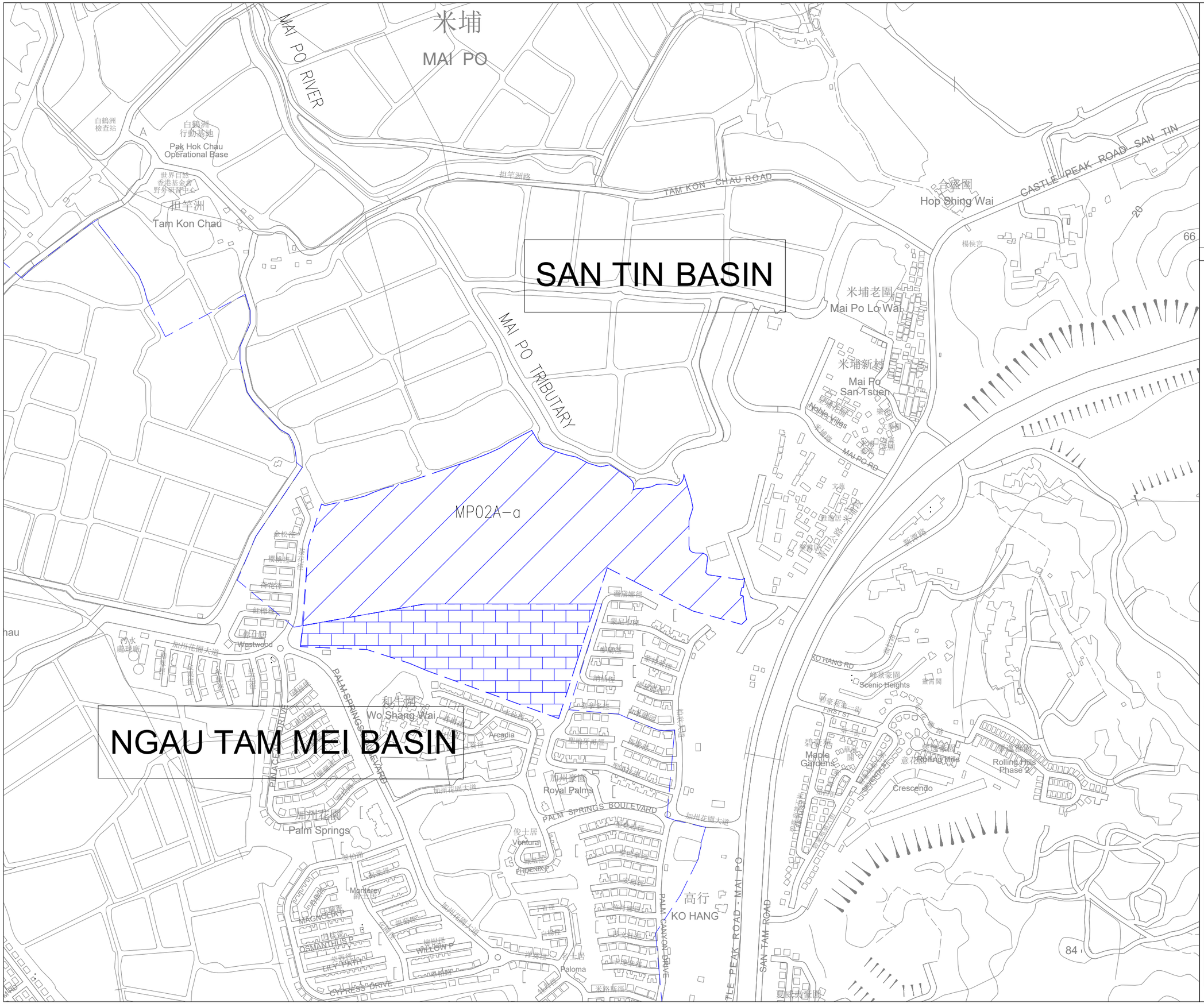
	PROPOSED DEVELOPMENT
CH690	RIVER CHAINAGE OF MAI PO RIVER DEFINED IN MIKE 11 MODEL

WSP HONG KONG LIMITED

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

LOCATION PLAN OF PROPOSED DEVELOPMENT

FIGURE 1



N

LOCATION PLAN

LEGENDS:

- SUB–CATCHMENT MP02A–a AS PER NORTHERN NEW TERRITORY DRAINAGE MASTER PLAN
- APPLICATION SITE WITHIN SAN TIN BASIN
- APPLICATION SITE WITHIN NGAU TAM MEI BASIN

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB–CATCHMENT PLAN OF MP02A–a

Drawing no.		Rev.
Figure 2		0
Drawn: JX	Date: AUG2024	Checked: – / Approved: –
Scale: 1:3000	Status:	

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FISH PONDS

WETLAND RESTORATION AREA
(COMPLETED)

DIP TO MAI PO TRIBUTARY

DRAIN TO MAI PO TRIBUTARY
VIA A PIPE

2 X Ø200

MTRC
VENT
BUILDING

EXISTING 3 X 1.35m DIA.PIPES FROM
VACANT LOTS VIA ROYAL PLAMS,
CANNOT SEE ITS ALIGNMENT WITHIN
APPLICATION SITE AND ITS OUTFALL

PALM
SPRINGS
(WEST)

EXISTING 2×250mm DIA.PIPES
FROM WO WAI VILLAGE

4 X Ø200

PALM
SPRINGS
(EAST)

ROYAL PALMS

N

LOCATION PLAN

LEGENDS:

APPLICATION SITE BOUNDARY

FLOW DIRECTION

EXISTING PIPES

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

EXISTING DRAINAGE

Drawing no.		Rev.
Figure 3		–
Drawn: JX	Date: APRIL2025	Checked: –	Approved: –
Scale: 1: 3000		Status:	

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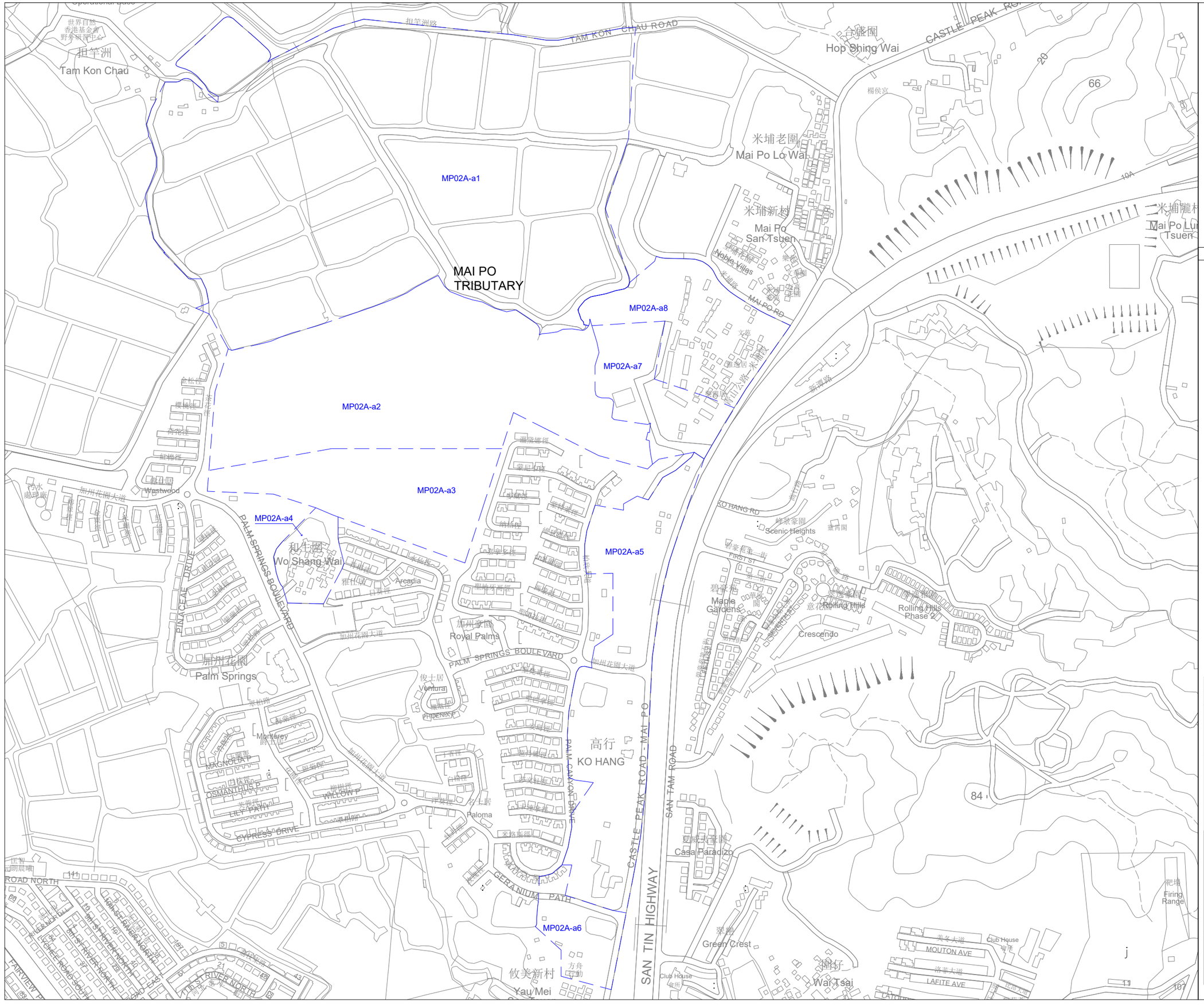

N

LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR PRE-DEVELOPMENT MODEL

Drawing no.		Rev.
Figure 4		0
Drawn: JX	Date: AUG2024	Checked: –	Approved: –
Scale: 1:3000		Status:	

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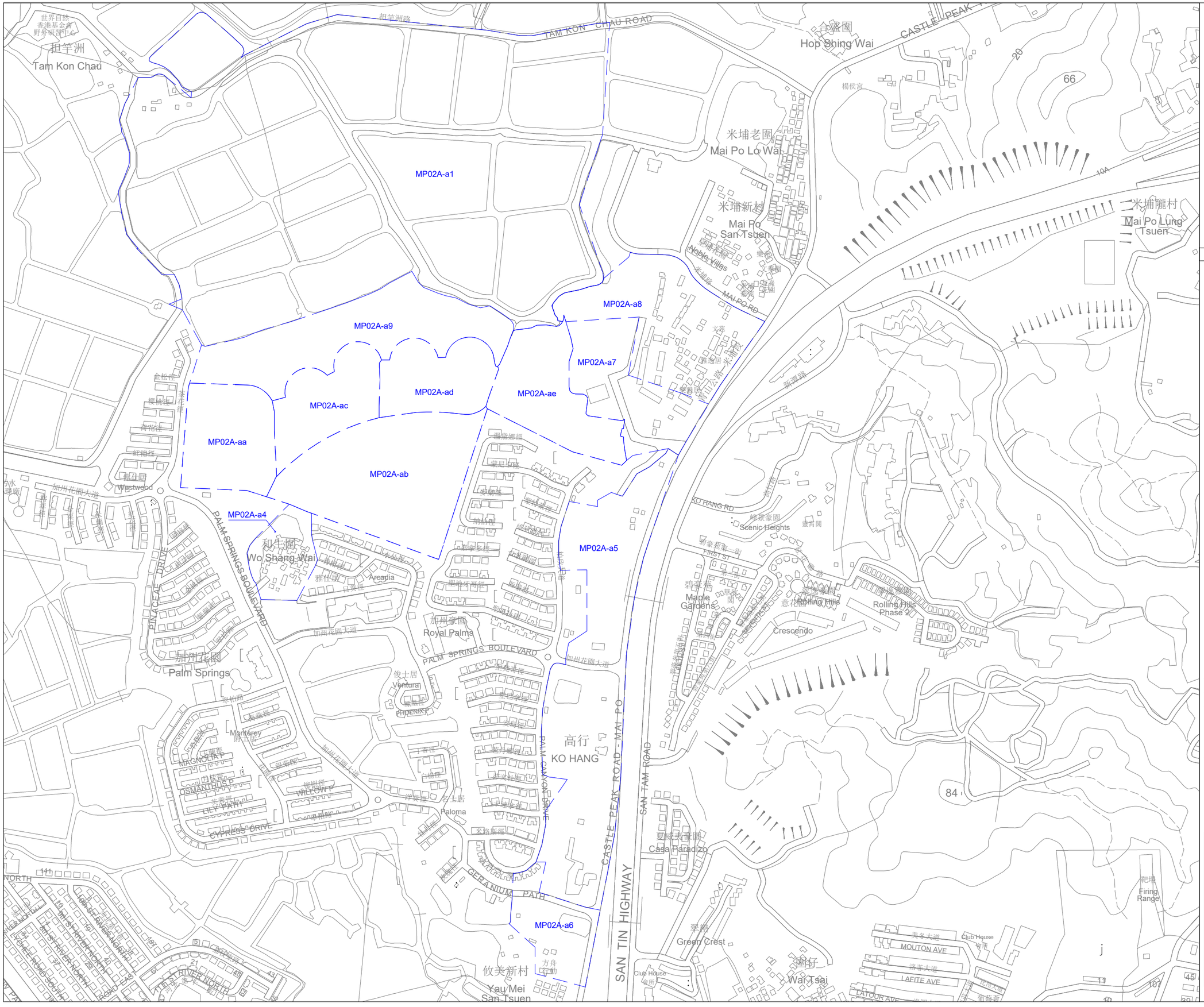

LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR POST-DEVELOPMENT MODEL

Drawing no.			Rev.
Figure 5			–
Drawn	Date	Checked	Approved
JX	–	–	–
Scale		Status	
1: 3000			

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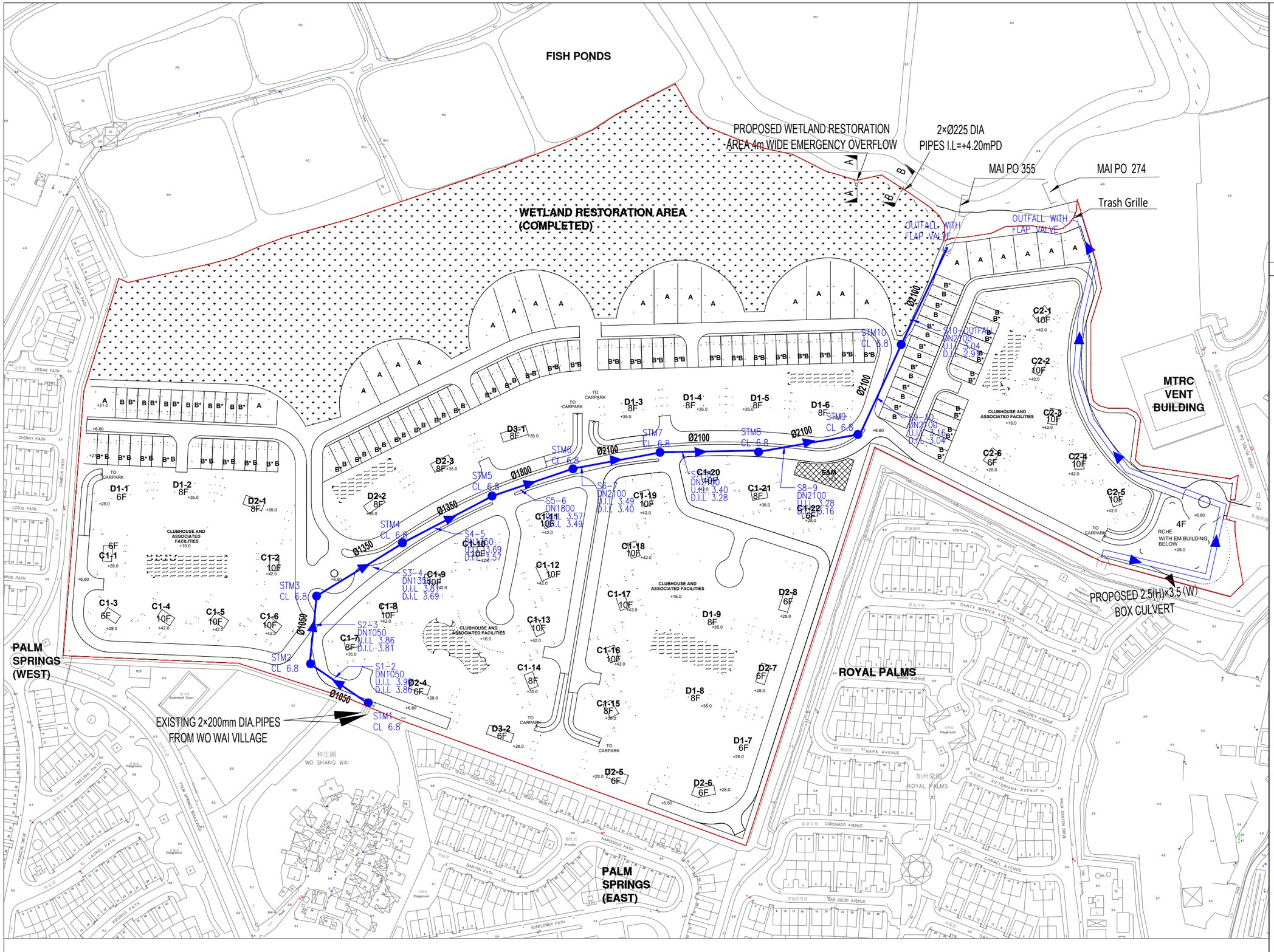
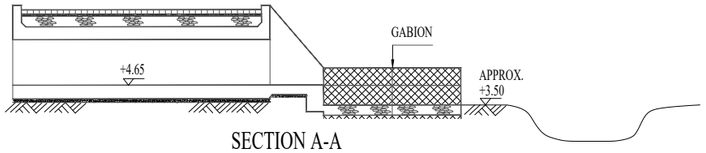
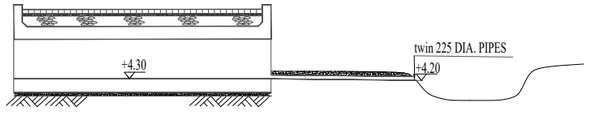




SECTION A-A



SECTION B-B

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED MANHOLE
- Ø1800 — PROPOSED DRAINAGE SYSTEM
- PROPOSED 2.5(H)×3.5(W) BOX CULVERT
- STM1-2 — STORM PIPE NUMBER
- U.I.L 1.48 — PIPE DIAMETER UPSTREAM INVERT LEVEL (mPD)
- D.I.L 1.47 — DOWNSTREAM INVERT LEVEL (mPD)
- SMH1012333 — STORM MANHOLE NUMBER
- CL 6.8 — COVER IEVEL (mPD)

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

PROPOSED DRAINAGE

Drawing no. Figure 6 | Rev.

Drawn	Date	Checked	Approved
Scale 1:1200		Status	

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Appendices

Appendix A

Approval Letters of Previous DIAs
in 2015, 2021 and 2024

規劃署

粉嶺、上水及元朗東規劃處
新界沙田上禾輋路1號
沙田政府合署12樓

By Post and Fax (2587 7068)
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
12/F., Sha Tin Government Offices,
1 Sheung Wo Che Road, Sha Tin, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/229

電話號碼 Tel. No. : 2158 6284

傳真機號碼 Fax No. : 3105 0057

17 December 2015

Masterplan Limited
Room 3516B, 35/F
China Merchants Tower, Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Mr. Ian Brownlee)

Dear Sir,

Planning Application No. A/YL-MP/229
Compliance with Approval Condition (d)

I refer to your submissions dated 13.4.2015, 6.7.2015 and 10.7.2015 for compliance with the approval condition (d) of the captioned application on "the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the Town Planning Board". The relevant departments have been consulted on your submission. Your submission is considered:

☑ Acceptable. The captioned condition **has been complied with**. Please find detailed comments of the Chief Engineer/Mainland North, Drainage Services Department (CE/MN, DSD), District Lands Officer/Yuen Long, Lands Department (DLO/YL, LandsD), Director of Agriculture, Fisheries and Conservation (DAFC) and Director of Environmental Protection (DEP) at **Appendix**.

☐ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement the accepted proposal for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Simon CHEUNG (Tel: 2158 6289) direct.

Yours faithfully,

(K.T. NG)
for District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

Encl.

城市規劃委員會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳 真 Fax: 2877 0245 / 2522 8426
電 話 Tel: 2231 4810
來函檔號 Your Reference:
覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/229

By Registered Post & Fax (2587 7068)

13 March 2015

Masterplan Ltd.
Rm 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: I.T. Brownlee)

Dear Sir/Madam,

Proposed Filling and Excavation of Land for House Development with Wetland Habitat in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots No. 43 S.A RP, 50 S.A and 50 RP in D.D. 101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 20.1.2015.

After giving consideration to the application, the Town Planning Board (the TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 27.2.2019; and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (q) below to the satisfaction of the Director of Planning or of the TPB;

(b) the interface arrangement for the Express Rail Link (XRL) project in terms of the permanent land take for Express Rail Link tunnels and structures and temporary land take for related construction to the satisfaction of the Director of Highways or of the TPB;

(c) the submission and implementation of a revised Landscape Master Plan including a tree preservation proposal to the satisfaction of the Director of Planning or of the TPB;

(d) the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the TPB;

(e) in relation to (d) above, the implementation of a drainage proposal and other necessary flood relief mitigation measures identified in the revised DIA to the satisfaction of the Director of Drainage Services or of the TPB;

(f) the implementation of mitigation measures identified therein in the revised Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(g) the submission and implementation of a maintenance and management plan which covers implementation details and the estimated annual recurrent costs with breakdown required for maintaining the restored wetland area to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(h) the submission and implementation of a funding arrangement proposal for ensuring the long-term maintenance and management of the restored wetland area to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(i) as proposed by you, land exchange and/or lease modification for the proposed development if considered and approved by the Director of Lands, should not be executed prior to the compliance with condition (h) to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(j) the design and provision of improvement measures at the junction of Palm Springs Boulevard and Castle Peak Road – Mai Po section to the satisfaction of the Commissioner for Transport or of the TPB;

(k) the design and provision of vehicle parking, motorcycle parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(l) the design and provision of the access connection between the development and the public road to the satisfaction of the Commissioner for Transport or of the TPB;

(m) the provision of emergency vehicular access, water supplies for fire-fighting and fire service installations to the satisfaction of the Director of Fire Services or of the TPB;

(n) the design and provision of mitigation measures to alleviate the visual impact of the noise barriers to the satisfaction of the Director of Planning or of the TPB;

(o) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB;

(p) the implementation of mitigation measures identified in the revised SIA to the satisfaction of the Director of Environmental Protection or of the TPB; and

(q) the implementation of sewage disposal arrangement including the interim on-site sewerage treatment plant, the reuse of treated effluent and the irrigation system, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you of the following:

(a) to note the suggestion of Members on the provision of a tree belt at the interface of the development portion and the wetland restoration area of the scheme to create a buffer area in between. As part of the Landscape Master Plan, you should liaise with the Planning Department regarding the design and implementation of the tree belt;

(b) the approval of the application does not imply that the proposed building design elements can fulfil the requirements under the Sustainable Building Design Guidelines and the relevant requirements under the lease, and that the proposed gross floor area (GFA) concession for the proposed development will be approved/granted by the Building Authority (BA). You should approach the Buildings Department (BD) and the Lands Department (LandsD) direct to obtain the necessary approval. If the building design elements and the GFA concession are not approved/granted by the BA and the Lands Authority and major changes to the current scheme are required, a fresh planning application to the TPB may be required;

(c) to note the comments of the District Lands Officer/Yuen Long, LandsD that with reference to Figure A3 of the Wetland Restoration and Creation Scheme, the Wetland Restoration Area boundary is modified. A proposed land exchange is being processed for the lots within the site based on the previous Application No. A/YL-MP/185. Should the TPB approve the application which cause amendments to the proposed land exchange, you are required to apply to LandsD for the proposed development in current scheme. However, there is no guarantee that such application (including the granting of any additional government land (GL)) will be approved. Such application will be dealt with by his department acting in the capacity as the landlord at his discretion, and if it is approved under such discretion, the approval would be subject to such terms and conditions including among others, the payment of premium and administrative fee as may be imposed by his department. The proposed storm water drain will connect to outfall beyond the site boundary. Should such drains encroach upon private land and GL, you should clearly indicate the whole alignment of such storm water drain connection, in particular the one connecting the existing outfall to Mai Po Tributary, and then obtain prior approval/consent from the relevant authorities before carrying out of the works. According to the layout plan of the preliminary interim sewage system design, there is no GL involved. However, you should consult his department if there is any works to be carried out on GL, if unavoidable;

(d) to note the comments of the Director of Environmental Protection (DEP) that this is a revised residential development scheme different from the layout shown in the Environmental Permit No. EP-311/2008/D issued under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). The proposed on-site wastewater treatment does not conform with Condition 5.13 of the Environmental Permit. You should be reminded to go through the statutory EIAO process should the current development scheme goes ahead;

(e) to note the comments of the Commissioner for Transport that you should take account of the segregation of vehicles and pedestrian in the detailed design during submission of the general building plan stage. He has no objection to the proposed basement carpark but the Transport Department's comment will be provided at the detailed design stage;

(f) to note the comments of the Chief Engineer/Railway Development, Railway Development Office, Highways Department that the site, in particular the site portion within Lot 43 S.A RP in D.D. 101, falls within the railway protection boundary of the Hong Kong Section of the XRL, which is now under construction. You should consult MTR Corporation Limited on the full details of the proposal and comply with their requirements with respect to the construction, operation, maintenance and safety of the XRL;

(g) to note the comments of the Chief Building Surveyor/New Territories West, BD that the access road linking the site and the Castle Peak Road shall be completed before the Occupation Permit application. In view of the size of the site, any internal streets/roads required under the Buildings Ordinance (BO) s.16(1)(p) may have to be deducted from site area for plot ratio/site coverage calculations under the BO. Recreational facilities and the proposed noise barriers, unless exempted, are accountable for GFA calculation under the BO. Filtration plant rooms for swimming pool at private houses are accountable for GFA calculation under the BO. Each phase of the proposed development should be self-sustainable under the BO. Your attention is drawn to the requirements on the provision of emergency vehicle access to all buildings to be erected on the site under Building (Planning) Regulations (B(P)R) 41D. The proposed open space should not be less than the requirements as stipulated in the second schedule of B(P)R. Application for exemption of carparking spaces from GFA calculation under the BO will be considered on the basis of the PNAP APP-2 during plan submission stage. The new quality and sustainable built environment (QBE) requirements are applicable to the site. In accordance with the Government's committed policy to implement building design to foster a QBE, the sustainable building design requirements (including building separation, building setback and greenery coverage) should be included, where possible, in the planning approval;

(h) to note the comments of the Chief Engineer/Mainland North, Drainage Services Department that he would reserve his comments until specific drainage proposal is submitted. You should be reminded that the SIA for the current application needs to meet the full satisfaction of DEP;

(i) to note the comments of the Chief Town Planner/Urban Design and Landscape, Planning Department (PlanD) that regarding communal open space calculation, you should be advised that the ancillary pedestrian route should be "within" the open space to be counted as part of the open space as per the Hong Kong Planning Standards and Guidelines (HKPSG). You should maximize the provision of greening, especially at-grade tree and shrub planting along roadside and clubhouses to improve the landscape and visual amenity of the development;

(j) to note the comments of the Chief Engineer/Development (2), Water Supplies Department (WSD) that for the provision of water supply to the development, you may need to extend your inside services to the nearest suitable government water mains for connection. You shall resolve any land matter (such as private lots) associated with the provision of water supply and shall be responsible for the construction, operation and maintenance of the inside services within the private lots to WSD's standard. Fresh water from government mains shall not be used for watering plant nurseries or landscape features purposes except with the written consent of the Water Authority. Consent to use fresh water from the mains for such purposes may be given on concessionary supply basis if an alternative supply is impracticable and evidence to that effect is offered to and accepted by the Water Authority. Such permission will be withdrawn if in the opinion of the Water Authority the supply situation requires it; and

(k) to note the comments of the Director of Electrical and Mechanical Services that for electricity safety, you shall approach the electricity supplier for the requisition of cable plans to find out whether there is any underground cable (and/or overhead line) within or in the vicinity of the site. For the site within the preferred working corridor of high voltage overhead lines at transmission voltage level 132kV and above as stipulated in the HKPSG published by PlanD, prior consultation and arrangement with the electricity supplier is necessary. Prior to establishing any structure within the site, you and/or your contractors shall liaise with the electricity supplier and, if necessary, ask the electricity supplier to divert the underground cable (and/or overhead line) away from the vicinity of the proposed structure. The "Code of Practice on Working near Electricity Supply Lines" established under the Electricity Supply Lines (Protection) Regulation shall be observed by you and your contractors when carrying out works in the vicinity of the electricity supply lines. For town gas safety, there is a high pressure town gas pipeline running along San Tin Highway and the site is in close proximity to the existing high pressure gas pipeline. He considers that given the application is a low density residential development (i.e. plot ratio is 0.4) and the minimum proximity distance of the proposed houses to the concerned gas pipeline is about 150m, it should not be a mandatory requirement for you to submit a risk assessment. Nevertheless, given that there is a town gas pipeline near to the proposed development, the project proponent should maintain liaison/coordination with the Hong Kong and China Gas Company Limited in respect of the exact location of existing or planned gas pipe routes/gas installations in the vicinity of the proposed works area and the minimum setback distance away from the gas pipes/gas installations if any excavation work is required during the design and construction stages of the development. The project proponent shall also note the requirements of the Electrical and Mechanical Services Department's 'Code of Practice on Avoiding Danger from Gas Pipes'.

If you wish to seek an extension of the validity of this permission, you may submit an application to the TPB for renewal of the permission no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider any application for renewal of permission if the time limit for commencement of development specified in the permission has already

expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35B and 36A for details. The Guidelines and application forms are available at the TPB's website (www.info.gov.hk/tpb/), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved scheme that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36A for details.

A copy of the TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) and the relevant extract of minutes of the TPB meeting held on 27.2.2015 are enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 8.4.2015). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. K.T. Ng of Fanling, Sheung Shui & Yuen Long East District Planning Office at 2158 6284. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Michael CHIU)
for Secretary, Town Planning Board

MC/DY/el

規劃署

粉嶺、上水及元朗東規劃處
新界荃灣青山公路388號
中染大廈22樓2202室

By Fax (2587 7068) and Post
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
Unit 2202, 22/F., CDW Building,
388 Castle Peak Road, Tsuen Wan, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/291

電話號碼 Tel. No.: 3168 4072

傳真機號碼 Fax No.: 3168 4074

12 May 2021

Masterplan Limited
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre, 200 Connaught Road Central
Hong Kong
(Attn: Mr. Ian BROWNLEE)

Dear Mr. BROWNLEE,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots 43 S.A RP, 50 S.A and 50 RP in D.D.101, Wo Shang Wai, Mai Po, Yuen Long
(Planning Application No. A/YL-MP/291)
Compliance with Approval Condition (c)

I refer to your submission dated 27.4.2021 for compliance with the captioned approval condition regarding the submission of a revised Drainage Impact Assessment (DIA). The relevant department has been consulted on your submission. Your submission is considered:

☐ Acceptable. The captioned condition **has been complied with**.

☑ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement and maintain the flood mitigation measures and provision of drainage facilities identified in the DIA for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Joshua YUEN (Tel: 2300 1235) of DSD directly.

Yours sincerely,

(Anthony LUK)
District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

c.c.
CE/MN, DSD (Attn: Mr. Joshua YUEN)
CTP/TPB(2)

Internal
Site Record

AL/AC/AP

城 市 規 劃 委 員 會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳　真 Fax: 2877 0245 / 2522 8426
電　話 Tel: 2231 4810
來函檔號 Your Reference:

覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/344

By Post & Fax (2587 7068)

1 March 2024

Masterplan Ltd.
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Benson Poon)

Dear Sir/Madam,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" Zone, Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 15.2.2024.

After giving consideration to the application, the Town Planning Board (TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 16.2.2028, and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (i) below to the satisfaction of the Director of Planning or of the TPB;

(b) the submission and implementation of a Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB;

(c) the implementation of drainage proposal identified in the accepted Drainage Impact Assessment to the satisfaction of the Director of Drainage Services or of the TPB;

(d) the implementation of the mitigation measures identified in the Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(e) the design and provision of vehicular access, parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(f) the design and provision of improvement measures at the junction of Castle Peak Road - San Tin and Shek Wu Wai Road before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(g) the design and provision of improvement measures at the junction of Fairview Park Interchange, if deemed required by Transport Department, before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(h) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB; and

(i) the implementation of sewage disposal arrangement identified in the revised SIA including the on-site sewerage treatment plant and the reuse of treated effluent, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you to note the advisory clauses as set out at the Appendix attached.

Regarding the determination on commencement of an approved development, please refer to TPB Guidelines No. 35D for details. If you wish to seek an extension of the validity of this permission, you may submit an application under 16A of the Town Planning Ordinance to the TPB no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider the application if the time limit for commencement of development specified in the permission has already expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35D and 36C for details. The Guidelines and application forms are available at the TPB's website (https://www.tpb.gov.hk/en/resources/index.html), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved development that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36C for details.

The TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) is available at this link (https://www.tpb.gov.hk/en/meetings/RNTPC/Agenda/736_rnt_agenda.html) and the relevant extract of minutes of the TPB meeting held on 16.2.2024 is enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 22.3.2024). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. Kimson Chiu of Fanling, Sheung Shui & Yuen Long East District Planning Office at 3168 4033. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Leticia LEUNG)
for Secretary, Town Planning Board

LL/CN/cl

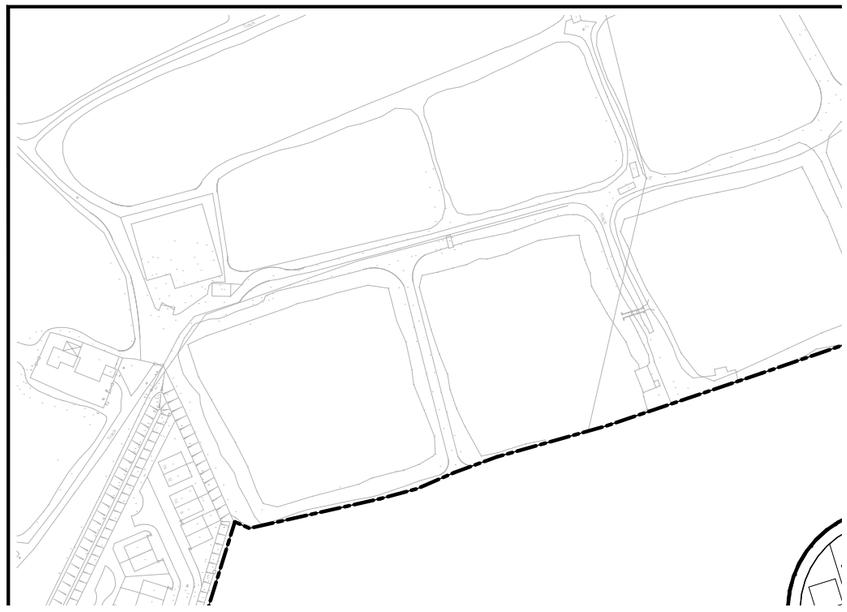
List of Government Department Contacts

(Application No. A/YL-MP/344)

部門 Department	辦事處 Office	聯絡人姓名 Name of Contact Person	電話號碼 Telephone No.	傳真號碼 Facsimile No.
漁農自然護理署 Agriculture, Fisheries and Conservation Department	自然護理組(元朗) Nature Conservation Section (Yuen Long)	黃金欣博士 Dr. WONG Kam Yan, Azaria	2150 6932	2377 4427
渠務署 Drainage Services Department	新界北渠務部 Mainland North Division	梁長政先生 Mr. LEONG Cheung Ching	2300 1432	2770 4761
環境保護署 Environmental Protection Department	環境評估科 Environmental Assessment Division	陳麗薇女士 Ms. CHAN Lai Mei, Jolitta	2835 1112	2591 0558
運輸署 Transport Department	交通工程(新界西)部 Traffic Engineering (NTW) Division	梁志江先生 Mr. LEUNG Chi Kong, Donald	2399 2778	2381 3799

Appendix B

Master Layout Plan of the Proposed Development



Appendix C

Site Visit Photo



Figure 1: Fishpond in WSW village and pump panel


Figure 2: Current inlet of rising mains to Application Site



Figure 3: Bund along Application Site Boundary



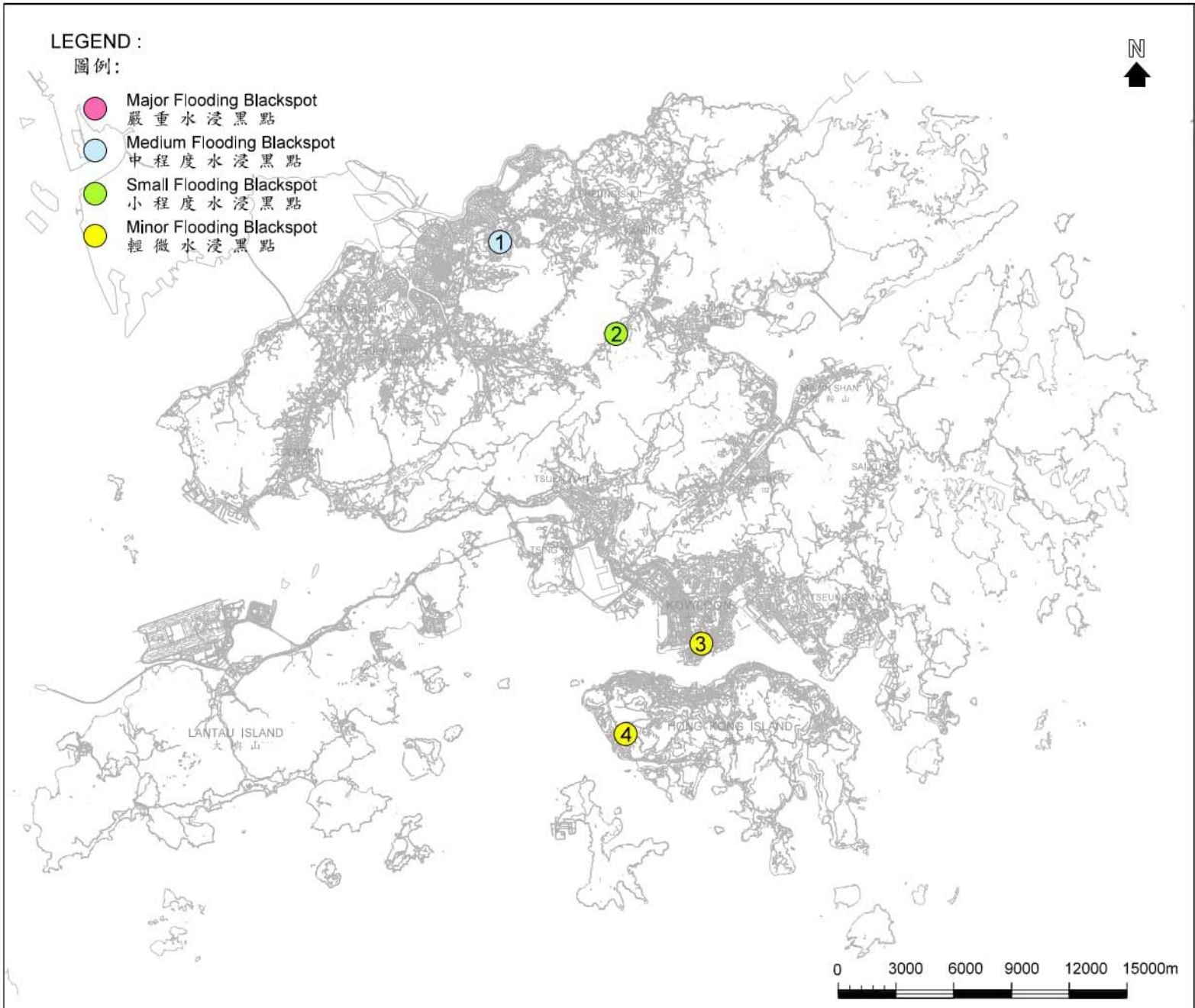
Figure 4: Outlet of triple 1350mm dia. pipes before Application Site



Figure 5: Inlet of triple 1350mm dia. Pipes to east portion of Application Site

Appendix D

Location of DSD Flooding Blackspots
(Information Extracted from DSD Website)



Flooding Blackspots
水浸黑點

No. 編號	Location 地點
1	Shek Wu Wai, San Tin 新田石湖圍
2	Lam Tsuen Valley Basin 林村谷盆地
3	Chatham Road South (Granville Road to Austin Avenue) 漆咸道南 (加連威老道和柯士甸路之間)
4	Pok Fu Lam Village 薄扶林村

Remarks :

The DSD blackspots list and location map are produced based on previous flooding records and complaints received by DSD for monitoring the maintenance and mitigation measures to alleviate flooding at the blackspots. Locations susceptible to flooding problems dominated by tidal influence were not included. The blackspots list and maps should not be used as an indication of the actual or hidden flood risk at any particular location in Hong Kong.

備註：

渠務署水浸黑點名單及位置圖是根據我們以往的水浸記錄及收到的水浸投訴編制而成，用以監察該地點維修及防洪措施的進展，一些純粹因潮漲引發水浸的地點並未包括在內。水浸黑點名單及位置圖並不適用於顯示本港任何地方的實際或隱藏水浸風險。

Drawing title

Flooding Blackspots as at March 2023

水浸黑點(2023年3月情況)

Drawing no.	Scale	Date
DLD 4012C	A4 (1:300000)	Mar 2023

Office

LAND DRAINAGE DIVISION

DRAINAGE SERVICES DEPARTMENT
HONG KONG

Appendix E

Synthetic Rainfall Profile and
Its Calculation Example

Design 4-hr Rainfall Profile

Rainfall intensity is calculated according to Section 4.3.5 of SDM as below

Rain Storm Return / Period Storm Constant	2yr	10yr	50yr	200yr
a=	446.1	485	505.5	508.8
b=	3.38	3.11	3.29	3.46
c=	0.463	0.397	0.355	0.322

Rainfall Intensity(mm/hr) I =

$$F(t) = \begin{cases} \dfrac{a\left[b + 2(1-c)t\right]}{(2t+b)^{(c+1)}} & , \quad 0 \le t \le \dfrac{t_d}{2} \\ F(-t) & , \quad -\dfrac{t_d}{2} \le t \le 0 \end{cases}$$

Rainfall Depth (mm) =28.1%*[Rainfall Intensity/60]

t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)			
		2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr
120	0:00:00	0.41	0.71	1.00	1.26	70	0:50:00	0.52	0.88	1.21	1.51	20	1:40:00	0.95	1.47	1.90	2.27	30	2:30:00	0.78	1.24	1.64	1.99	80	3:20:00	0.49	0.84	1.15	1.44
119	0:01:00	0.41	0.71	1.00	1.27	69	0:51:00	0.53	0.89	1.22	1.51	19	1:41:00	0.98	1.50	1.94	2.31	31	2:31:00	0.77	1.23	1.62	1.96	81	3:21:00	0.49	0.83	1.15	1.44
118	0:02:00	0.41	0.72	1.00	1.27	68	0:52:00	0.53	0.89	1.22	1.52	18	1:42:00	1.00	1.53	1.98	2.35	32	2:32:00	0.76	1.21	1.60	1.94	82	3:22:00	0.49	0.83	1.14	1.43
117	0:03:00	0.41	0.72	1.01	1.27	67	0:53:00	0.53	0.90	1.23	1.53	17	1:43:00	1.03	1.57	2.02	2.39	33	2:33:00	0.75	1.20	1.59	1.92	83	3:23:00	0.48	0.82	1.14	1.42
116	0:04:00	0.41	0.72	1.01	1.28	66	0:54:00	0.54	0.90	1.24	1.53	16	1:44:00	1.06	1.61	2.07	2.44	34	2:34:00	0.74	1.18	1.57	1.91	84	3:24:00	0.48	0.82	1.13	1.42
115	0:05:00	0.41	0.72	1.01	1.28	65	0:55:00	0.54	0.91	1.24	1.54	15	1:45:00	1.10	1.65	2.11	2.50	35	2:35:00	0.73	1.17	1.55	1.89	85	3:25:00	0.48	0.82	1.13	1.41
114	0:06:00	0.42	0.73	1.02	1.28	64	0:56:00	0.55	0.92	1.25	1.55	14	1:46:00	1.13	1.70	2.17	2.55	36	2:36:00	0.72	1.15	1.54	1.87	86	3:26:00	0.48	0.81	1.12	1.41
113	0:07:00	0.42	0.73	1.02	1.29	63	0:57:00	0.55	0.92	1.26	1.56	13	1:47:00	1.18	1.75	2.23	2.62	37	2:37:00	0.71	1.14	1.52	1.85	87	3:27:00	0.47	0.81	1.12	1.40
112	0:08:00	0.42	0.73	1.02	1.29	62	0:58:00	0.55	0.93	1.26	1.57	12	1:48:00	1.22	1.81	2.30	2.69	38	2:38:00	0.70	1.13	1.51	1.84	88	3:28:00	0.47	0.81	1.11	1.40
111	0:09:00	0.42	0.73	1.03	1.30	61	0:59:00	0.56	0.93	1.27	1.57	11	1:49:00	1.28	1.88	2.37	2.76	39	2:39:00	0.69	1.12	1.49	1.82	89	3:29:00	0.47	0.80	1.11	1.39
110	0:10:00	0.42	0.74	1.03	1.30	60	1:00:00	0.56	0.94	1.28	1.58	10	1:50:00	1.34	1.95	2.45	2.85	40	2:40:00	0.68	1.11	1.48	1.81	90	3:30:00	0.47	0.80	1.11	1.39
109	0:11:00	0.43	0.74	1.03	1.30	59	1:01:00	0.57	0.95	1.29	1.59	9	1:51:00	1.41	2.04	2.55	2.95	41	2:41:00	0.67	1.10	1.47	1.79	91	3:31:00	0.46	0.79	1.10	1.38
108	0:12:00	0.43	0.74	1.04	1.31	58	1:02:00	0.57	0.95	1.29	1.60	8	1:52:00	1.49	2.14	2.66	3.07	42	2:42:00	0.67	1.08	1.45	1.78	92	3:32:00	0.46	0.79	1.10	1.38
107	0:13:00	0.43	0.74	1.04	1.31	57	1:03:00	0.58	0.96	1.30	1.61	7	1:53:00	1.59	2.26	2.80	3.21	43	2:43:00	0.66	1.07	1.44	1.76	93	3:33:00	0.46	0.79	1.09	1.37
106	0:14:00	0.43	0.75	1.04	1.32	56	1:04:00	0.58	0.97	1.31	1.62	6	1:54:00	1.72	2.41	2.96	3.37	44	2:44:00	0.65	1.06	1.43	1.75	94	3:34:00	0.46	0.78	1.09	1.37
105	0:15:00	0.43	0.75	1.05	1.32	55	1:05:00	0.59	0.97	1.32	1.63	5	1:55:00	1.87	2.60	3.16	3.58	45	2:45:00	0.65	1.05	1.42	1.74	95	3:35:00	0.45	0.78	1.08	1.36
104	0:16:00	0.43	0.75	1.05	1.32	54	1:06:00	0.59	0.98	1.33	1.64	4	1:56:00	2.08	2.84	3.42	3.84	46	2:46:00	0.64	1.05	1.41	1.73	96	3:36:00	0.45	0.78	1.08	1.36
103	0:17:00	0.44	0.76	1.05	1.33	53	1:07:00	0.60	0.99	1.34	1.65	3	1:57:00	2.38	3.18	3.77	4.19	47	2:47:00	0.63	1.04	1.40	1.71	97	3:37:00	0.45	0.77	1.08	1.35
102	0:18:00	0.44	0.76	1.06	1.33	52	1:08:00	0.60	1.00	1.35	1.66	2	1:58:00	2.83	3.69	4.29	4.71	48	2:48:00	0.63	1.03	1.39	1.70	98	3:38:00	0.45	0.77	1.07	1.35
101	0:19:00	0.44	0.76	1.06	1.34	51	1:09:00	0.61	1.00	1.36	1.67	1	1:59:00	3.62	4.58	5.17	5.55	49	2:49:00	0.62	1.02	1.38	1.69	99	3:39:00	0.44	0.77	1.07	1.35
100	0:20:00	0.44	0.76	1.06	1.34	50	1:10:00	0.61	1.01	1.37	1.68	0	2:00:00	5.42	6.60	7.07	7.28	50	2:50:00	0.61	1.01	1.37	1.68	100	3:40:00	0.44	0.76	1.06	1.34
99	0:21:00	0.44	0.77	1.07	1.35	49	1:11:00	0.62	1.02	1.38	1.69	1	2:01:00	3.62	4.58	5.17	5.55	51	2:51:00	0.61	1.00	1.36	1.67	101	3:41:00	0.44	0.76	1.06	1.34
98	0:22:00	0.45	0.77	1.07	1.35	48	1:12:00	0.63	1.03	1.39	1.70	2	2:02:00	2.83	3.69	4.29	4.71	52	2:52:00	0.60	1.00	1.35	1.66	102	3:42:00	0.44	0.76	1.06	1.33
97	0:23:00	0.45	0.77	1.08	1.35	47	1:13:00	0.63	1.04	1.40	1.71	3	2:03:00	2.38	3.18	3.77	4.19	53	2:53:00	0.60	0.99	1.34	1.65	103	3:43:00	0.44	0.76	1.05	1.33
96	0:24:00	0.45	0.78	1.08	1.36	46	1:14:00	0.64	1.05	1.41	1.73	4	2:04:00	2.08	2.84	3.42	3.84	54	2:54:00	0.59	0.98	1.33	1.64	104	3:44:00	0.43	0.75	1.05	1.32
95	0:25:00	0.45	0.78	1.08	1.36	45	1:15:00	0.65	1.05	1.42	1.74	5	2:05:00	1.87	2.60	3.16	3.58	55	2:55:00	0.59	0.97	1.32	1.63	105	3:45:00	0.43	0.75	1.05	1.32
94	0:26:00	0.46	0.78	1.09	1.37	44	1:16:00	0.65	1.06	1.43	1.75	6	2:06:00	1.72	2.41	2.96	3.37	56	2:56:00	0.58	0.97	1.31	1.62	106	3:46:00	0.43	0.75	1.04	1.32
93	0:27:00	0.46	0.79	1.09	1.37	43	1:17:00	0.66	1.07	1.44	1.76	7	2:07:00	1.59	2.26	2.80	3.21	57	2:57:00	0.58	0.96	1.30	1.61	107	3:47:00	0.43	0.74	1.04	1.31
92	0:28:00	0.46	0.79	1.10	1.38	42	1:18:00	0.67	1.08	1.45	1.78	8	2:08:00	1.49	2.14	2.66	3.07	58	2:58:00	0.57	0.95	1.29	1.60	108	3:48:00	0.43	0.74	1.04	1.31
91	0:29:00	0.46	0.79	1.10	1.38	41	1:19:00	0.67	1.10	1.47	1.79	9	2:09:00	1.41	2.04	2.55	2.95	59	2:59:00	0.57	0.95	1.29	1.59	109	3:49:00	0.43	0.74	1.03	1.30
90	0:30:00	0.47	0.80	1.11	1.39	40	1:20:00	0.68	1.11	1.48	1.81	10	2:10:00	1.34	1.95	2.45	2.85	60	3:00:00	0.56	0.94	1.28	1.58	110	3:50:00	0.42	0.74	1.03	1.30
89	0:31:00	0.47	0.80	1.11	1.39	39	1:21:00	0.69	1.12	1.49	1.82	11	2:11:00	1.28	1.88	2.37	2.76	61	3:01:00	0.56	0.93	1.27	1.57	111	3:51:00	0.42	0.73	1.03	1.30
88	0:32:00	0.47	0.81	1.11	1.40	38	1:22:00	0.70	1.13	1.51	1.84	12	2:12:00	1.22	1.81	2.30	2.69	62	3:02:00	0.55	0.93	1.26	1.57	112	3:52:00	0.42	0.73	1.02	1.29
87	0:33:00	0.47	0.81	1.12	1.40	37	1:23:00	0.71	1.14	1.52	1.85	13	2:13:00	1.18	1.75	2.23	2.62	63	3:03:00	0.55	0.92	1.26	1.56	113	3:53:00	0.42	0.73	1.02	1.29
86	0:34:00	0.48	0.81	1.12	1.41	36	1:24:00	0.72	1.15	1.54	1.87	14	2:14:00	1.13	1.70	2.17	2.55	64	3:04:00	0.55	0.92	1.25	1.55	114	3:54:00	0.42	0.73	1.02	1.28
85	0:35:00	0.48	0.82	1.13	1.41	35	1:25:00	0.73	1.17	1.55	1.89	15	2:15:00	1.10	1.65	2.11	2.50	65	3:05:00	0.54	0.91	1.24	1.54	115	3:55:00	0.41	0.72	1.01	1.28
84	0:36:00	0.48	0.82	1.13	1.42	34	1:26:00	0.74	1.18	1.57	1.91	16	2:16:00	1.06	1.61	2.07	2.44	66	3:06:00	0.54	0.90	1.24	1.53	116	3:56:00	0.41	0.72	1.01	1.28
83	0:37:00	0.48	0.82	1.14	1.42	33	1:27:00	0.75	1.20	1.59	1.92	17	2:17:00	1.03	1.57	2.02	2.39	67	3:07:00	0.53	0.90	1.23	1.53	117	3:57:00	0.41	0.72	1.01	1.27
82	0:38:00	0.49	0.83	1.14	1.43	32	1:28:00	0.76	1.21	1.60	1.94	18	2:18:00	1.00	1.53	1.98	2.35	68	3:08:00	0.53	0.89	1.22	1.52	118	3:58:00	0.41	0.72	1.00	1.27
81	0:39:00	0.49	0.83	1.15	1.44	31	1:29:00	0.77	1.23	1.62	1.96	19	2:19:00	0.98	1.50	1.94	2.31	69	3:09:00	0.53	0.89	1.22	1.51	119	3:59:00	0.41	0.71	1.00	1.27
80	0:40:00	0.49	0.84	1.15	1.44	30	1:30:00	0.78	1.24	1.64	1.99	20	2:20:00	0.95	1.47	1.90	2.27	70	3:10:00	0.52	0.88	1.21	1.51	120	4:00:00	0.41	0.71	1.00	1.26
79	0:41:00	0.49	0.84	1.16	1.45	29	1:31:00	0.80	1.26	1.66	2.01	21	2:21:00	0.93	1.44	1.87	2.23	71	3:11:00	0.52	0.88	1.20	1.50						
78	0:42:00	0.50	0.85	1.16	1.45	28	1:32:00	0.81	1.28	1.68	2.03	22	2:22:00	0.91	1.41	1.84	2.20	72	3:12:00	0.52	0.87	1.20	1.49						
77	0:43:00	0.50	0.85	1.17	1.46	27	1:33:00	0.82	1.30	1.71	2.06	23	2:23:00	0.89	1.39	1.81	2.17	73	3:13:00	0.51	0.87	1.19	1.48						
76	0:44:00	0.50	0.85	1.17	1.47	26	1:34:00	0.84	1.32	1.73	2.08	24	2:24:00	0.87	1.36	1.78	2.14	74	3:14:00	0.51	0.86	1.19	1.48						
75	0:45:00	0.51	0.86	1.18	1.47	25	1:35:00	0.86	1.34	1.75	2.11	25	2:25:00	0.86	1.34	1.75	2.11	75	3:15:00	0.51	0.86	1.18	1.47	**4-hr Total Rainfall Depth(mm)**		**180.44**	**281.91**	**369.83**	**446.05**
74	0:46:00	0.51	0.86	1.19	1.48	24	1:36:00	0.87	1.36	1.78	2.14	26	2:26:00	0.84	1.32	1.73	2.08	76	3:16:00	0.50	0.85	1.17	1.47						
73	0:47:00	0.51	0.87	1.19	1.48	23	1:37:00	0.89	1.39	1.81	2.17	27	2:27:00	0.82	1.30	1.71	2.06	77	3:17:00	0.50	0.85	1.17	1.46						
72	0:48:00	0.52	0.87	1.20	1.49	22	1:38:00	0.91	1.41	1.84	2.20	28	2:28:00	0.81	1.28	1.68	2.03	78	3:18:00	0.50	0.85	1.16	1.45						
71	0:49:00	0.52	0.88	1.20	1.50	21	1:39:00	0.93	1.44	1.87	2.23	29	2:29:00	0.80	1.26	1.66	2.01	79	3:19:00	0.49	0.84	1.16	1.45						

Noted:

i. The storm constants are based on the SDM Corrigendum No. 1/2024

ii. The climate change effect is adopted in accordance with the DSD-SDM. A total increase of 28.1% in rainfall is added to above four design rainfall profiles, including 16% increase due to climate change up to end of 21st Century as per Table 28 of the SDM Corrigendum No. 1/2022 and 12.1% increase for design allowance as per Table 31 of the SDM Corrigendum No. 1/2022.

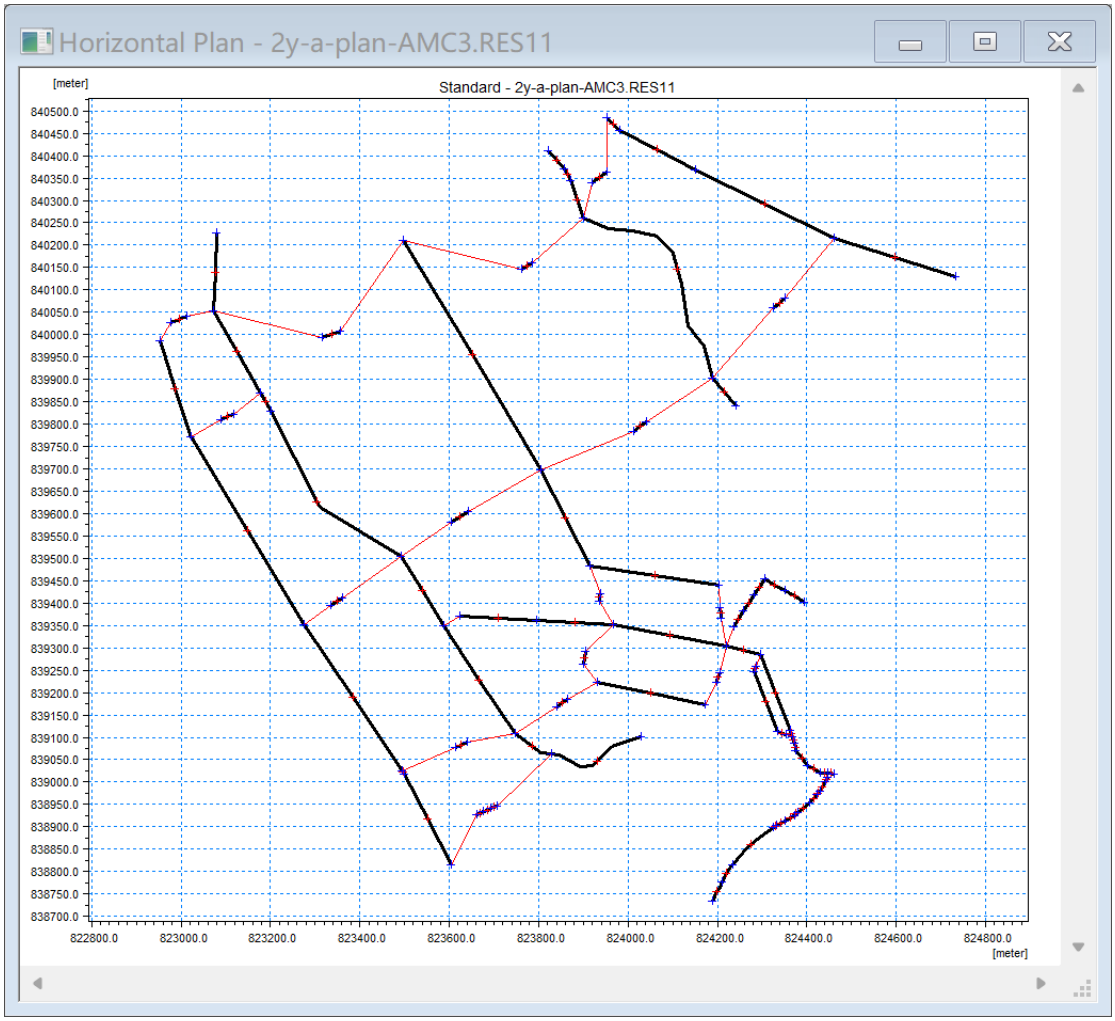
Calculational Examples：1 in 2yr 0:00:00(t=120) Rainfall Depth =28.1%*[446.1*[3.38+2*(1-0.463)*120]/(2*120+3.38)$^{0.463+1}$]/60=0.41 (mm)

Appendix F

Catchment Characteristic Input for
MP02A-A1 to A8 and AA-AE
(Information Extracted from Mike11 RR Model)
&
Modelling settings in Mike 11 for Wetland
Restoration Area

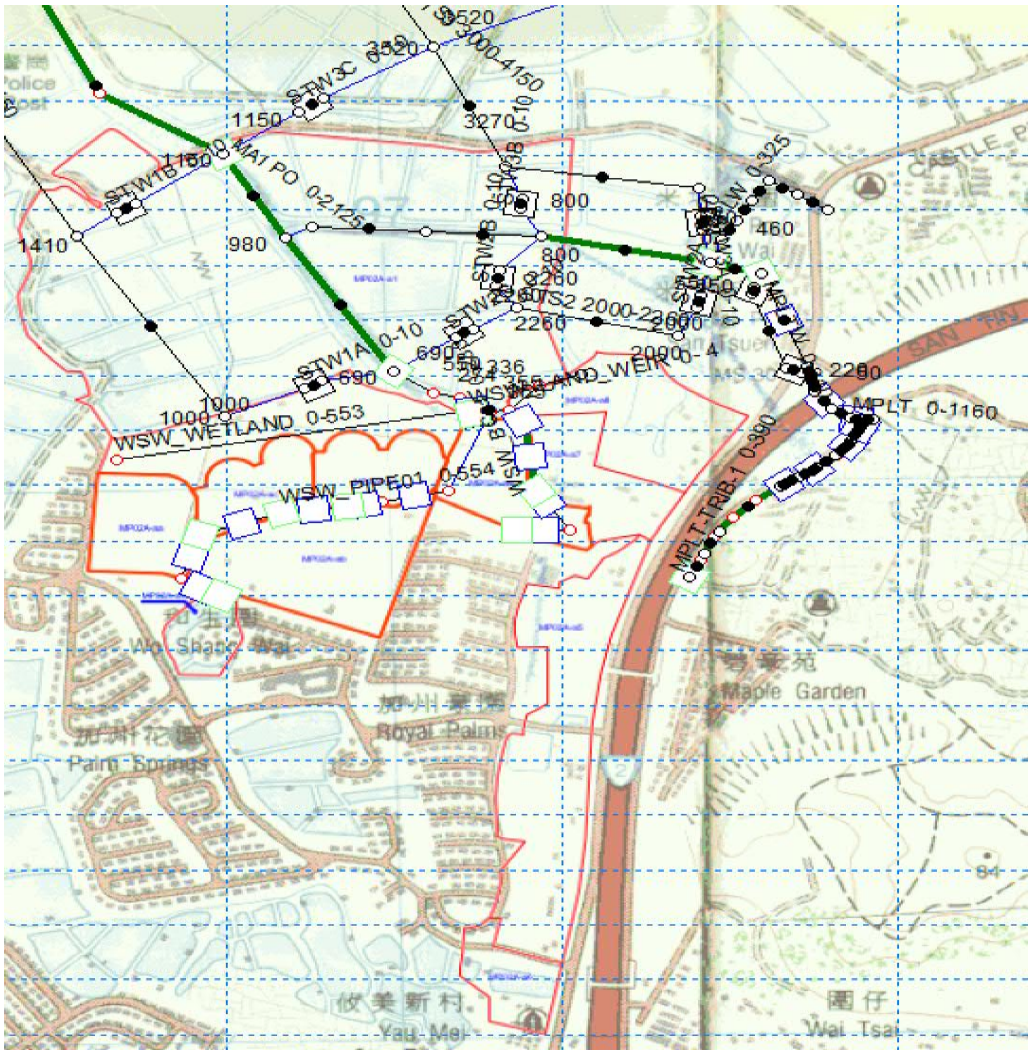
Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Drainage Network



Catchment Characteristic Input in Mike 11 Hydraulic Model

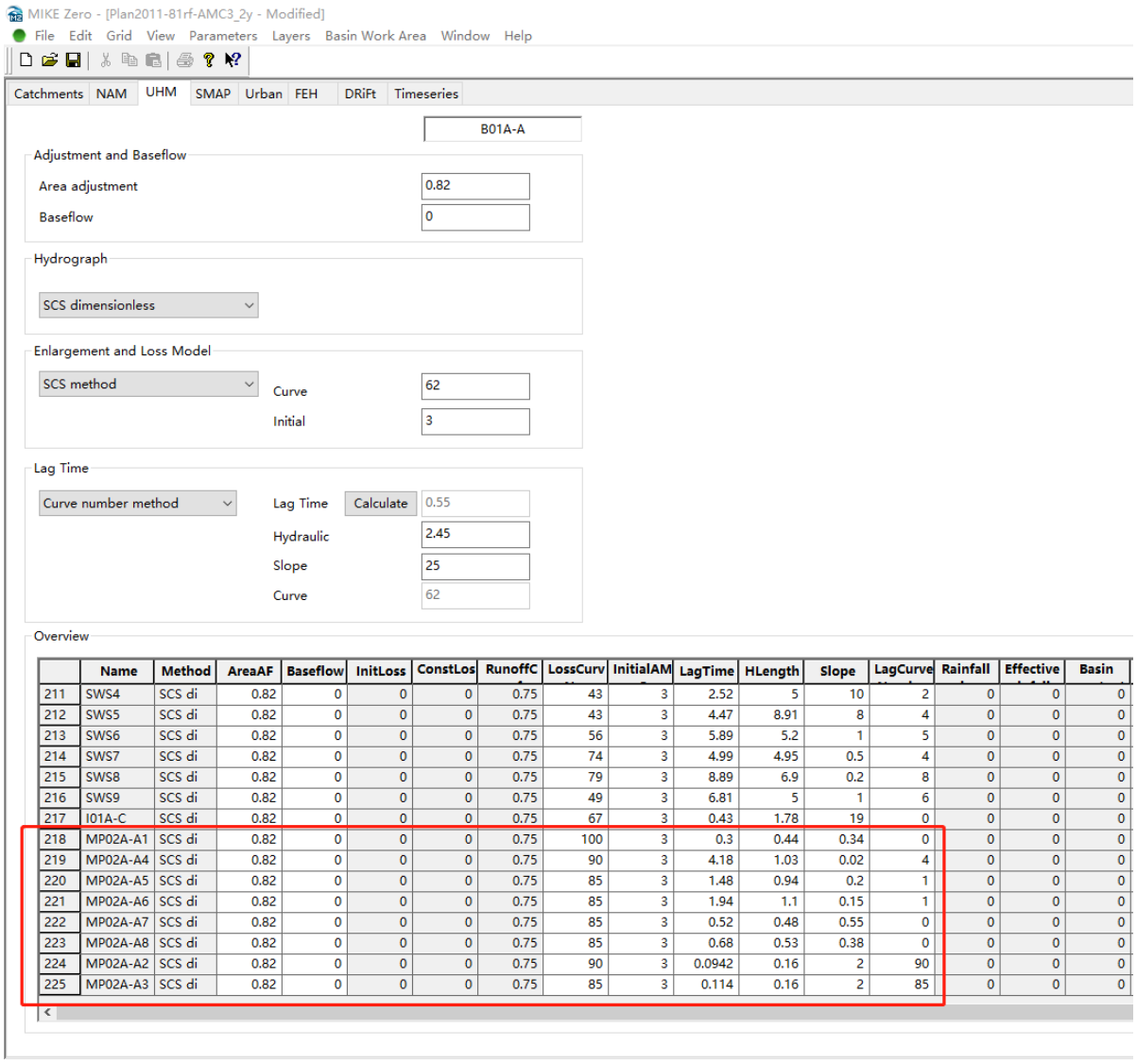
Post-Development Drainage Network



Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Condition of Catchment MP02A-A1 to A8

(Areal reduction factors of 0.82 and AMC 3 as example)

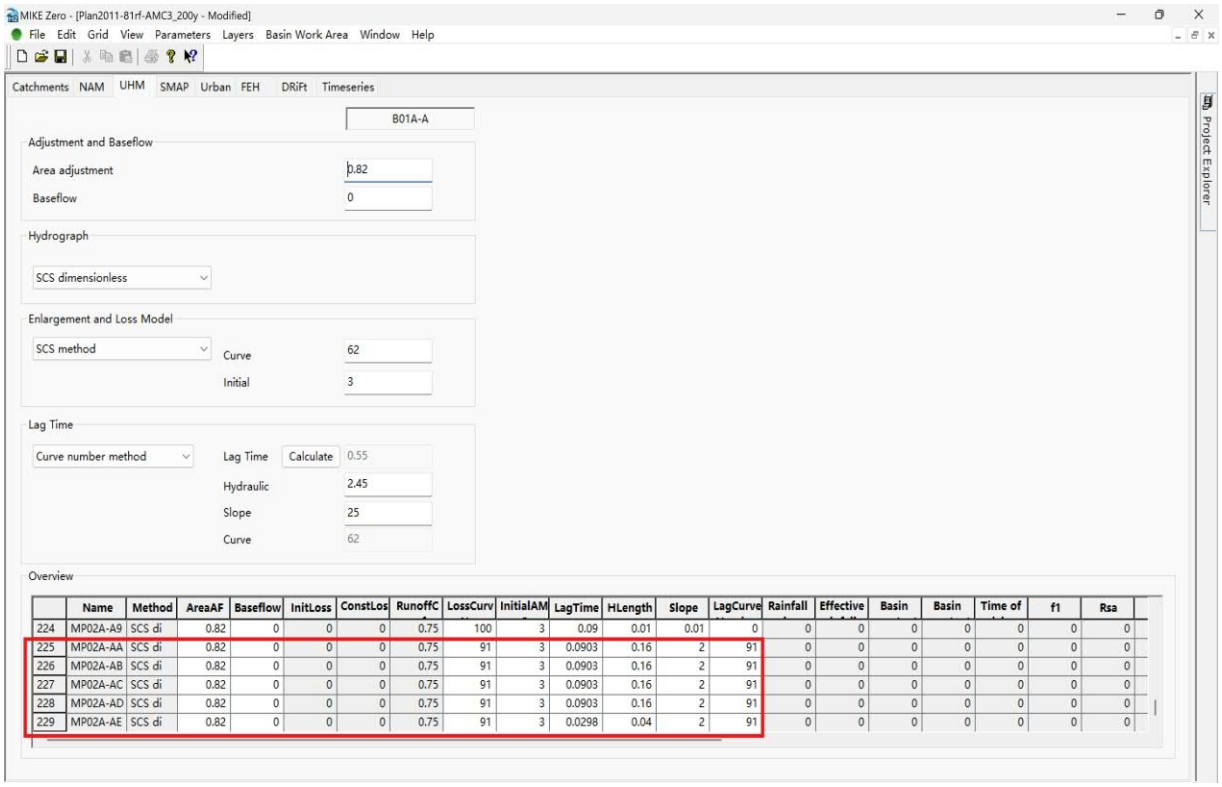


	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin
211	SWS4	SCS di	0.82	0	0	0	0.75	43	3	2.52	5	10	2	0	0	0
212	SWS5	SCS di	0.82	0	0	0	0.75	43	3	4.47	8.91	8	4	0	0	0
213	SWS6	SCS di	0.82	0	0	0	0.75	56	3	5.89	5.2	1	5	0	0	0
214	SWS7	SCS di	0.82	0	0	0	0.75	74	3	4.99	4.95	0.5	4	0	0	0
215	SWS8	SCS di	0.82	0	0	0	0.75	79	3	8.89	6.9	0.2	8	0	0	0
216	SWS9	SCS di	0.82	0	0	0	0.75	49	3	6.81	5	1	6	0	0	0
217	I01A-C	SCS di	0.82	0	0	0	0.75	67	3	0.43	1.78	19	0	0	0	0
218	MP02A-A1	SCS di	0.82	0	0	0	0.75	100	3	0.3	0.44	0.34	0	0	0	0
219	MP02A-A4	SCS di	0.82	0	0	0	0.75	90	3	4.18	1.03	0.02	4	0	0	0
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0
224	MP02A-A2	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
225	MP02A-A3	SCS di	0.82	0	0	0	0.75	85	3	0.114	0.16	2	85	0	0	0

Catchment Characteristic Input in Mike 11 Hydraulic Model

Post-Development Condition of Catchment MP02A-AA to AE

(Areal reduction factors of 0.82 and AMC 3 as example)

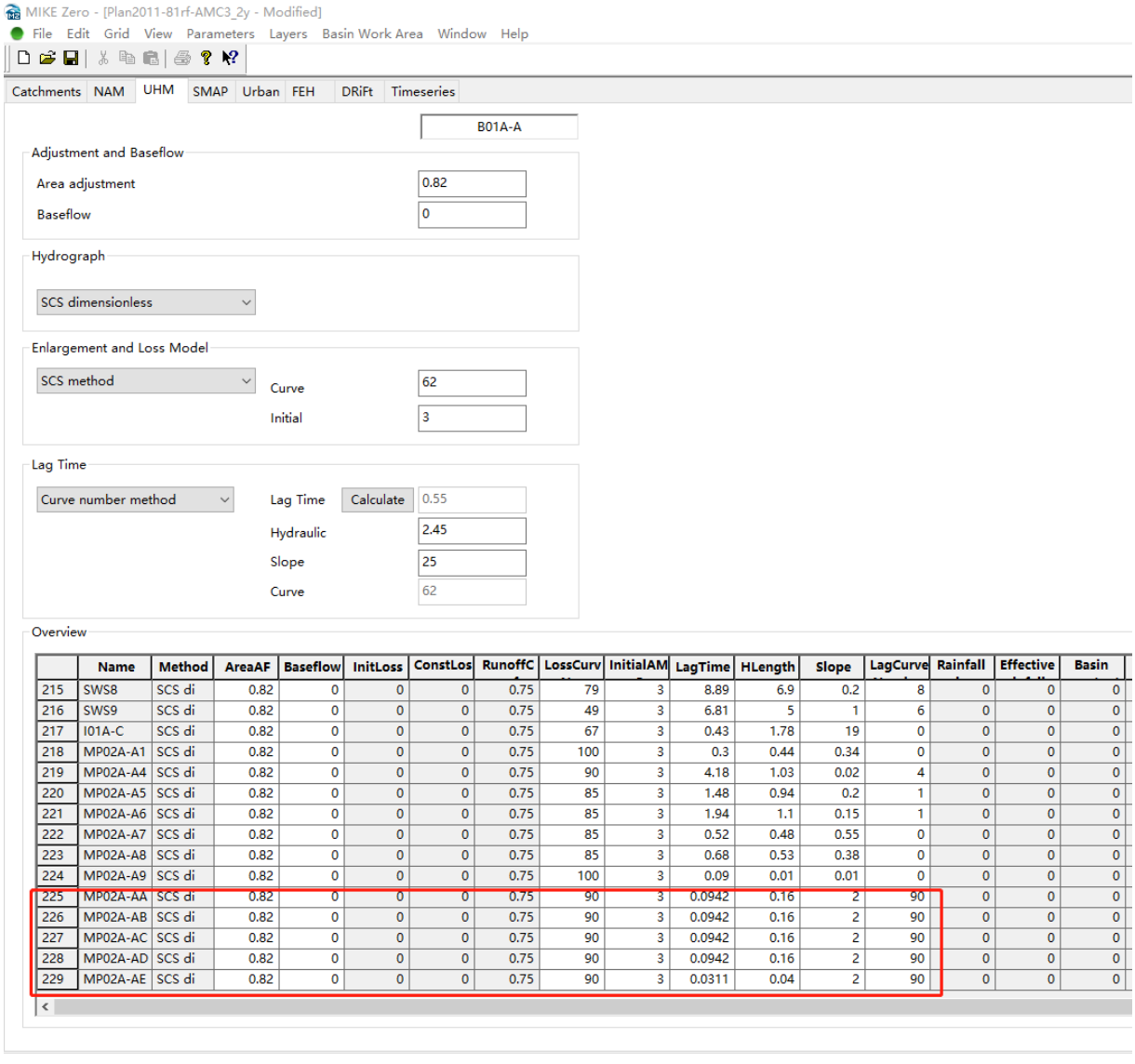


	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin	Basin	Time of	f1	Rsa
224	MP02A-A9	SCS di	0.82	0	0	0	0.75	100	3	0.09	0.01	0.01	0	0	0	0	0	0	0	0
225	MP02A-AA	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
226	MP02A-AB	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
227	MP02A-AC	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
228	MP02A-AD	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
229	MP02A-AE	SCS di	0.82	0	0	0	0.75	91	3	0.0298	0.04	2	91	0	0	0	0	0	0	0

Catchment Characteristic Input in Mike 11 Hydraulic Model in Previous Approved DIA in March 2024

Post-Development Condition of Catchment MP02A-AA to AE

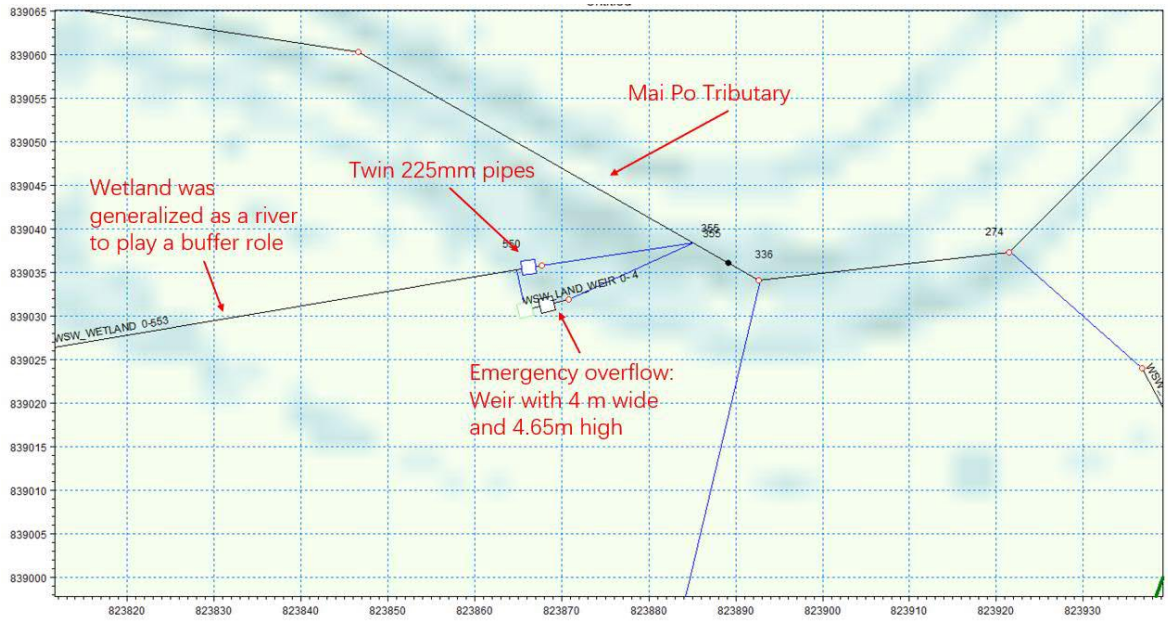
(Areal reduction factors of 0.82 and AMC 3 as example)



	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin
215	SWS8	SCS di	0.82	0	0	0	0.75	79	3	8.89	6.9	0.2	8	0	0	0
216	SWS9	SCS di	0.82	0	0	0	0.75	49	3	6.81	5	1	6	0	0	0
217	I01A-C	SCS di	0.82	0	0	0	0.75	67	3	0.43	1.78	19	0	0	0	0
218	MP02A-A1	SCS di	0.82	0	0	0	0.75	100	3	0.3	0.44	0.34	0	0	0	0
219	MP02A-A4	SCS di	0.82	0	0	0	0.75	90	3	4.18	1.03	0.02	4	0	0	0
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0
224	MP02A-A9	SCS di	0.82	0	0	0	0.75	100	3	0.09	0.01	0.01	0	0	0	0
225	MP02A-AA	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
226	MP02A-AB	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
227	MP02A-AC	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
228	MP02A-AD	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
229	MP02A-AE	SCS di	0.82	0	0	0	0.75	90	3	0.0311	0.04	2	90	0	0	0

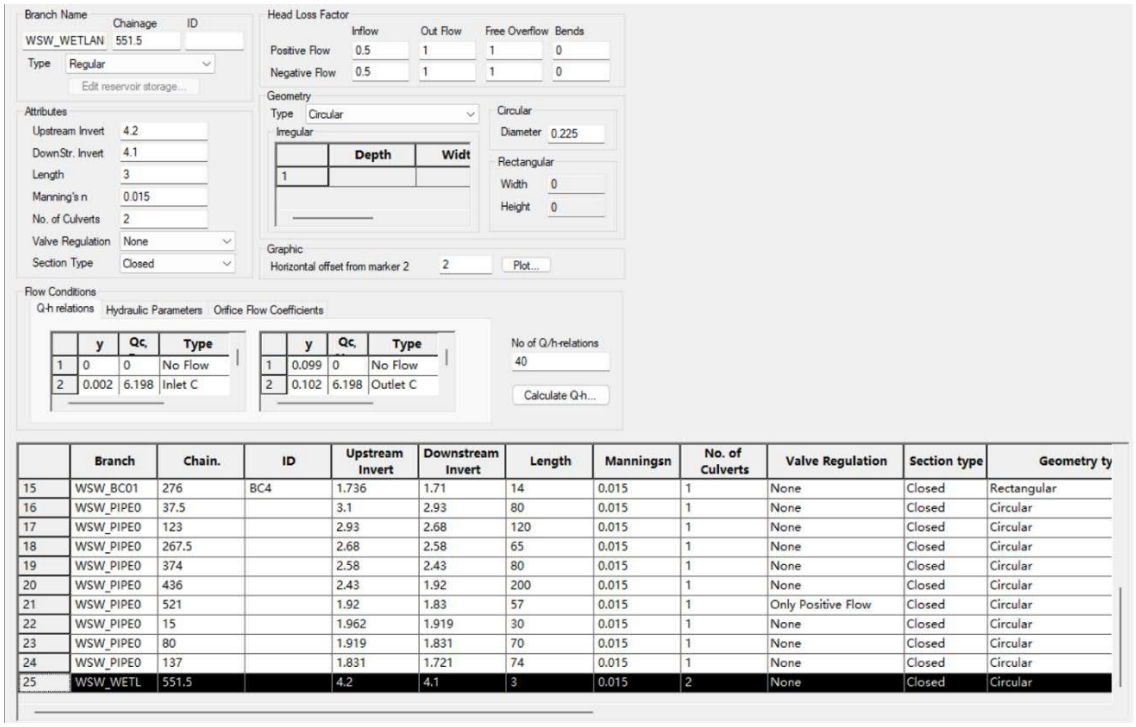
Modelling settings in Mike 11 for Wetland Restoration Area

Wetland Network



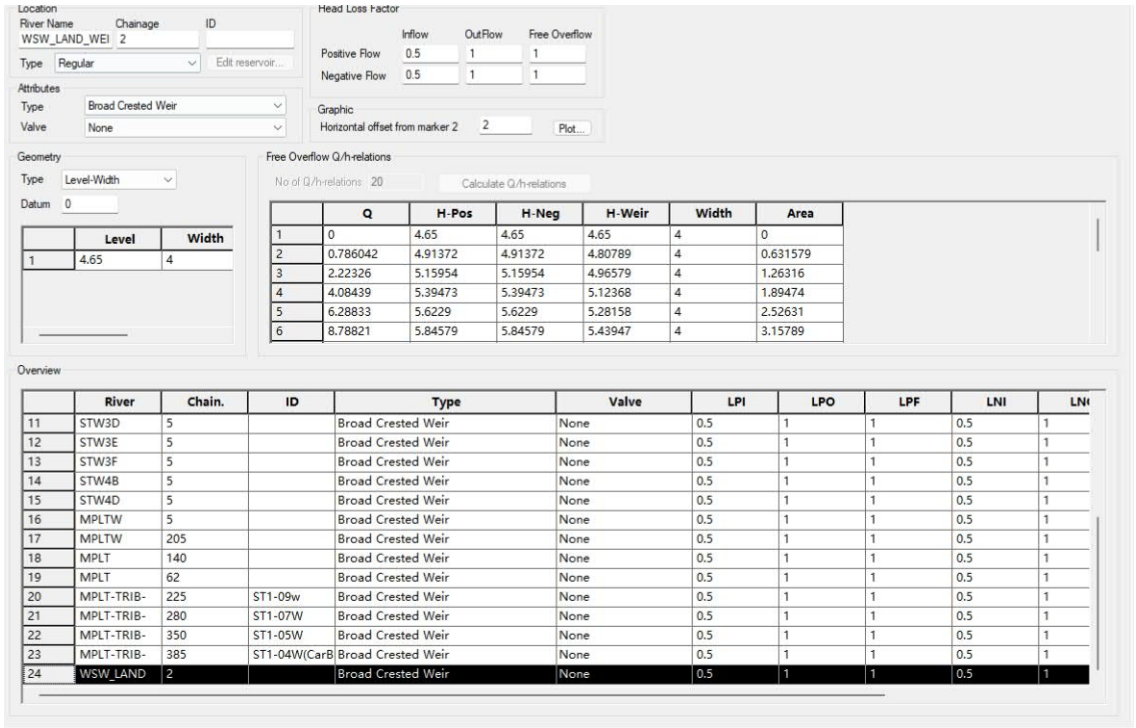
Modelling settings in Mike 11 for Wetland Restoration Area

a. Twin 225mm pipes



	Branch	Chain.	ID	Upstream Invert	Downstream Invert	Length	Manningsn	No. of Culverts	Valve Regulation	Section type	Geometry ty
15	WSW_BC01	276	BC4	1.736	1.71	14	0.015	1	None	Closed	Rectangular
16	WSW_PIPE0	37.5		3.1	2.93	80	0.015	1	None	Closed	Circular
17	WSW_PIPE0	123		2.93	2.68	120	0.015	1	None	Closed	Circular
18	WSW_PIPE0	267.5		2.68	2.58	65	0.015	1	None	Closed	Circular
19	WSW_PIPE0	374		2.58	2.43	80	0.015	1	None	Closed	Circular
20	WSW_PIPE0	436		2.43	1.92	200	0.015	1	None	Closed	Circular
21	WSW_PIPE0	521		1.92	1.83	57	0.015	1	Only Positive Flow	Closed	Circular
22	WSW_PIPE0	15		1.962	1.919	30	0.015	1	None	Closed	Circular
23	WSW_PIPE0	80		1.919	1.831	70	0.015	1	None	Closed	Circular
24	WSW_PIPE0	137		1.831	1.721	74	0.015	1	None	Closed	Circular
25	WSW_WETL	551.5		4.2	4.1	3	0.015	2	None	Closed	Circular

b. Emergency Overflow: Weir



	Q	H-Pos	H-Neg	H-Weir	Width	Area
1	0	4.65	4.65	4.65	4	0
2	0.786042	4.91372	4.91372	4.80789	4	0.631579
3	2.22326	5.15954	5.15954	4.96579	4	1.26316
4	4.08439	5.39473	5.39473	5.12368	4	1.89474
5	6.28833	5.6229	5.6229	5.28158	4	2.52631
6	8.78821	5.84579	5.84579	5.43947	4	3.15789

Overview

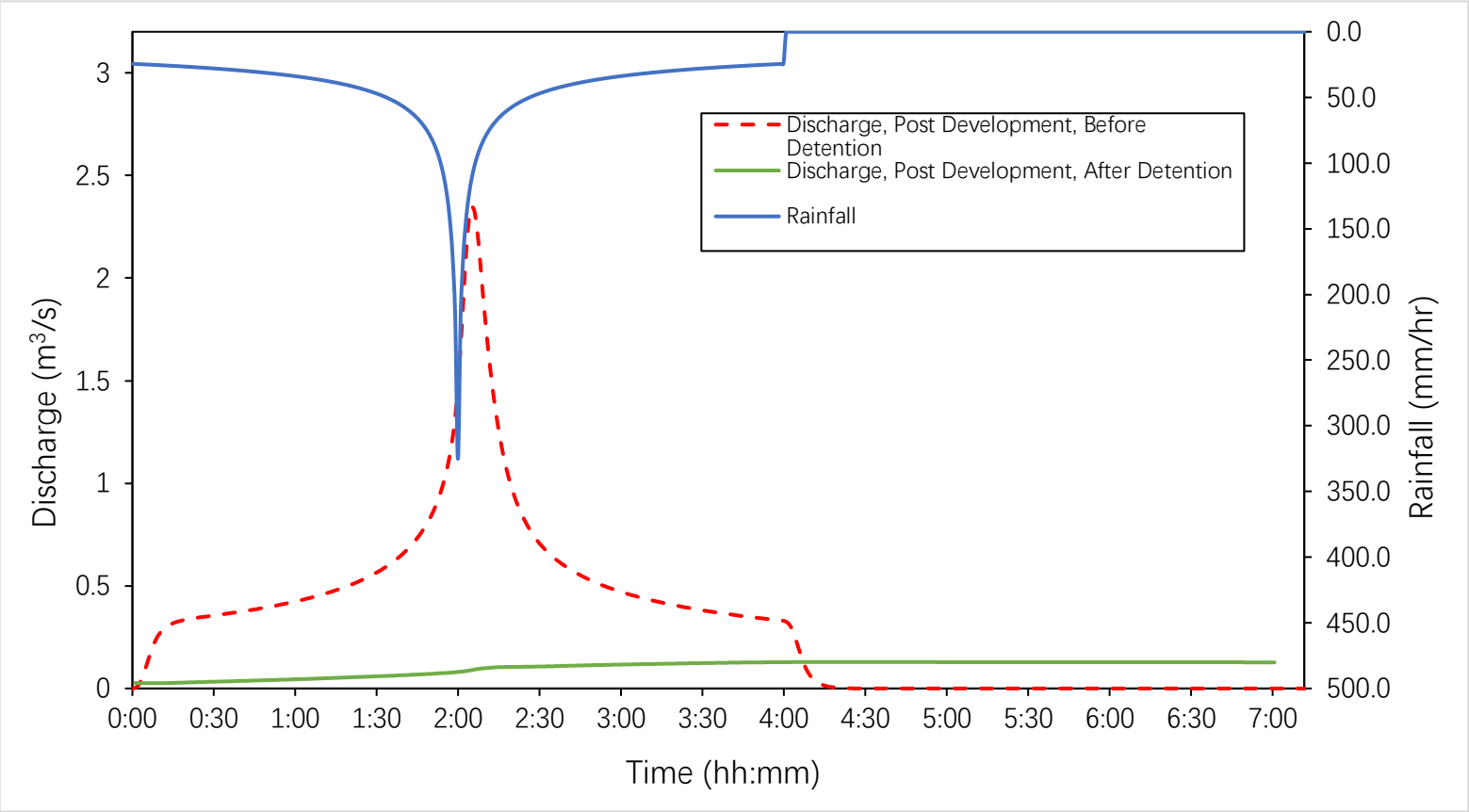
	River	Chain.	ID	Type	Valve	LPI	LPO	LPF	LNI	LN
11	STW3D	5		Broad Crested Weir	None	0.5	1	1	0.5	1
12	STW3E	5		Broad Crested Weir	None	0.5	1	1	0.5	1
13	STW3F	5		Broad Crested Weir	None	0.5	1	1	0.5	1
14	STW4B	5		Broad Crested Weir	None	0.5	1	1	0.5	1
15	STW4D	5		Broad Crested Weir	None	0.5	1	1	0.5	1
16	MPLTW	5		Broad Crested Weir	None	0.5	1	1	0.5	1
17	MPLTW	205		Broad Crested Weir	None	0.5	1	1	0.5	1
18	MPLT	140		Broad Crested Weir	None	0.5	1	1	0.5	1
19	MPLT	62		Broad Crested Weir	None	0.5	1	1	0.5	1
20	MPLT-TRIB-	225	ST1-09w	Broad Crested Weir	None	0.5	1	1	0.5	1
21	MPLT-TRIB-	280	ST1-07W	Broad Crested Weir	None	0.5	1	1	0.5	1
22	MPLT-TRIB-	350	ST1-05W	Broad Crested Weir	None	0.5	1	1	0.5	1
23	MPLT-TRIB-	385	ST1-04W(CarB	Broad Crested Weir	None	0.5	1	1	0.5	1
24	WSW_LAND	2		Broad Crested Weir	None	0.5	1	1	0.5	1

Appendix G

Hydrograph of Wetland Restoration Area

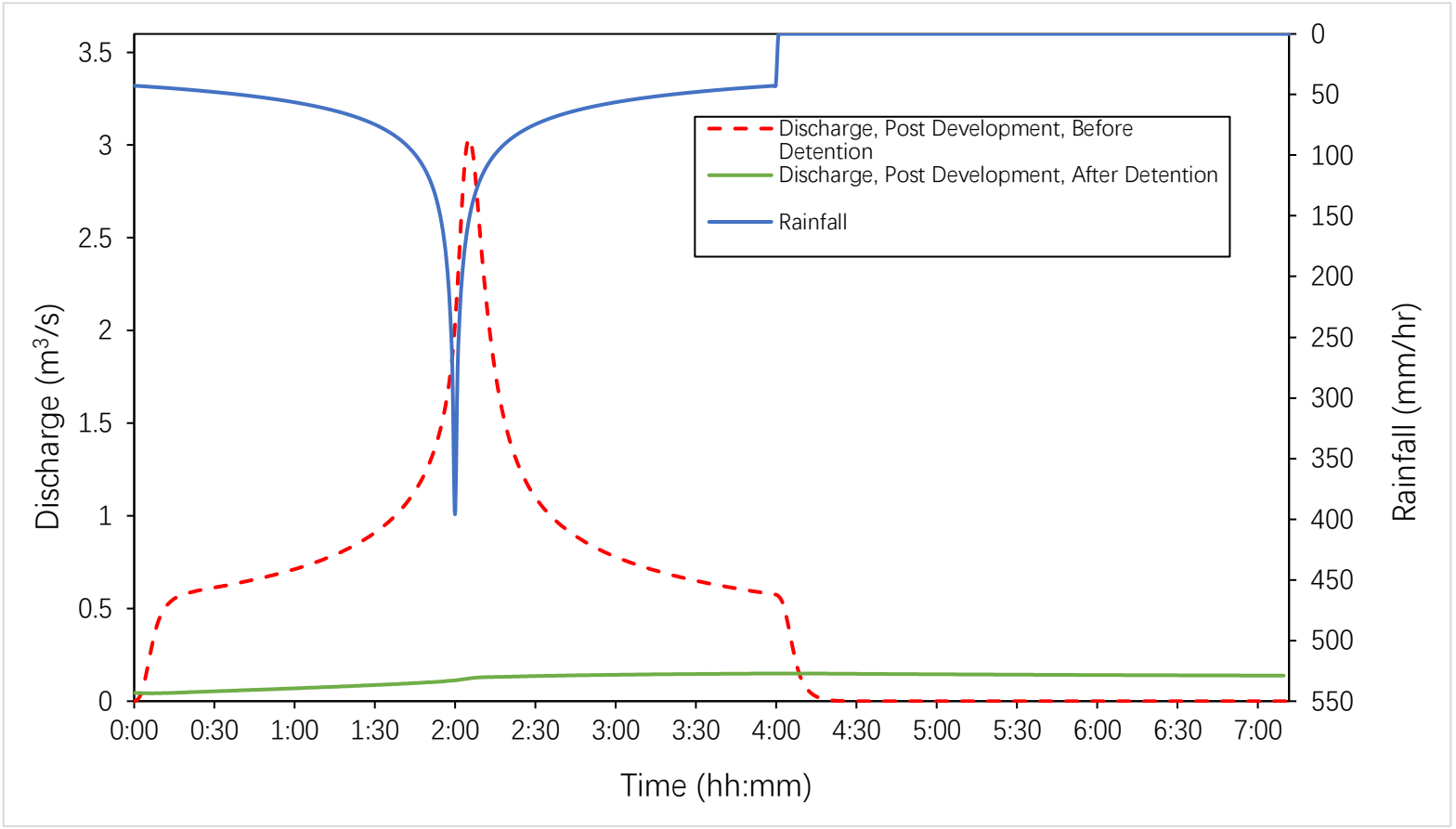
Hydrograph of Wetland Restoration Area

2yr Rainstorm Event, AMC3, RF=1.0



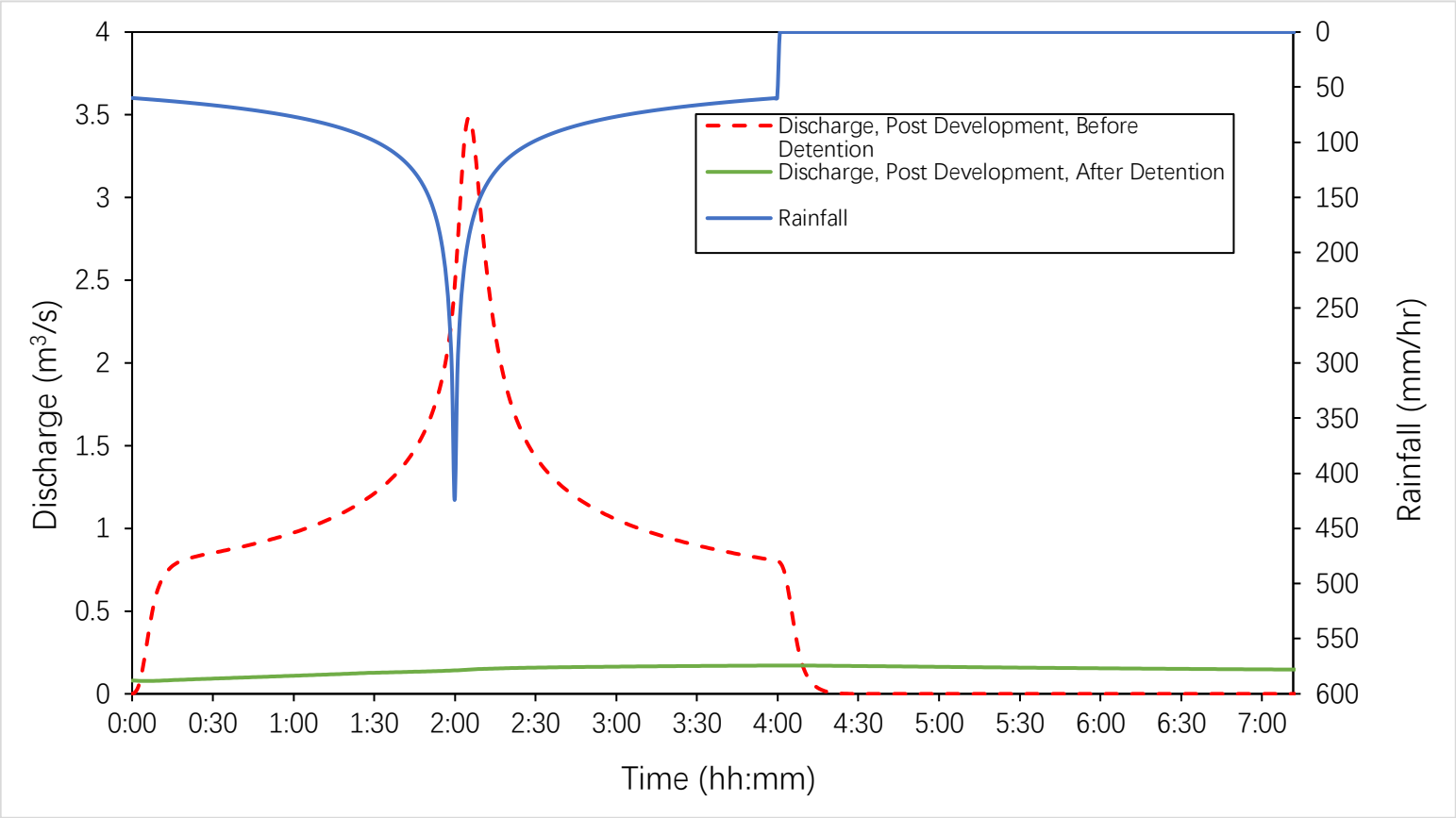
Hydrograph of Wetland Restoration Area

10yr Rainstorm Event, AMC3, RF=1.0



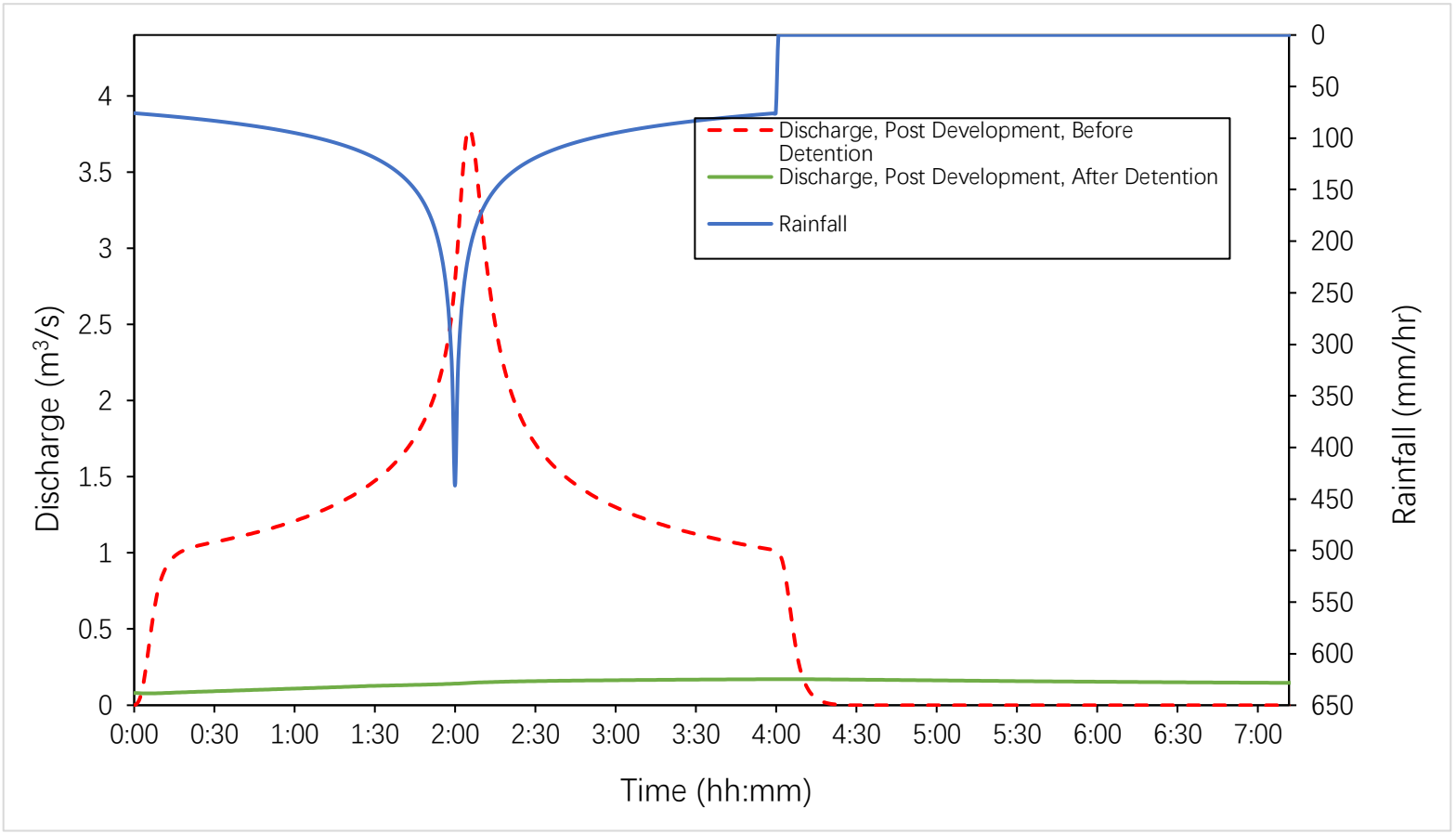
Hydrograph of Wetland Restoration Area

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Wetland Restoration Area

200yr Rainstorm Event, AMC3, RF=1.0

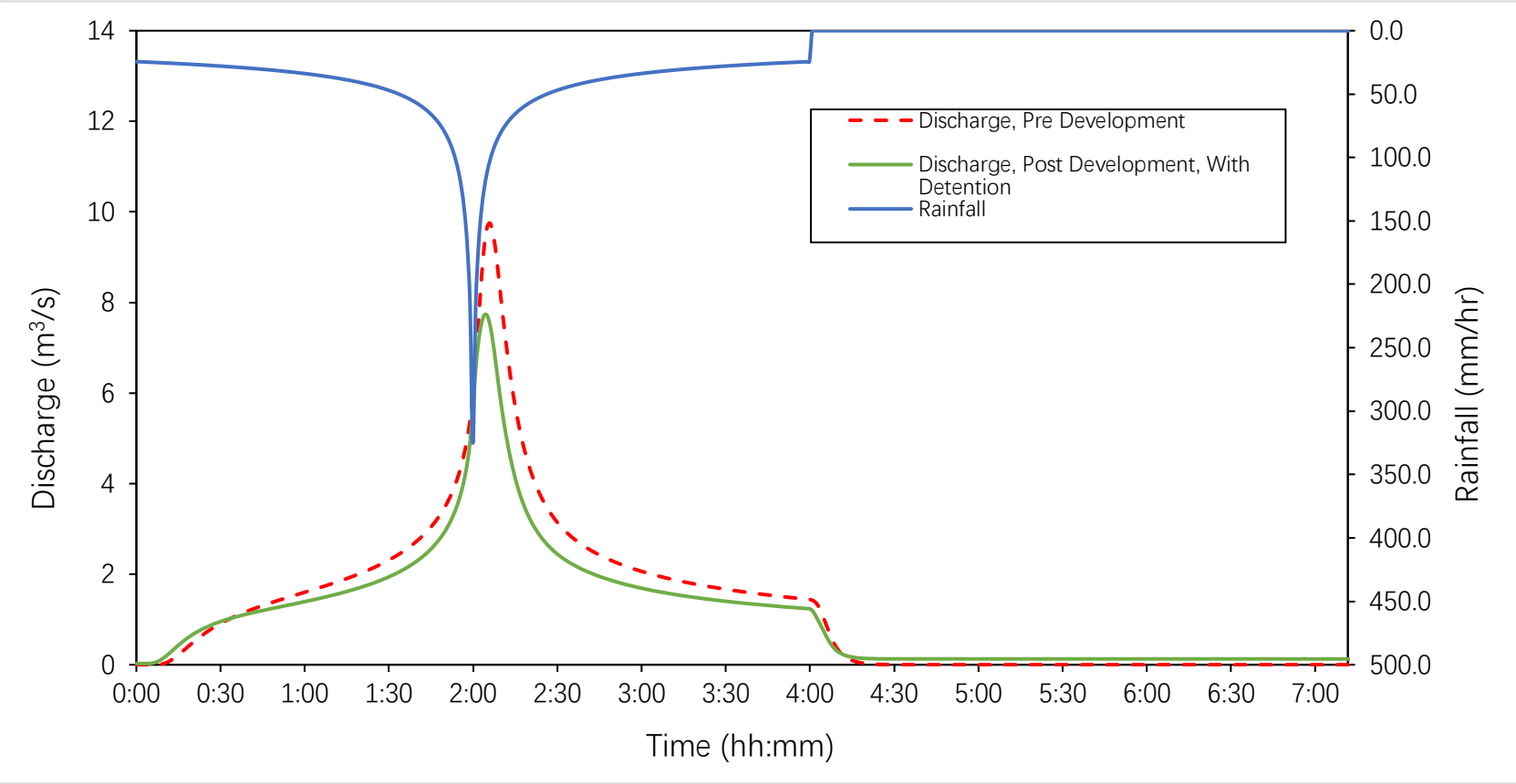


Appendix H

Hydrograph of the Proposed Development

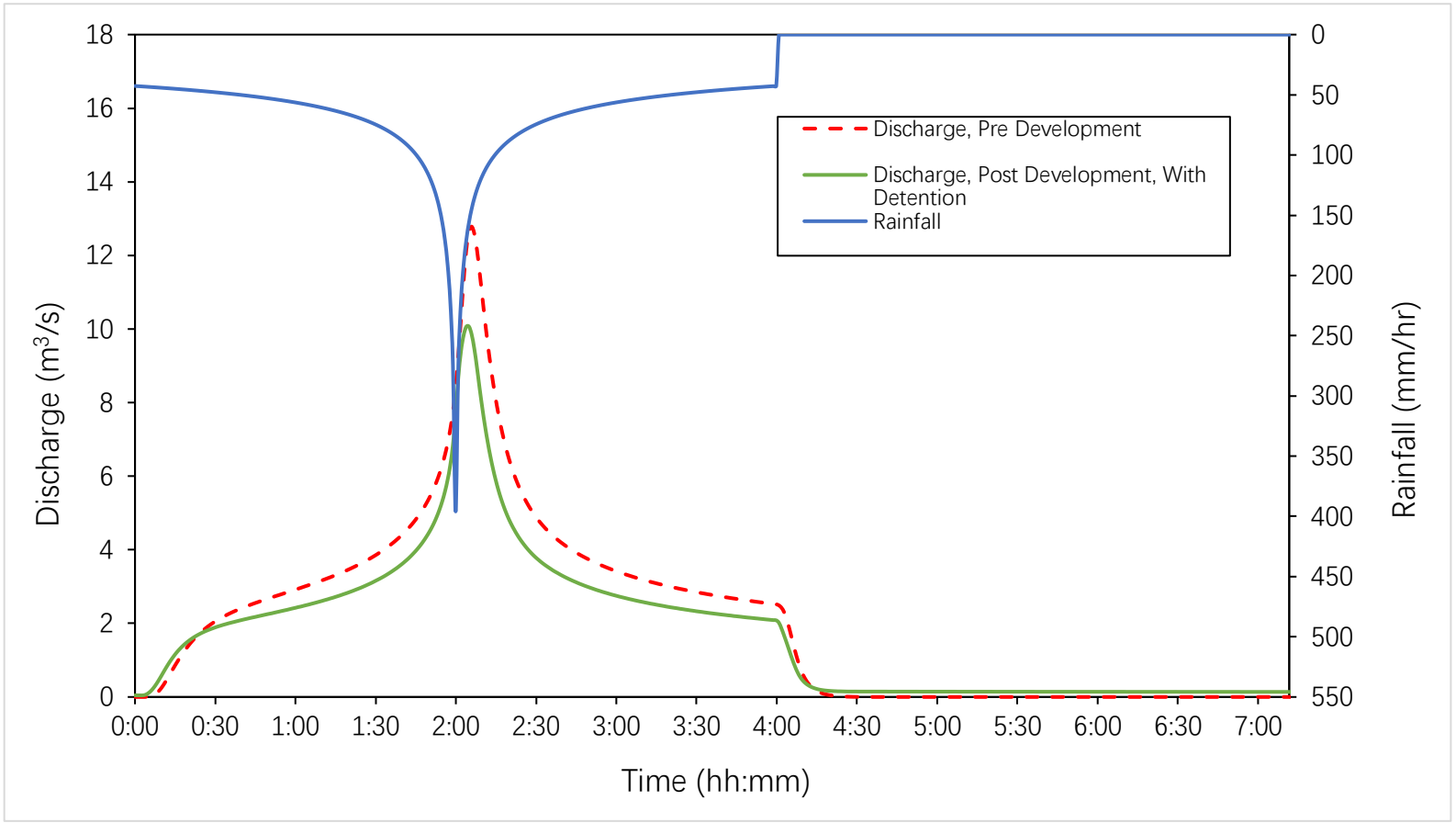
Hydrograph of Proposed Development

2yr Rainstorm Event, AMC3, RF=1.0



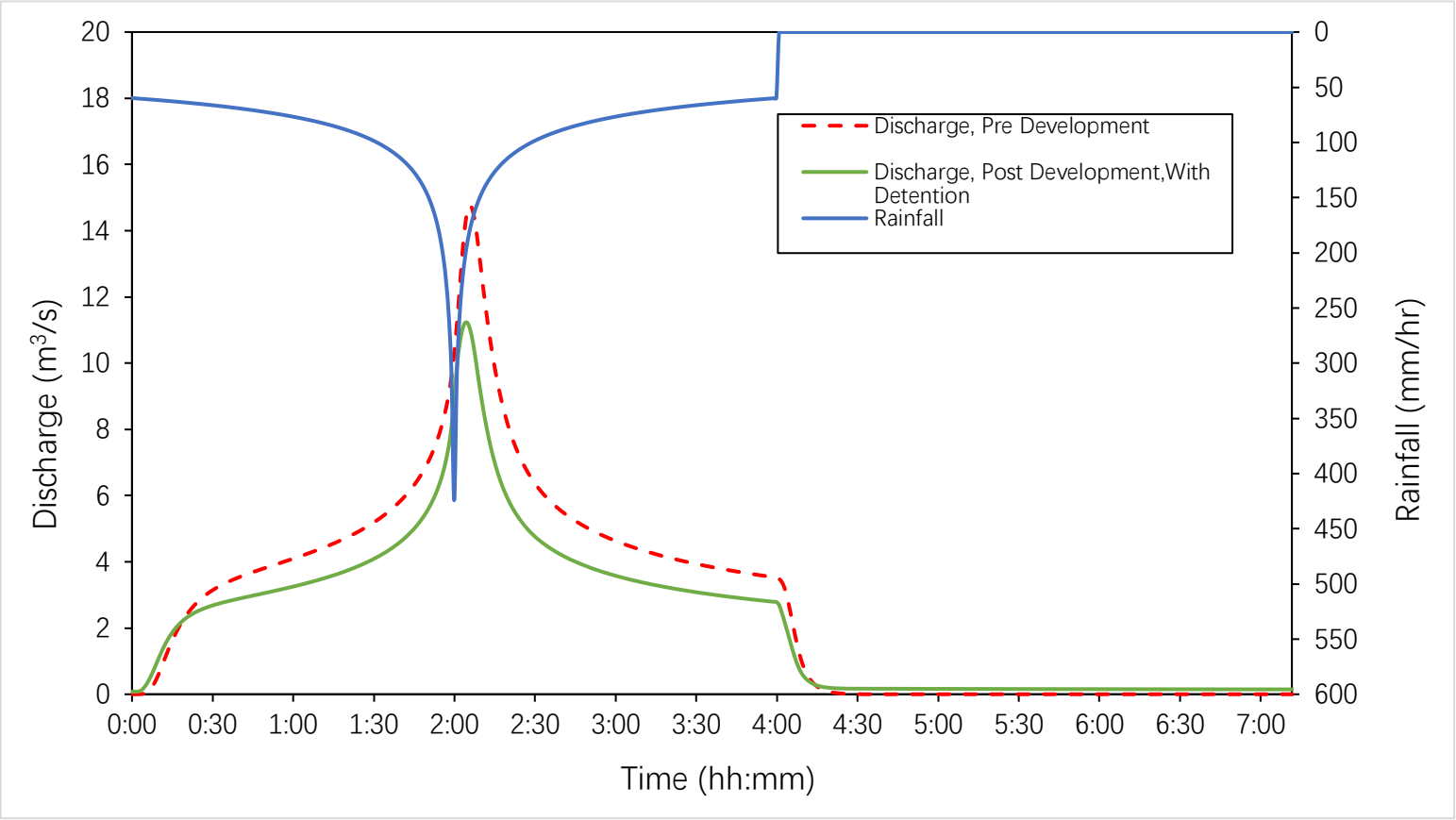
Hydrograph of Proposed Development

10yr Rainstorm Event, AMC3, RF=1.0



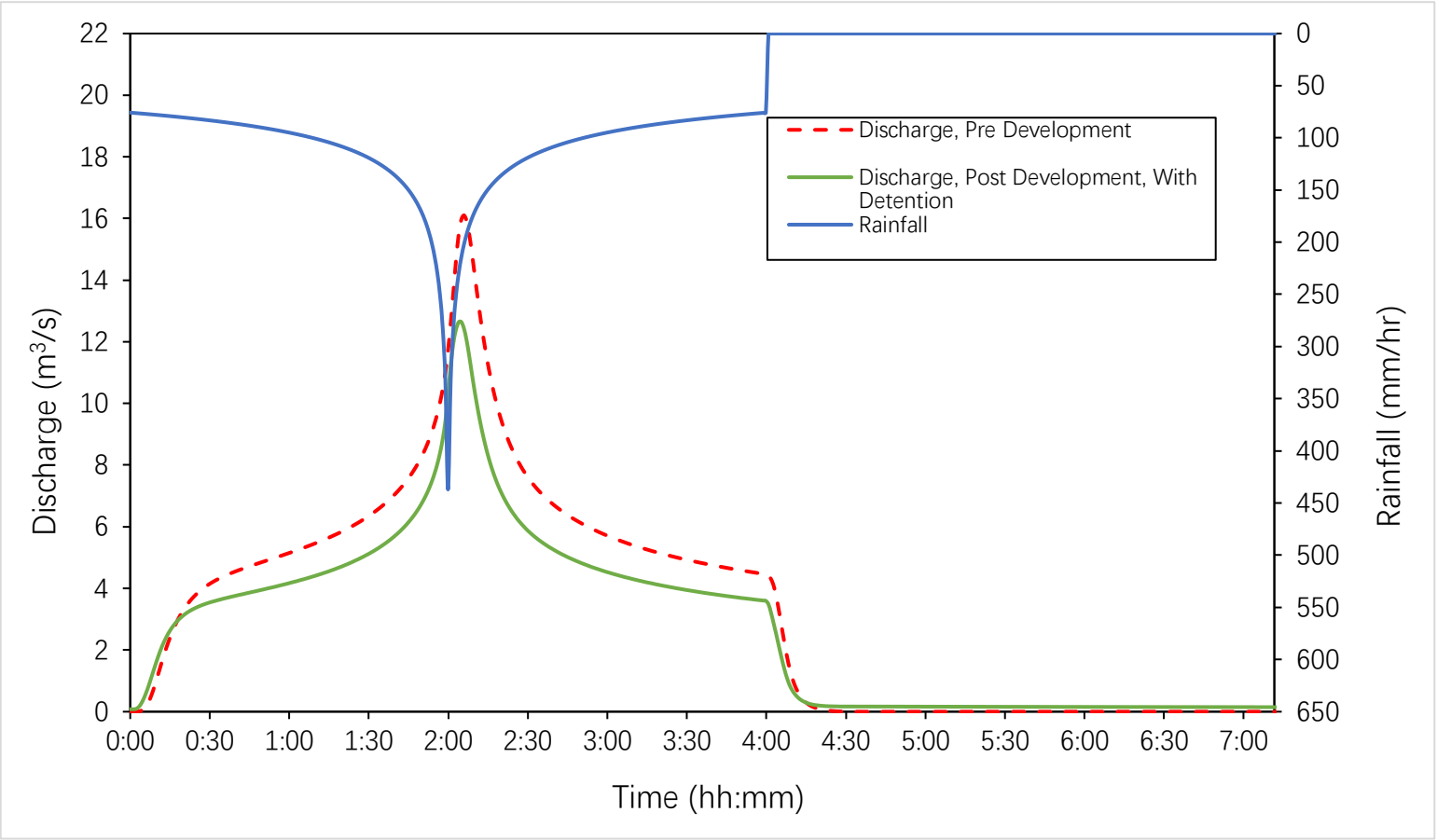
Hydrograph of Proposed Development

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Proposed Development

200yr Rainstorm Event, AMC3, RF=1.0



Appendix I

Summary of Hydrodynamic Modelling Results

(AMC3, Scenario C)

Pre-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c(m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.569	4.571	3.742	4.398	3.835	4.305	3.890	4.250
MAI PO 490	3.563	4.577	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 490	3.563	4.577	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 980	3.557	4.583	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 980	3.557	4.583	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1620	3.281	4.859	3.687	4.453	3.809	4.331	3.867	4.273
MAI PO 1630	3.040	5.100	3.445	4.695	3.726	4.414	3.818	4.322
MAI PO 1630	3.040	5.100	3.445	4.695	3.726	4.414	3.818	4.322
MAI PO 1880	2.737	5.403	3.307	4.833	3.657	4.483	3.756	4.384
MAI PO 1180	2.737	5.403	3.307	4.833	3.657	4.483	3.756	4.384
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Post-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c (m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.548	4.592	3.732	4.408	3.835	4.305	3.890	4.250
MAI PO 274	3.548	4.592	3.732	4.408	3.836	4.304	3.889	4.251
MAI PO 274	3.548	4.592	3.732	4.408	3.836	4.304	3.889	4.251
MAI PO 336	3.548	4.592	3.732	4.408	3.834	4.306	3.889	4.251
MAI PO 336	3.548	4.592	3.732	4.408	3.834	4.306	3.889	4.251
MAI PO 355	3.548	4.592	3.731	4.409	3.834	4.306	3.888	4.252
MAI PO 355	3.548	4.592	3.731	4.409	3.834	4.306	3.888	4.252
MAI PO 690	3.545	4.595	3.727	4.413	3.827	4.313	3.878	4.262
MAI PO 690	3.545	4.595	3.727	4.413	3.827	4.313	3.878	4.262
MAI PO 980	3.537	4.603	3.722	4.418	3.822	4.318	3.874	4.266
MAI PO 980	3.537	4.603	3.722	4.418	3.822	4.318	3.874	4.266
MAI PO 1150	3.425	4.715	3.707	4.433	3.811	4.329	3.864	4.276
MAI PO 1150	3.425	4.715	3.707	4.433	3.811	4.329	3.864	4.276
MAI PO 1620	3.299	4.841	3.676	4.464	3.809	4.331	3.867	4.273
MAI PO 1630	3.048	5.092	3.430	4.710	3.722	4.418	3.816	4.324
MAI PO 1630	3.048	5.092	3.430	4.710	3.722	4.418	3.816	4.324
MAI PO 1880	2.744	5.396	3.287	4.853	3.652	4.488	3.755	4.385
MAI PO 1880	2.744	5.396	3.287	4.853	3.652	4.488	3.755	4.385
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Note:

1) The Lowest Levee Level from River Chainage from MAI PO 0 to MAIPO 2125 is 8.14mPD.
2) Freeboard = The Lowest Levee Level - Max Water Level

Appendix J

Hydraulic Analysis of the Proposed Drainage Pipe Network

Hydraulic Analysis of the Proposed Drainage Pipe Network at

Mai Po 355 (WSW_PIPE01), the location is shown in Figure 6

Extracted from MIKE11 model

Freeboard of Drainage Pipe at Mai Po 355 (WSW_PIPE01 554)

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.504	3.296
2C	3.548	3.252
10A	3.684	3.116
10B	3.712	3.088
10C	3.732	3.068
50A	3.771	3.029
50B	3.936	2.864
50C	3.834	2.966
200A	3.824	2.976
200B	4.145	2.655
200C	3.888	2.912

Note:

1) The average ground level of the drainage manhole is approximate 6.8mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix K

Hydraulic Analysis of the Proposed
3.5m(W) x 2.5m(H) Box Culvert

Hydraulic Analysis of the Proposed 3.5m(W) × 2.5m(H) Box Culvert at MAI PO 274 (WSW_BC01 283), the location is shown in Figure 6

Extracted from MIKE11 model

Freeboard of Box Culvert at MAI PO 274 (WSW_BC01 283)

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.504	3.296
2C	3.546	3.254
10A	3.685	3.115
10B	3.712	3.088
10C	3.732	3.068
50A	3.771	3.029
50B	3.937	2.863
50C	3.836	2.964
200A	3.826	2.974
200B	4.145	2.655
200C	3.889	2.911

Note:

1) The average ground level of the box culvert is approximate 6.8mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix L

Current Spot Level



823400.000 E
823600.000 E
823800.000 E
824000.000 E
839000.000 N
838800.000 N
838600.000 N
Open Storage
CAMELIA PATH
CEDAR PATH
CHERRY PATH
LOTUS PATH
KAPOK PATH
Westwood
WO SHANG WAI
PALM SPRINGS BOULEVARD
GMELINA PATH
LAUREL PATH
PRUNUS PATH
PINACEAE DRIVE
BANYAN PATH
NARCISSUS PATH
SUNFLOWER PATH
Arcadia
VENTURA AVENUE
SANTA MONICA AVENUE
MARIN AVENUE
MONTEREY AVENUE
NAPA AVENUE
VICTORIANA AVENUE
CORONADO AVENUE
CARMEL AVENUE
SAN DIEGO AVENUE
SAN SIMEON AVENUE
PALM CANYON DRIVE
CASTLE PEAK ROAD - MAI PO
Playground
Track

WATER SUPPLY IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Water Supply Impact Assessment (WSIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the water demand due to the proposed comprehensive residential development.

1.1.2 This application is made under Section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in Figure 1.

1.2 DESCRIPTION OF PROPOSED DEVELOPMENT

1.2.1 The proposed development consists of a mix of 3 stories detached and semi-detached house and 6, 8 and 10 storey residential tower. 48716 m^2 of land are reserved as open greenery area.

1.2.2 The development consists of 128 units as houses and 3623 units in residential blocks, totalling 3571 housing unit with a plot ratio of 1.28 and an average unit gross floor area of 74.45 m^2.

1.2.3 The master layout plan is attached in **Appendix A**.

1.2.4 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff.

1.3 OBJECTIVES

1.3.1 The objective for this study is set out to be as follows:

(1) Estimating water demand arising from proposed development

(2) Estimating water intakes to the existing/planned development

(3) Evaluating water supply impacts to other existing development

(4) Proposing water supply main layout to mitigate negative impacts to existing developments

1.4 DESIGN GUIDELINE

1.4.1 To conduct this study, we have obtained and adopted the following information:

- Existing water main records provided by WSD
- Capacity, Top water level, and Invert water level of Ngau Tam Mei Fresh Water Preliminary Service Reservoir
- Master Layout Plan of the proposed development
- WSD's Departmental Instruction 1309 (D.I. 1309)
- Manual of Mainlaying Practice
- 2021 Population Census

1.4.2 The following approach were adopted in carrying out this WSIA

(1) Evaluate existing and planned works within the study area

(2) Assess water demand from proposed development

(3) Assess water demand from existing and planned development

(4) Evaluate impact on existing water main

(5) Recommend and propose water supply scheme with a hydraulic analysis

(6) Examine the short- and long-term impacts on existing water mains and interfacing projects

1.5 INTERFACING PROJECTS

1.5.1 Notable interfacing project includes:

- CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction

2 EXISTING AND PLANNED WORK

2.1 EXISTING WATER WORKS AND SERVICE RESERVOIRS

2.1.1 Ngau Tam Mei area surrounding the application site is served by Ngau Tam Mei Water Treatment Works. The treated water from Ngau Tam Mei is stored in Ngau Tam Mei Primary Service Reservoir.

2.1.2 **Table 2-1** summarise the capacity, top water level and invert level of the Ngau Tam Mei Primary Service Reservoir.

Table 2-1 Parameter of Ngau Tam Mei Primary Service Reservoir

Reservoir	Capacity (m^3)	Top Water Level (APD)	Invert Level (APD)
Ngau Tam Mei Primary Service Reservoir	40750	104.1	94.15

2.1.3 There is no saltwater supply nor reclaimed water supply to the area, therefore, fresh water is used for flushing.

2.2 EXISTING WATER MAINS

2.2.1 With reference to Main Record Plans (MRPs) from WSD, the application site is served by a DN150 and a DN200 pipe. Both pipes are a tee-off from a DN200 ductile iron pipe running along Castle Peak Road-Mai Po section.

2.2.2 A DN600 pipe runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The DN600 pipe gets fresh water from a DN700 pipe along Castle Peak Road – Tam Mi section.

2.2.3 The DN700 pipe gets water from DN1400 which runs from east to west along Ching Yau Road, starting from Ngau Tam Mei Primary Service Reservoir and ending at San Tin Highway.

2.3 EXISTING DEVELOPMENT

2.3.1 After evaluating aerial photo and water main records of the application site, the list of developments identified is shown in **Table 2-2.**

Table 2-2 List of Building Group Identified and Parameters

Building Group	Number of units	Population (person)
Wah On Villa	119	334
Ian Court	105	294
San Wai Tsuen	30	84
Kadoorie Villas	75	210
Faye Villa	39	110
Chuk Yuen Tsuen	438	1227
Tai Yuen Villa	159	446
Yau Tam Mei Tsuen	31	87
Yau Mei San Tsuen	18	51
Green Crest	81	227
Wai Tsai Tsuen	127	356
The Vineyard	214	600
The Vineyard Phase 2	30	84
YL 0172 (Palm Springs)	980	4677
YL 0162 (Casa Paradizo + The Vineyard + Rolling Hills + The Step)	1370	3836
Maple Gardens	160	448
Crescendo	67	188
Scenic Heights	33	93
Mai Po San Tsuen	338	947
Tsing Lung Tsuen	155	434
Fan Tin Tsuen	403	1129
San Lung Tsuen	79	222
On Lung Tsuen	63	177
Tai Fu Tai Garden	34	96
Sunny Hills	18	51
Wing Ping Tsuen	757	2120
Tung Chan Wai	152	426
Yan Shau Wai	356	997
Hang Fook Gardens	87	244

2.3.2 Number of units were obtained by counting houses on aerial photo and data from real estate database. Populations were found from population census 2021.

2.3.3 The population of building group YL 0172 and YL 0162 is extracted from the population census in 2021. Building group YL 0173 is not included as it covered settlements that are not served by the same existing water mains as application site.

2.4 PLANNED DEVELOPMENT

2.4.1 After reviewing the gazettes from Planning Department, 3 planned and approved developments were identified, the name, application number and parameters are listed in **Table 2-3.**

2.4.2 Application A/YL-MP/205 covers various lots near at Kam Pok Road to the west of Chuk Yuen Tsuen. The latest Broad Development Parameters from Town Planning Board shows that the development consisted of 71 houses.

2.4.3 Application A/YL-MP/287 covers various lots on Kam Pok Road and Ha San Wai Road. The most recent Board Development Parameter show that application A/YL-MP/287 will be a Residential (Group D) development consisting of 65 houses.

2.4.4 Application Y/YL-NTM/9 covers lot 4823 in D.D. 104, located north of Casa Paradizo. The most recent Board Development Parameter show that the zoning have been changed from Residential (Group C) to Government, Institution or Community. The lot will consist of a RCHE with 142 beds.

Table 2-3 List of planned development identified and parameters

Landuse	Application Number	Number of units	Population (person)
Residential Development (Group C)	A/YL-MP/205	71	199
Residential Development (Group D)	A/YL-MP/287	65	182
RCHE	Y/YL-NTM/9	142	142

2.4.5 The location of the existing and planned developments is shown in **Appendix B.**

2.5 PLANNED WATER WORK AND WATER MAIN

2.5.1 North to application site, CEDD have commissioned CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction. The project will involve re-routing water main in the area and constructing a new water treatment work and service reservoir.

2.5.2 The drafted preliminary diversion plan of CE 15/2023 was obtained from the project consultant. It shows that the application site itself does not fall into the project scope, but there would be potential interface if proposed water main extends to the section of San Tam Road under San Tin Highway. The DN600 pipe on San Tam Road, north of application site will be proposed for rerouting as part of the development plan in CE 15/2023.

3 WATER SUPPLY IMPACT ASSESSMENT

3.1 WATER DEMAND FROM PROPOSED DEVELOPMENT

3.1.1 As quoted in Section 1, the proposed development would be R3 type residential development with 3571 units, 128 of which being houses. The development is estimated to house 9641 people in residential blocks and 359 people in houses, totalling 9999 people, assuming an average of 2.8 people occupying each unit. The total landscaping area is 48716 $m^{2.}$

3.1.2 With reference to D.I. 1309 and comments from WSD, the freshwater demand in R3 settlements is assumed to be 0.300 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day. Irrigation water demand is assumed to be 0.007 m^3 per m^2 per day.

3.1.3 The development will also include a 100-bed RCHE. The 100-bed RCHE is considered as private houses where each unit houses 1 person. Freshwater demand is assumed to be 0.230 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day.

3.1.4 Overall, the freshwater demand from the application site is estimated to be 3800.3 m^3 per day and the mean flushing demand is 1050.4 m^3 per day.

3.2 WATER DEMAND FROM EXISTNG DEVELOPMENTS

3.2.1 As presented in Section 2.3, the existing developments can be divided into 29 building groups. Based on **Table 2-2**, the population can be estimated from number of units using the average occupier per unit from population census 2021. For Yuen Long district the factor is 2.8 person per household.

3.2.2 Most developments in the area are 3 storey houses with low plot ratio, hence they are considered R3 residential development with fresh water demand of 0.300 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day

3.2.3 Some settlements, such as Mai Po San Tsuen and San Wai Tsuen, around application site are recognised as modern villages. For such site, the freshwater demand is assumed to be 0.230 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day.

3.2.4 Overall, the freshwater demand from the existing developments is estimated to be 9087.98 m^3 per day and the mean flushing demand is 2925.6 m^3 per day.

3.2.5 The calculations and table summarising the demand arising from different demand type can be found in **Table** 3-1.

Table 3-1 Table of Water Demands Adopted for the Assessment

Demand Type	Water Type	Unit Demand	Unit
Residential (R3)	Fresh	0.300	m^3 per person per day
	Flushing	0.104	m^3 per person per day
New Private Houses	Fresh	0.390	m^3 per person per day
	Flushing	0.104	m^3 per person per day
RCHE	Fresh	0.230	m^3 per person per day
	Flushing	0.104	m^3 per person per day
Villages (Modern)	Fresh	0.230	m^3 per person per day
	Flushing	0.104	m^3 per person per day
Service Trade	Fresh	0.040	m^3 per person per day
Irrigation	Fresh	0.007	m^3 per m^2 per day

3.3 IMPACT ON EXISTING WATER WORK

3.3.1 The freshwater peak demand factor is assumed to be 3 and the flushing water peak demand factor were assumed to be 2. According to the Manual of Mainlaying Practice, the maximum advisable flow velocity in water mains is 3 m/s. Therefore, the maximum peak flowrate was found assuming flow velocity to be 3 m/s.

3.3.2 Based on the calculation shown in **Appendix C**, the proposed development has a mean daily freshwater demand of 3800.3 m^3/day and flushing water demand of 1050.4 m^3/day. The total peak water demand is 13501.8 m^3/day after applying the peak demand factor. The maximum allowable flowrate for the DN150 and DN200 pipe leading to the site is 7271.9 m^3/day and 3876.9 m^3/day respectively. The existing pipes are not sufficient to meet the peak water demand of the application site.

4 PROPOSED WATER MAIN SCHEME

4.1 OVERVIEW

4.1.1 As mentioned in **Section 2.2**, there is a DN600 pipe running along San Tam Road on the other side of San Tin Highway. The DN600 pipe would have the flow velocity 0.88 m/s and flowrate of 0.24 m^3/s supplying to only existing and planned development. According to Appendix B, the flow velocity in the DN600 pipe will be increased to 1.46 m/s with a flowrate of 0.39 m^3/s when the proposed development is considered.

4.1.2 It is therefore proposed to construct a new tee-off from the DN600 pipe, named 600DI89 on MRP. Two options are presented and evaluated in this WSIA. The drawings of the proposed pipe layout can be found in **Appendix D**.

4.1.3 Only elevation heads and frictional head are considered in the hydraulic calculations. Elevation head is considered as the sole driving force from primary reservoir and the main head loss is due to friction. Velocity and angled head loss are considered minor compared to frictional head loss. Minor losses are estimated as 10% of the frictional head loss.

4.1.4 Hazen-William's equation is used to calculate frictional head loss, and Hazen-Willams Coefficient is taken as 120 for pipe with diameter larger than 600mm, and 110 for pipe with diameter smaller than 600mm. Pipes where water demand cannot be estimated are assumed to have a flow velocity of 3 m/s for a conservative approach.

4.2 PREFERRED OPTION – CONSTRUCTION AT EXISTING SUBWAY AT SAN TAM ROAD

4.2.1 The preferred option would be to tee-off from the DN600 pipe further north at existing San Tam Road Subway under San Tin Highway. This option would avoid construction work under San Tin Highway and mitigate all potential structural and safety issues associate with the works at San Tin Highway.

4.2.2 Proposed tee-off pipe will be 400 mm in nominal diameter based on the calculation in **Appendix C**, and the length were estimated to be 573 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have an even lower elevation.

4.2.3 Calculation have shown that with a head loss of 40.6 meter from existing water mains and 4.7 meter head loss from proposed water main, the residual head in the pipe will be 52.3 meter at the boundary of the application site.

4.2.4 Based on WSD's circular letter No. 1/2007, the minimum acceptable residual pressure in water mains is 20 m . This option meets the minimum requirements and are therefore hydraulically feasible.

4.2.5 However, the proposed connection point is located on a proposed pipe under CE15/2023 managed by AECOM-Halcrow Joint Venture. The joint venture should be consulted on construction schedule and feasibility of the connection may varies with time. In the case that the proposed tee-off is not feasible, the backup option should be considered.

4.3 BACKUP OPTION – CONSTRUCTION UNDER SAN TIN HIGHWAY

4.3.1 The backup option would be to directly tee-off from the DN600 pipe across San Tin Highway. Construction would preferably be through micro-tunnelling to avoid interrupting traffic on San Tin Highway.

4.3.2 Proposed tee-off pipe will be 300 mm at minimum in nominal diameter, and the length were estimated to be 166 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have a lower elevation.

4.3.3 Calculation have shown that with a head loss of 40.6 meter from existing water mains and 4.7 meter head loss from proposed water main, the residual head in the pipe will be 52.3 meter at the boundary of the application site.

4.3.4 Digging underneath the San Tin Highway will requires an excavation permit from Highway department. If the option is to be adapted, the applicant shall register on XPMS as soon as possible and liaison with Highway department for permission.

5 CONCLUSION AND WAY FORWARD

5.1.1 It could be concluded that the existing water supply mains around the proposed development is not sufficient for the water demand, and hence a new water main scheme is needed.

5.1.2 It would be feasible to tee-off from the existing DN600 pipe (600DI89) which runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The preferred scheme would be to tee-off further north on San Tam Road to prevent construction work under the highway. The residual head would be 52.3 meter, which meets the minimum residual pressure requirement from WSD.

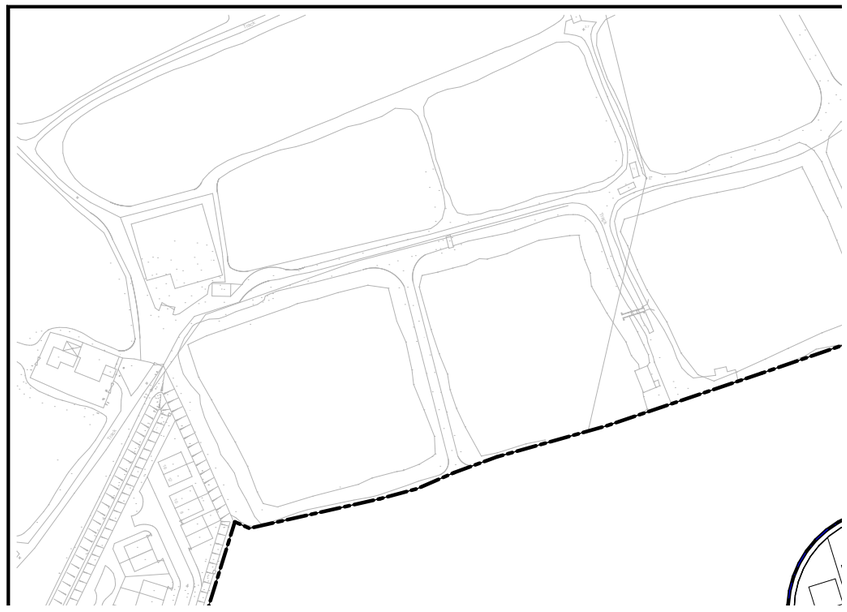
5.1.3 Another feasible scheme is to tee-off directly across San Tin Highway, this is not preferred as construction work on San Tin highway may be uncertain. The residual head is estimated to be 52.3 meter, which would also meet the minimum residual pressure requirement from WSD.

5.1.4 The applicant will discuss the preferred option with AECOM for interface with CE 15/2023 and adopt the backup option if the preferred option becomes unavailable.

Appendices

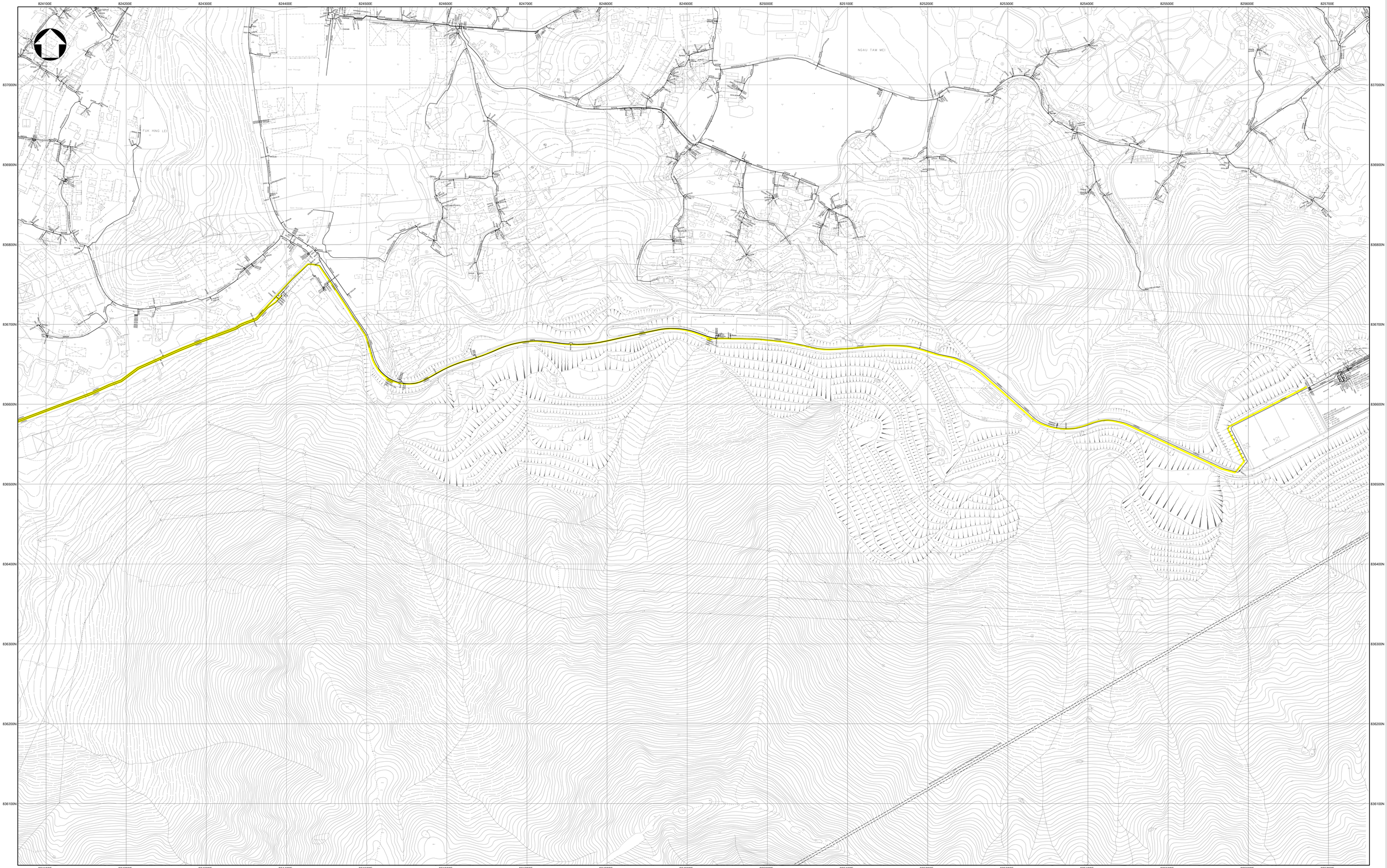
Appendix A

MLP of Proposed Development



Appendix B

MRP with development site labelled



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
10. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/2-SE-22A, 22B, 22C, 22D, 23A & 23C

FILE REF: Part 3

REF. CODE: 45W24M	SHEET 1 OF 1	SCALE 1:1500

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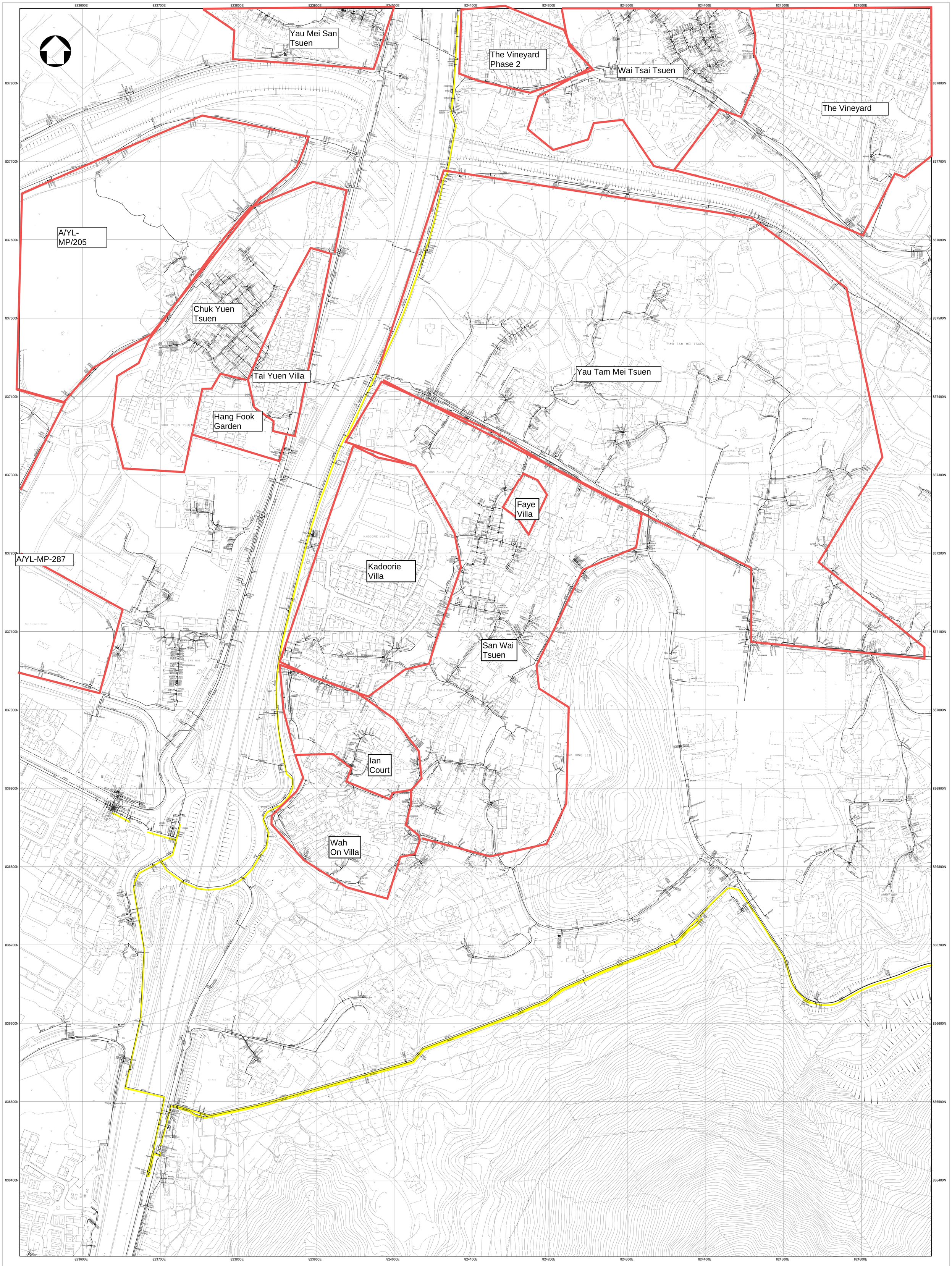

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
10. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/2-SE-16B, 16D, 17A, 17C, 21B, 21D, 22A & 22C

FILE REF: Part 2

REF. CODE: 45W24M	SHEET 1 OF 1	SCALE 1:1500

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Mai Po
San Tsuen

The STEP

Scenic
Heights

Rolling
Hills

Cresendo

Maple
Gardens

Y/YL-NTM/9

Palm Spring

Casa Paradizo

Yau Mei San
Tsuen

Green Crest

The Vineyard
Phase 2

Wai Tsai Tsuen

The Vineyard

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
10. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/2-SE-11B, 11D, 12A, 12C, 16B, 16D, 17A & 17C

FILE REF: Part 1

REF. CODE: 45W24M	SHEET 1 OF 1	SCALE 1:1500

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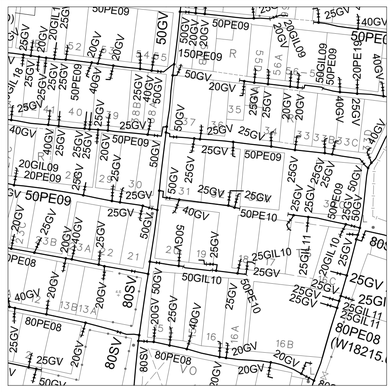
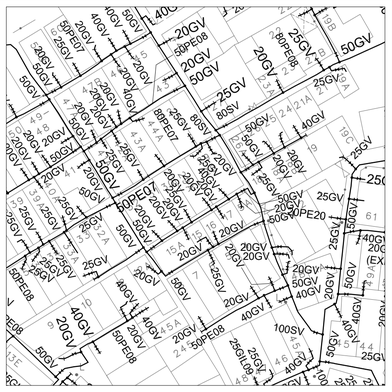
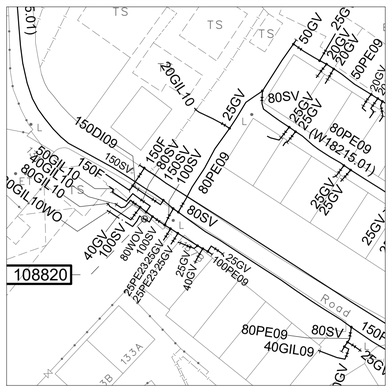
INSET 'A'	INSET 'B'	INSET 'C'	INSET 'D'	INSET 'E'	INSET 'F'
					

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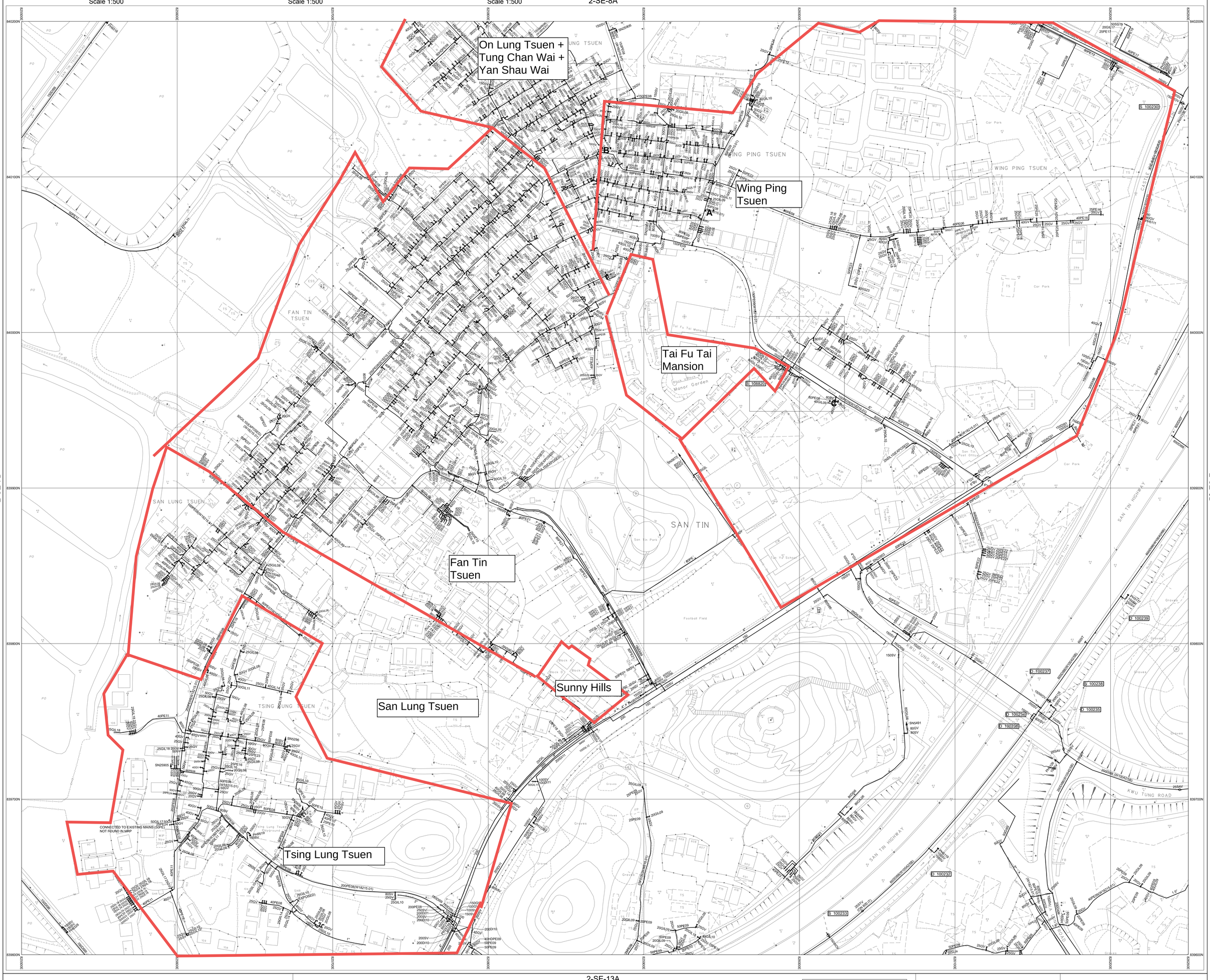

2-SE-13A

NOTES:

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2. DIMENSIONS OF MAINS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.

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METRES 20 10 0 20 40 60 80 100 METRES

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FRESH WATER MAINS RECORD PLAN

CASTLE PEAK ROAD, SAN TIN

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SIGNED

K.C. KONG
CE/MNW

DATE: 15/12/1998

Water Supplies Department
HONG KONG

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Appendix C

Table of Calculation

						Fresh			Flushing	
	Building Group	Landuse	Area (m2)	Number of units	Population (person)	Unit Demand Factor (m3/head/day)	Unit Demand Factor (m3/m2/day)	Mean Water Demand (m3/day)	Unit Demand Factor (m3/head/day)	Mean Flushing demand (m3/day)
Exisitng Developments	Wah On Villa	Residental (R3)		119	334	0.34		113.56	0.104	34.736
	Ian Court	Residental (R3)		105	294	0.34		99.96	0.104	30.576
	San Wai Tsuen	Villages (Modern)		30	84	0.27		22.68	0.104	8.736
	Kadoorie Villas	Residental (R3)		75	210	0.34		71.4	0.104	21.84
	Faye Villa	Residental (R3)		39	110	0.34		37.4	0.104	11.44
	Chuk Yuen Tsuen	Villages (Modern)		438	1227	0.27		331.29	0.104	127.608
	Tai Yuen Villa	Villages (Modern)		159	446	0.27		120.42	0.104	46.384
	Yau Tam Mei Tsuen	Villages (Modern)		31	87	0.27		23.49	0.104	9.048
	Yau Mei San Tsuen	Villages (Modern)		18	51	0.27		13.77	0.104	5.304
	Green Crest	Residental (R3)		81	227	0.34		77.18	0.104	23.608
	Wai Tsai Tsuen	Villages (Modern)		127	356	0.27		96.12	0.104	37.024
	The Vineyard	Residental (R3)		214	600	0.34		204	0.104	62.4
	The Vineyard Phase 2	Residental (R3)		30	84	0.34		28.56	0.104	8.736
	YL 0172 (Palm Springs)	Residental (R3)		980	4677	0.34		1590.18	0.104	486.408
	YL 0162 (Casa Paradizo + The Vineyard + Rolling Hills + The Step)	Residental (R3)		1370	3836	0.34		1304.24	0.104	398.944
	Maple Gardens	Residental (R3)		160	448	0.34		152.32	0.104	46.592
	Crescendo	Residental (R3)		67	188	0.34		63.92	0.104	19.552
	Scenic Heights	Residental (R3)		33	93	0.34		31.62	0.104	9.672
	Mai Po San Tsuen	Villages (Modern)		338	947	0.27		255.69	0.104	98.488
	Tsing Lung Tsuen	Villages (Modern)		155	434	0.27		117.18	0.104	45.136
	Fan Tin Tsuen	Villages (Modern)		403	1129	0.27		304.83	0.104	117.416
	San Lung Tsuen	Villages (Modern)		79	222	0.27		59.94	0.104	23.088
	On Lung Tsuen	Villages (Modern)		63	177	0.27		47.79	0.104	18.408
	Tai Fu Tai Garden	Residental (R3)		34	96	0.34		32.64	0.104	9.984
	Sunny Hills	Residental (R3)		18	51	0.34		17.34	0.104	5.304
	Wing Ping Tsuen	Villages (Modern)		757	2120	0.27		572.4	0.104	220.48
	Tung Chan Wai	Villages (Modern)		152	426	0.27		115.02	0.104	44.304
	Yan Shau Wai	Villages (Modern)		356	997	0.27		269.19	0.104	103.688
	Hang Fook Gardens	Residental (R3)		87	244	0.34		82.96	0.104	25.376
Total					17352			5423.12		1804.608
Planned Developments	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	Houses		71	199	0.43		85.57	0.104	20.696
	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	Houses		65	182	0.43		78.26	0.104	18.928
	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long (Y/YL-NTM/9)	RCHE		142	142	0.27		38.34	0.104	14.768
Total					523			202.17		54.392
Proposed Development		Residential Tower		3443	9641	0.34		3277.94	0.104	1002.664
		Houses		128	359	0.43		154.37	0.104	37.336
		RCHE		100	100	0.27		27	0.104	10.4
		Landscaping	48716				0.007	341.012		
Total					10100			3800.322		1050.4
Grand Total					27975			9425.612		2909.4

Remark:

Unit demand factor from DI 1309 or agreed with WSD

Unit demand factor for Fresh Water = Fresh water demand factor + Service trades

Records for populations taken from 2021 population census

Census found from: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.census2021.gov.hk%2Fdoc%2FHMA_BG_21C.xlsx&wdOrigin=BROWSELINK

Population data for village type settlement are estimated by counting house seens in aerial photo and assuming 2.7 person per house

2.8 person per house is assumed based on the data for Yuen Long District in the 2021 population census

Portion	Nominal Diameter (mm)	Internal Diameter (mm)	Length (m)	Material	Hazen-Williams Coefficient	Total Fresh water demand	Total Flushing water demand	Fresh water peak factor	Flushing water peak factor	Peak Demand Flow(m3/day)	Peak flowrate(m3/s)	Area (m2)	Velocity (m/s)	Head loss per length	Head Loss (m)	Minor Head Loss (m)	Total Head Loss (m)	Note
1400S01	1400	1379	2255.3	S	120							1.5	3.00	0.005	11.4	1.1	12.5	Assumed velocity of 3 m/s for conservative estimation
1400S98	1400	1379	53.8	S	120							1.5	3.00	0.005	0.3	0.0	0.3	Assumed velocity of 3 m/s for conservative estimation
1200S98	1200	1182	11.3	S	120							1.1	3.00	0.006	0.1	0.0	0.1	Assumed velocity of 3 m/s for conservative estimation
700S00	700	682	29.4	S	120							0.4	3.00	0.011	0.3	0.0	0.4	Assumed velocity of 3 m/s for conservative estimation
700S91	700	682	155.3	S	120							0.4	3.00	0.011	1.8	0.2	2.0	Assumed velocity of 3 m/s for conservative estimation
700S88	700	682	311.4	S	120							0.4	3.00	0.011	3.6	0.4	3.9	Assumed velocity of 3 m/s for conservative estimation
600S90	600	586	207.8	S	110							0.3	3.00	0.016	3.3	0.3	3.7	Assumed velocity of 3 m/s for conservative estimation
600S89	600	586	341.7	S	110							0.3	3.00	0.016	5.5	0.6	6.1	Assumed velocity of 3 m/s for conservative estimation
600DI90	600	586	1493.0	DI	110	9425.6	2909.4	3	2	34095.6	0.39	0.3	1.46	0.004	6.4	0.6	7.0	Considering all existing and planned development
									Backup Option									
DN300	300	285	166.0	DI	110	3800.3	1050.4	3	2	13501.8	0.2	0.1	2.45	0.026	4.3	0.4	4.7	Supply to only proposed development
									Perferred Option									
600DI90	600	586	173.6	DI	110	9425.6	2909.4	3	2	34095.6	0.4	0.27	1.46	0.00	0.74	0.1	0.8	
DN400	400	382	573.0	DI	110	3800.3	1050.4	3	2	13501.8	0.2	0.1	1.36	0.006	3.5	0.4	3.9	Supply to only proposed development

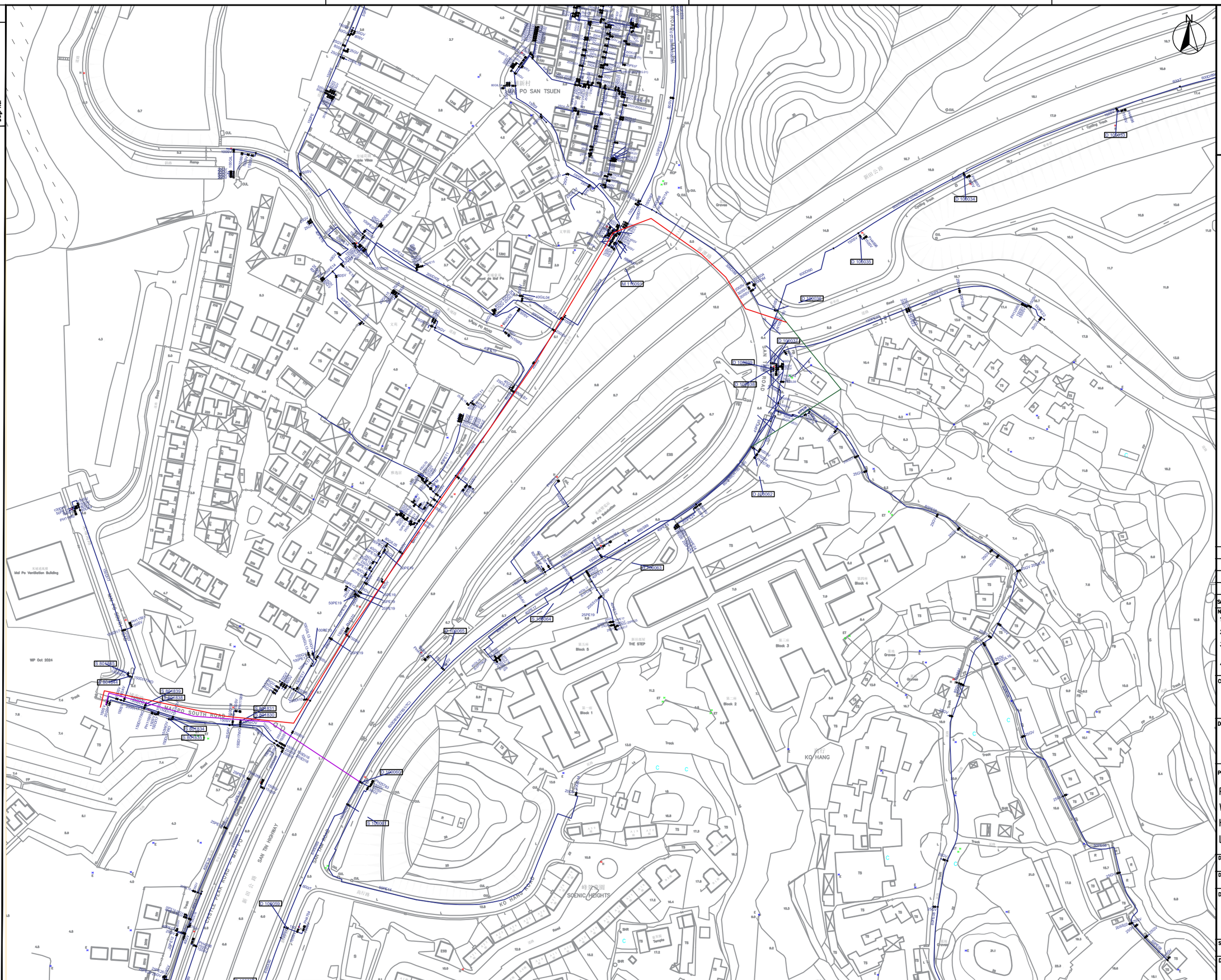
Notes:
Hazen-Williams Coefficient taken as 110 when diameter < 600, 120 when diameter > 600
According to main laying practice, the maximim velocity allowed is 3 m/s
Velocity head loss, angled headloss and headloss at connections are considered minor
Minor headloss accounted by a 1.1 factor on frictional headloss

Estimate Residual Head			
Head to Ngau Tam Mei Fresh Water Preliminary Service Reservoir	=	99.1	mPD
Ground Level at extremity of proposed system	=	6.2	mPD
Friction Head Loss from Existing and Proposed Main Option 1	=	40.6	m
Residual Head at Extremity	=	52.3	m
Friction Head Loss from Existing and Proposed Main Option 2	=	40.6	m
Residual Head at Extremity	=	52.3	m

Appendix D

Proposed Water Supply Scheme

Dwg. No.



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LEGEND

- Option 1
- Option 2
- Water Main to be diverted in CE15
- Water Main to be abolished in CE15

Suffix	Date	Revision	Drawn	Checked
–	–	–	–	–

NOTES:

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4. All Pipe Sizes refers to inner diameter in millimeters.

CLIENT

Profit Point Enterprise Ltd

DESIGN CONSULTANT

wsp

PROJECT

PROPOSED DEVELOPMENT AT
WO SHANG WAI
HONG KONG
LOTs 77 AND 50 S.A in DD101

DESIGNED BY	DATE	CHECKED BY	DATE
–	JAN 2025	CC	JAN 2025
DRAWN BY	DATE	APPROVED BY	DATE
JS	JAN 2025	–	–

DRAWING TITLE

PROPOSED WATER SUPPLY SCHEME
(Sheet 1)

SCALE	STATUS	FILE NAME
1:2000		

DRAWING NO.	REV.
–	

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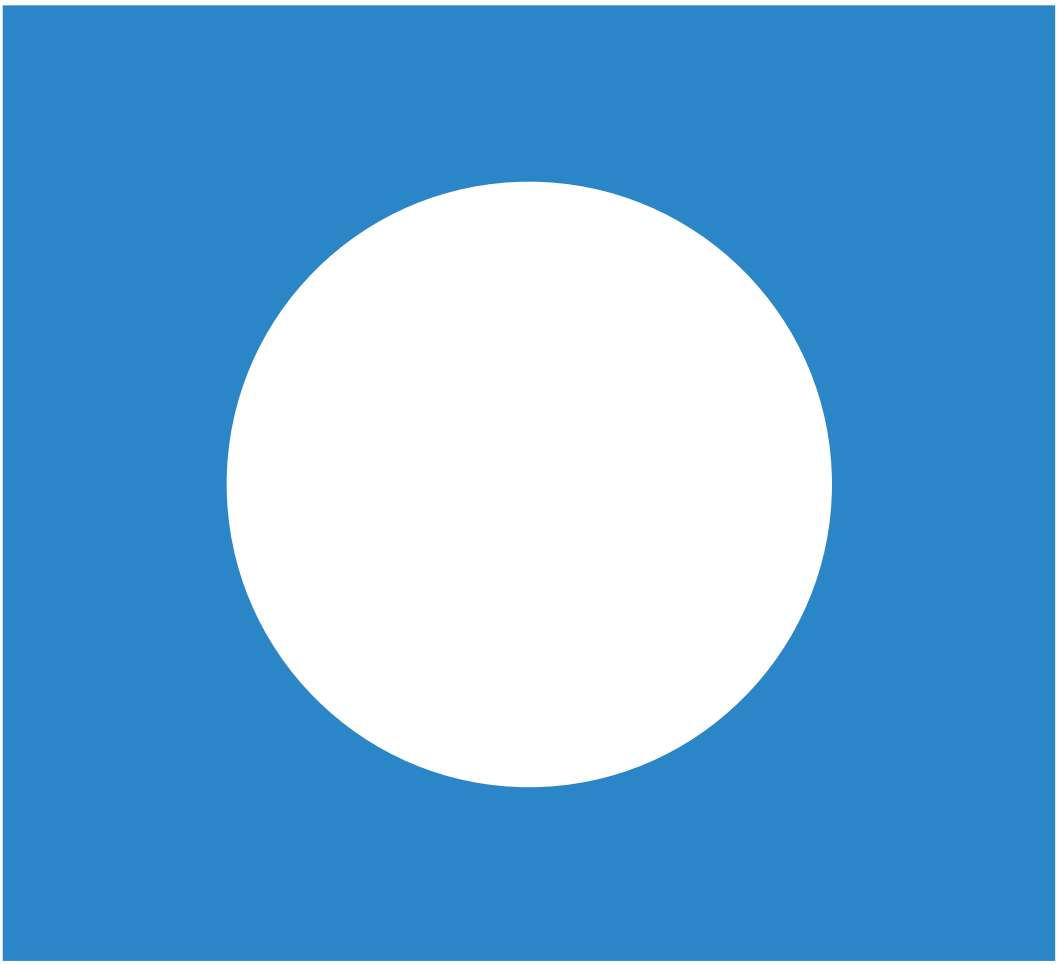

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.D)

May 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.D)

May 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

Issue and Revision Record

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B	Oct 2024	Various	J Chan	E Ching	
C	Mar 2025	Various	J Chan	E Ching	
D	May 2025	Various	J Chan	E Ching	

Document reference: 370161-001 | 01 | D |

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Appendix 2.5 Fixed Plant Noise Assessment (Mai Po Ventilation Building)

Appendix 2.6 Proposed Use for Project NSRs (RCHE)

Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area. This proposed comprehensive residential development comprises of club house, landscaped open spaces, car parks, residential care homes for elderly (RCHE). The project layout is shown in **Figure 0.1** and the indicative development parameters for the future landuses of the Application Site is summarised in the table below.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The wetland restoration area (WRA) portion of the site has been completed and operational since 2010. The residential portion of the site underwent initial site clearance and site formation in 2011-2013 and is currently pending construction.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	39,072m^2
Communal Streetside Landscape	2,988m^2
Communal Water Body	5,103m^2
Private Garden	15,444m^2
Domestic Buildings and Clubhouse	42,078m^2
Internal Road/Driveway	34,120m^2
Domestic Components	
Plot Ratio Domestic Non-Domestic	1.3 1.28 0.02
Maximum Domestic GFA (Approx.)	265,847m^2
Maximum Non-Domestic GFA (Approx.)	3,800m^2
Site Coverage (not more than)	25%
Total Number of Units	3,751

Average Unit Size (Approx.)	74.45m^2
Ancillary Recreational Facilities (Approx.)	11,581 m^2
Estimated Population	9,998*
Completion Year	2031

Remarks:
* Based on person per plat ration of 2.8

Mott MacDonald Hong Kong Limited (MMHK) was commissioned by Profit Point Enterprises Ltd to conduct an Environmental Assessment (EA) to assess the potential environmental impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development portion. The Application Site is subject to the Environmental Impact Assessment Ordinance (EIAO) for which previous approvals were obtained including:

i. Environmental Impact Assessment (Register No.: AEIAR-120/2008) for the development at the site approved on 31 July 2008;
ii. Environmental Permit (No. EP-311/2008) for the construction and operation of the development issued on 9 September 2008, the latest revision being 19 December 2017 (EP-311/2008/E); and
iii. Variations to the Environmental Permit reflecting the approved development schemes have been approved, the latest one being 19 December 2017 (No. VEP-538/2017).

Since the EA is focus on the proposed changes in the layout of the residential development portion, while no enlargement of the Project boundary. And also, the Project Site has been fenced off by the Project Proponent since the EIA approved and no change of land use being made. Therefore, no potential land contamination would be induced after the approved EIA, and land contamination section is not included in this ER.

Aside from the latest revise the layout and form of the housing developments in the Application Site, two options are also being considered for offsite sewerage conveyance to handle the sewage generated from the Development during the operational phase. The two options are (1) construction of a sewerage pipeline to the new San Tin Lok Ma Chau Effluent Polishing Plant and adopting a temporary on-site sewage treatment plant (STP) until the San Tin Lok Ma Chau Effluent Polishing Plant is commissioned; and (2) construction of a sewerage pipeline to connect to the existing Nam San Wai Sewage Pumping station for discharge to Yuen Long Sewage Treatment Plant.

Should this application be approved by TPB, the feasibility of these two sewerage conveyance options will be reviewed. The potential environmental impacts and EIAO implications arising from the proposed option along with the revised development layout will be reviewed at later stage and confirm with the EPD to ensure the proposed development complies with all statutory requirements under the EIAO.

1 Air Quality Impact

1.1 Introduction

This section assesses the potential air quality impacts upon and arising from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

1.2 Legislation, Standards, Guidelines and Criteria

The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance;
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulation;
- Recommended Pollution Control Clauses for Construction Contracts;
- Environmental Impact Assessment Ordinance and Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM); and
- Hong Kong Planning Standards and Guidelines (HKPSG).

Air Pollution Control Ordinance

The principal legislation for the management of air quality is the APCO. The APCO specifies Air Quality Objectives (AQOs) which stipulate the statutory limits of air pollutants and the maximum allowable numbers of exceedances over specific periods. Updated AQOs which came into effect on 11 April 2025 are listed in **Table 1.1** below.

Table 1.1: Updated Air Quality Objectives

Pollutant	Averaging time	Concentration (μg/m^3)	Number of exceedances allowed
Respirable Suspended Particulates (PM_{10})	24-hour	75	9
	Annual	30	Not applicable
Fine Suspended Particulates ($PM_{2.5}$)	24-hour	37.5	18
	Annual	15	Not applicable
Nitrogen Dioxide (NO_2)	1-hour	200	18
	24-hour	120	9
	Annual	40	Not applicable
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	40	3
Ozone (O_3)	8-hour	160	9
	Peak season	100	Not applicable
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
	24-hour	4,000	0
Lead (Pb)	Annual	0.5	Not applicable

Notes:
[i]. All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
[ii]. Respirable suspended particulates (PM_{10}) mean suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
[iii]. Fine suspended particulates ($PM_{2.5}$) mean suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

Air Pollution Control (Construction Dust) Regulation

The Air Pollution Control (Construction Dust) Regulation enacted under the APCO defines notifiable and regulatory works activities that are subject to construction dust control. Notifiable works are site formation, reclamation, demolition of a building, construction of foundation and superstructure for a building, and road construction work. Regulatory works are renovation of building, road opening or resurfacing work, slope stabilisation work, and any work involving stockpiling, loading and unloading of dusty material, transfer of dusty material using belt conveyor system, etc.

Notifiable works require that advance notice of activities shall be given to EPD. The Air Pollution Control (Construction Dust) Regulation also requires the works contractor to ensure that both notifiable works and regulatory works are conducted in accordance with the Schedule of Regulation, which provides air quality control measures.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation controls the emissions from non-road vehicle and regulated machines to be used in construction sites. The regulated machines must comply with the emission standards of Stage IIIA of the European Union (EU) or equivalent, while non-road vehicles must comply with the prevailing emission standards for newly registered road vehicles, which is Euro V. Upon confirmation of their compliance with the emission requirement, EPD will issue them with an approval label.

According to the regulation, mobile machine and equipment (regulated machines) means any mobile machine or transportable industrial equipment that is powered by an internal combustion engine with a rated engine power output that is greater than 19 kW but less than or equal to 560 kW. Non-road Mobile Machinery (NRMM) is intended to be used in a private road that is within an area wholly or mainly used for the carrying on of construction work/industry. The regulated machines include crawler cranes, excavators, etc., while non-road vehicles include private cars, goods vehicles, etc. Therefore, this regulation is applicable to the NRMM to be deployed for construction activities of the Project.

Air Pollution Control (Fuel Restriction) Regulation

The Air Pollution Control (Fuel Restriction) Regulation specifies the legal control on the type of fuels to be allowed for use and the sulphur contents of the fuels. Apart from Shatin district, the fuels to be used should comply the following respective requirements:

- Gaseous fuel; and
- Liquid fuel with a sulphur content not exceeding 0.001% by weight and a viscosity not more than 6centistokes at 40°C, such as Ultra Low Sulphur Diesel ("ULSD")

Recommended Pollution Control Clauses (RPCC) for Construction Contracts

The RPCC for construction contracts provide generally good engineering practices to minimise inconvenience and environmental nuisance to nearby sensitive receivers during the construction phase of the development. Some modifications may be required to suit different site conditions.

Technical Memorandum on Environmental Impact Assessment Process

The criteria and guidelines for evaluating air quality impacts are laid out in Section 1 of Annex 4 and Annex 12 respectively of the EIAO-TM. Section 1 of Annex 4 stipulates the criteria for evaluating air quality impacts. This includes meeting the Air Quality Objectives (AQOs) and other standards established under the APCO, and the 5-second average odour concentration of 5 odour units (ou/m^3). Annex 12 provides the guidelines for conducting air quality assessments under the Environmental Impact Assessment (EIA) process, including determination of Air Sensitive Receivers (ASRs), assessment methodology as well as impact prediction and assessment.

Hong Kong Planning Standards and Guidelines

According to Table 3.1 in Chapter 9 of the Hong Kong Planning Standards and Guidelines (HKPSG), guidelines on the buffer distances for air sensitive uses from vehicular emissions and industrial emissions have been recommended. The type of pollution source, associated parameters and their respective minimum buffer distances for open space sites are given in **Table 1.2** Table 1.2.

Table 1.2: Guidelines on Usage of Open Space Site

Pollutant Source	Parameter	Buffer Distance (m)	Permitted Uses
Road and Highways	*Type of Road:*		
	Trunk Road and Primary Distributor (PD)	>20	Active and passive recreational uses
		3-20	Passive recreational uses
		<3	Amenity areas
	District Distributor (DD)	>10	Active and passive recreational uses
		<10	Passive recreational uses
	Local Distributor (LD)	>5	Active and passive recreational uses
		<5	Passive recreational uses
	Under Flyovers	--	Passive recreational uses
Industrial Areas	*Difference in Height between Industrial Chimney Exit and the Site:*		
	<20m	>200	Active and passive recreational uses
		5-200	Passive recreational uses
	20-30m (*)	>100	Active and passive recreational uses
		5-100	Passive recreational uses
	30-40m	>50	Active and passive recreational uses
		5-50	Passive recreational uses
	>40m	>10	Active and passive recreational uses

Notes:
[i]. The buffer distance refers to the horizontal, shortest distance from the edge of road kerb or the position of existing chimneys, to the boundary of open space sites.
[ii]. In situations where the height of chimneys is not known, the set of guidelines marked with an asterisk are used for preliminary planning purposes and refined as and when more information is available.

1.3 Assessment Methodology

1.3.1 Construction Phase

Activities anticipated during the construction phase that could potentially give rise to fugitive dust emissions include site formation and construction of on-site infrastructure (roads/drains) and residential units. Other potential sources of air quality impacts may include exhaust emissions

from construction vehicles and machinery and odour generated from excavation of fishpond deposits.

The San Tin Technopole Phase 1 Stage 1 Works under the San Tin / Lok Ma Chau Development Node has been identified as a concurrent project within 500m assessment area of the Project.

1.3.2 Operational Phase

Potential air quality impacts during the operational phase could be attributed to vehicular emissions from existing road traffic and project induced traffic emissions, as well as odour from the existing sewage treatment plants (STP) in the vicinity. Odour may also be generated from the options being considered for handling of sewage generated from the Development, particularly the planned temporary on-site STP as part of one of the options for sewerage treatment. A site survey was conducted on 13 June 2024, during which no active chimney was identified within 200m from the Project site boundary.

1.4 Baseline Conditions / Sensitive Receivers

1.4.1 Baseline Conditions

Historical ambient air quality has been referenced from EPD's general air quality monitoring station (AQMS) located in Yuen Long, which is closest to the Project site. The recent five years' monitoring data (Year 2019 - 2023) recorded at the AQMS in Yuen Long is presented in **Table 1.3**Table 1.3.

Table 1.3: Historical Air Quality from EPD's General Monitoring Station at Yuen Long

Pollutant	Averaging Period	Concentration (µg/m³)						Corresponding AQOs (µg/m³)
		2019	2020	2021	2022	2023	5-year annual average	
Respirable Suspended Particulates (RSP or PM_{10})	24-hour - 10th highest	**83**	**77**	73	56	59	70	75
	Annual	**37**	30	30	25	26	30	30
Fine Suspended Particulates (FSP or $PM_{2.5}$)	24-hour - 19th highest	**38**	33	36	**38**	34	36	37.5
	Annual	**20**	**16**	**17**	**16**	**16**	**17**	15
Nitrogen Dioxide (NO_2)	1-hour - 19th highest	161	135	148	122	130	139	200
	24-hour - 10th highest	86	64	78	68	67	73	120
	Annual	**44**	32	40	37	37	38	40
Sulphur Dioxide (SO_2)	10-minute - 4th highest	42	26	24	21	20	27	500
	24-hour - 4th highest	11	10	14	7	10	10	40
Ozone (O_3)	8-hour - 10th highest	**200**	154	**178**	**194**	155	**176**	160
	Peak season	**102**	86	84	95	84	90	100
	1-hour	2,150	1,530	2,090	1,700	1,580	1,810	30,000
	8-hour	1,903	1,279	1,591	1,519	1,273	1,513	10,000

Carbon Monoxide (CO)	24-hour	1,630	1,182	1,183	1,159	1,047	1,240	4,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.1.
[ii]. Monitoring results that exceeded the AQO criteria are shown in **bold** characters.
[iii]. Lead is not measured at Yuen Long AQMS.

The predicted future background air pollutant concentrations within the Assessment Area are extracted from the relevant grids of the Pollutants in the Atmosphere and their Transport over Hong Kong (PATH) v.3.0 model for Year 2030, the nearest to the year of population intake of the Project (2031) and are summarised in **Table 1.4**Table 1.4 below.

Table 1.4: Future Background Air Quality from PATH for Year 2030

Pollutant	Averaging Period	Concentration (µg/m^3)		Corresponding AQO (µg/m^3)
		(28,51)	(28,52)	
RSP / PM_{10}	24-hour – 10th Highest	54	54	75
	Annual	21	21	30
FSP / $PM_{2.5}$	24-hour – 19th Highest	32	32	37.5
	Annual	13	13	15
NO_2	1-hour – 19th Highest	74	78	200
	24-hour – 10th Highest *	25	26	120
	Annual	15	15	40
SO_2	10-min – 4th Highest	24	24	500
	24-hour – 4th Highest	7	7	40
Ozone (O_3)	8-hour – 10th highest	**186**	**182**	160
	Peak Season *	**122**	**119**	100
Carbon Monoxide (CO)	1-hour	526	526	30,000
	8-hour	495	496	10,000
	24-hour *	458	462	4,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.1.
[ii]. Monitoring results that exceeded the AQO criteria are shown in **bold** characters.

As shown in **Table 1.4**, the future background levels of pollutants (except for ozone) would be below their corresponding AQOs in 2030. The improvement in future ambient air quality can be attributed to the government's commitment to implement various planned emission reduction measures, as published on EPD's website.

1.4.2 Air Sensitive Receivers

Representative ASRs within 500m of the Project site boundary have been identified according to the criteria set out in the EIAO-TM through site inspections and a review of land use plans. ASRs and their horizontal distance from the Project site boundary have been identified and are summarized in **Table 1.5**. Locations of the ASRs are shown in **Figure 1.1**.

Table 1.5: Locations of Representative Air Sensitive Receivers

ID	Receiver Description	Usage	Construction Phase	Operation Phase	Shortest Horizontal Distance from Project Site Boundary (m)
ASR1	Royal Palms	Residential	✓	✓	23
ASR2a	Palm Springs	Residential	✓	✓	21
ASR2b			✓	✓	16
ASR3	Wo Shang Wai Village	Residential	✓	✓	51
ASR4	Village House of Mai Po San Tsuen	Residential	✓	✓	58
ASR5	Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential	×	✓	--

1.5 Evaluation of Air Quality Impact

1.5.1 Construction Phase

The entire site will be divided into six portions, corresponding to six phases of residential development. Construction will be carried out in phases, starting from the northwestern portion and progressing towards the northeastern portion, followed by the southern portion. The construction of the Project will commence in 2027 and the planned population intake year for all six phases of the residential development is 2031.

Fugitive dust could be generated during the construction of the Project as a result of construction activities like material handling, excavation, vehicles movement and erosion of unpaved area and stockpiles. No percussive piling works would be conducted. The estimated total amount of construction and demolition (C&D) materials to be disposed off-site for the construction period is about 461,900 m^3, of which 360,800 m^3 would be inert C&D materials while 101,100 m^3 would be non-inert C&D materials. For details, please refer to **Section 4**.

Dust generation could be controlled by providing covers to dusty materials in order to prevent erosion, and dust could be suppressed by regular site watering. The highest number of dump trucks is expected to be around 158 per day. The speed of the trucks within site will be controlled to 10 kph to control air quality impact and for safe movement around the site. In addition, site hoarding shall be provided at the Project site boundary as a control measure. Appropriate air quality control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation under the APCO will be implemented.

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation came into effect to control the emissions from diesel powered engines and limit the amount of diesel-powered mechanical equipment to be used on-site during the construction phase.

The number of diesel-powered machinery to be used at the site is subject to site conditions and detailed construction methods. It is noted however that the works will be phased and there would be no population intake within any of the six phases of the residential development until the construction works of all phases are completed. According to the Air Pollution Control (Fuel Restriction) Regulations, liquid fuel with a sulphur content of less than 0.001% by weight should be used. Under the effects of the two regulations, emissions of PM and gaseous pollutants from the operation of on-site diesel-powered mechanical equipment would be controlled.

No concrete batching plants will be provided on-site. Concrete will be brought into the site in "ready-mixed" state or in pre-cast sections. Given the relatively flat site, no rock crushing will be necessary.

Apart from the implementation of control measures, an EM&A programme will be undertaken to monitor the air quality impacts associated with construction to ensure no adverse construction air quality impacts on the adjacent ASRs and to verify the effectiveness of the control measures. In conclusion, adverse air quality impact during the construction stage is not anticipated given the proper control measures recommended in **Section 1.6.1** and the EM&A programme.

Since the proposed Project site was derived from fishponds, pond deposits underlay a majority of the Project site. Pond deposits are a mixture of organic material and may release odour if excavated. In order to minimise the odour nuisance to surrounding environment, the following control measures are recommended:

- all malodorous excavated material should be placed as far as possible from any ASRs;
- the malodourous materials will be immediately contained in airtight and watertight containers on-site and transported off-site by trucks for disposal at a strategic landfill within one day. Sufficient number of containers will be provided;
- During transportation, odorous materials on the trucks should be properly covered by tarpaulin sheets;
- Limited number of ponds shall be excavated at a time, in line with the phased construction works; and
- Frequent site inspections shall be conducted to monitor odour impact.

With proper planning and measures in place, potential adverse odour impact is not anticipated. In case of future complaint against pond excavation work or if odour is detected during site inspections, the applicant shall be responsible for investigating the odour issue and taking remedial actions, as appropriate.

Based on the latest information available, the construction works for the San Tin Technopole Phase 1 Stage 1 Works - Site Formation and Engineering Infrastructure Project commenced in December 2024 and are scheduled to be completed in 2028. The San Tin Technopole Project site boundary is located approximately 175m away from Project. Control measures and good site practices will be implemented by both parties to minimize construction air quality impacts and close liaison will be maintained to avoid heavy/ dusty construction activities being carried out simultaneously, as far as practicable. Dust monitoring work will also be implemented by the proposed Project during the construction stage to ensure there is no adverse air quality impact.

1.5.2 Operational Phase

Impacts arising from the operation of this Project could primarily attribute to vehicular emissions that may affect the proposed development itself and identified ASRs off-site. Vehicular emission impacts from the major roads, San Tin Highway and Castle Peak Road - Mai Po are considered insignificant, as the nearest air sensitive receivers of the proposed development are more than 107m from these major roads. Based on the Annual Traffic Census 2023, the road type of San Tin Highway and Castle Peak Road - Mai Po are expressway (EX) and rural road (RR), respectively. A 20m buffer distance should be applied for EX and a 10m buffer distance should be applied for RR type roads. Hence, the buffer distance requirements for San Tin Highway and Castle Peak Road - Mai Po can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. As per the information provided by the Project's Traffic Consultant and agreed upon by the Transport Department (TD), the road leading to the project site (i.e., Mai Po South Road) is classified as a feeder road, which is similar in definition to a local distributor (LD) under the road types listed in the HKPSG. A 5m buffer distance should be applied for LD and hence the buffer distance requirement for Mai Po South Road can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. The email correspondence between the Project's Traffic Consultant and the TD is presented in **Appendix 1.1**. The corresponding buffer zones for each road type are shown in **Figure 1.2** and presented in Table 1.6. There exist a number of private roads surrounding the proposed

development. As a conservative approach, a buffer distance of 10m corresponding to district distributors (DD) was applied and found to be satisfied from these roads. The buffer zones for these roads are also shown in **Figure 1.2**. No air-sensitive uses of the proposed development including openable window, fresh air intake and recreational use in the open space shall be located within the buffer zones. All internal roads within the proposed Development are private roads, classified as emergency vehicular access (EVA) roads and therefore buffer distance requirements do not apply on these roads.

Table 1.6: Buffer Distances between the Proposed Residential Development and Nearby Roads

Road	Type of Road	Recommended Buffer Distance (m)	Minimum Separation Distance from Air Sensitive Use (m)	Fulfils Buffer Distance Requirement?
San Tin Highway	Expressway	20	107	Yes
Castle Peak Road - Mai Po	Rural Road	10	112	Yes
Mai Po South Road	Feeder Road[i]	5	24	Yes
Camelina Path	Private Road[ii]	10	15	Yes
Palm Springs Boulevard	Private Road[ii]	10	28	Yes
Narcissus Path	Private Road[ii]	10	31	Yes
Coronado Avenue	Private Road[ii]	10	35	Yes
Napa Avenue	Private Road[ii]	10	41	Yes
Ventura Avenue	Private Road[ii]	10	34	Yes

Notes:
[i]. Feeder Road is comparable to Local Distributor by definition
[ii]. The buffer distance of 10m corresponding to District Distributors was applied to Private Roads, as a conservative approach.

The HKPSG buffer distance requirement is met from all the surrounding roads for the proposed development subject to no proposed air sensitive uses being located within the buffer zones. By incorporating the recommended buffer zones into the design of the proposed development, adverse impact from vehicular emission to planned ASRs is not anticipated. Moreover, based on the traffic forecast of Mai Po South Road (the road leading to the Project site) provided by the Project's Traffic Consultant, more than 90% of vehicles inside the Project site during peak hours will be private cars. The rest of the vehicle types will be light goods vehicles and only a small number of heavy vehicles, such as refuse collection vehicles, would also appear within the Project site. In addition, Mai Po South Road is designated as a private road, mainly serving as an access road for the proposed development. No public transport service (including public transport interchange (PTI) and transport lay-by) will be provided within the proposed development.

A proposed car park will be located at the basement of the residential development. Reference shall be made to ProPECC PN 2/96 "*Control of Air Pollution in Car Parks*" for its design and operation. There will be 2,134 residential car parking spaces, 235 for visitors, 27 accessible parking spaces, 212 motorcycle parking spaces, 173 bicycle parking spaces and only 47 loading/ unloading bays, which may be used for passenger boarding / alighting, goods vehicles, etc.. The ventilation exhausts of the basement car park will be determined in the detail design stage.

All sewage generated from the Development will either be conveyed to San Tin / Lok Ma Chau Effluent Polishing Plant (STLMC EPP) through the public sewer that will be constructed under the

San Tin/ Lok Ma Chau Development Node or to the existing Nam San Wai Sewage Pumping station (SPS) for discharge to the Yuen Long STP. The option for sewage treatment will be confirmed during a later detailed design stage.

For the first option, a temporary on-site STP with a capacity of about 4,000 m^3/day will be provided until the STLMC EPP is ready to accept the generated sewage. No permanent on-site STP is proposed for the Development. The temporary on-site STP will provide tertiary level treatment; it will be fully enclosed and maintained at negative pressure. It will be designed with its inlet chamber and wet well located underground and enclosed by airtight cover. The exhaust will be facing away from the nearest sensitive receivers as far as practicable. It will be equipped with a high efficiency odour removal system of at least 95% (and 99.5% for hydrogen sulphide for the treatment of exhaust before discharge to the atmosphere). The temporary on-site STP will be abandoned after the STLMC EPP commences to be used to collect sewage generated from the proposed Development. The approved EIA for the Expansion of Sha Tau Kok Sewage Treatment Works (STKSTW) (EIA Register No.: AEIAR – 207/2017) is referenced. It has a proposed capacity of 5,000m^3/day by Phase 1 and 10,000m^3/day by Phase 2 of its development. The sewage treatment technology and odour control measures of STKSTW are similar to those proposed for the on-site STP, as summarized below.

- Enclosure of the major process equipment inside a building structure;
- Utilization of a Membrane Bioreactor (MBR) system equipped with a deodorizer (with 99.5% H_2S removal efficiency) to treat odorous emissions;
- Regular maintenance of the deodorizer to ensure that the odour removal efficiency remains at or above the design requirement; and
- Locating the exhaust of the deodorization facilities as far away as possible from any nearby ASRs.

The odour impact assessment of the approved EIA for STKSTW predicted 5-second odour concentrations at its closest ASR (20m away from the STW) of 0.03OU to 0.13OU at assessment heights of 1.5m to 10.5m above ground, which are well below the odour criterion of 5OU. The exhaust of the proposed temporary on-site STP will also be placed more than 20m from the nearest air sensitive uses and facing away from them, as far as practicable. An indicative location of the STP exhaust is shown in **Figure 1.1**. Adverse odour impact from the temporary STP is therefore not anticipated.

In relation to the second option for sewage treatment, odour nuisance is also not anticipated during sewerage conveyance as this will be transferred via an enclosed sewerage pipeline to the existing Nam San Wai Sewage Pumping station for discharge to Yuen Long Sewage Treatment Plant.

The planned STLMC EPP and food waste pre-treatment facilities (FWPF) is located just over 480m away from the nearest air-sensitive use of the proposed development, as indicated in **Figure 1.1**. Contour plots of predicted maximum 5-second average cumulative odour concentrations at various assessment heights between 1.5mAG and 20mAG, as presented in the approved EIA for San Tin / Lok Ma Chau Development Node (AEIAR-261/2024), indicated exceedances of odour impact away from proposed Development. Exceedance zones were identified over the STLMC EPP and FWPF's at 10mAG, 15mAG and 20mAG. The shortest separation distances between the exceedance zones and the nearest air-sensitive use are approximately 514m, 535m and 552m at 10mAG, 15mAG and 20mAG, respectively, which are all over 500m. No air sensitive uses were expected within these exceedance zones. Therefore, odour impact from the STLMC EPP and FWPF is not anticipated.

Within the 500m Assessment Area, two existing private STPs located more than 200m from the Project site, as shown in **Figure 1.1**, serve the Palm Springs and Royal Palms residential developments. The population sizes of both Palm Springs and Royal Palms are about 3,300 and

1,700, respectively. According to the previously approved Section 16 submissions, no sewage odour was detected when conducting site surveys at the Project site over 15 months from April 2005 to June 2006, and on 21 July 2023. A recent site survey was conducted on 13 June 2024 during which no odour was also detected around the Project site boundary of the proposed development and the site boundaries of both existing STPs.

1.6 Mitigation Measures

1.6.1 Construction Phase

It is recommended to include good site practice in the contract clauses to control cumulative construction air quality impact, and to implement a dust monitoring and audit programme to ensure proper implementation of the identified mitigation measures. All the relevant control measures stipulated in the Air Pollution Control (Construction Dust) Regulation would be fully implemented. Mitigation measures include:

- use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding where scaffolding is erected around the perimeter of a building under construction;
- dump trucks for material transport should be totally enclosed using impervious sheeting;
- any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;
- dusty materials remaining after a stockpile is removed should be wetted with water;
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g., concrete, bituminous materials, hardcore or similar;
- the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;
- all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;
- vehicle speed to be limited to 10 kph except on completed access roads;
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction site;
- the load of dusty materials carried by vehicles leaving the construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicles;
- the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet;
- deploy electrified NRMMs as far as practicable;
- use of exempted NRMMs should be avoided;
- regular maintenance of construction equipment deployed on-site should be conducted;
- all malodorous excavated material should be placed as far as possible from any ASRs;
- the stockpiled malodorous materials should be kept in airtight and watertight container on site and transported off site within 24 hours, for which sufficient number of containers shall be provided;

- during transportation, these odorous materials on the trucks should be properly covered by tarpaulin sheets;
- Limited number of ponds shall be excavated at a time, in line with the phased construction works; and
- Frequent site inspections shall be conducted to monitor odour impact.

1.6.2 Operational Phase

As adverse air quality impact during the operational phase is not anticipated, no specific mitigation measures are required.

1.7 Evaluation of Residual Impact

No adverse residual impact is anticipated for the construction and operational phases of the Project.

1.8 Environmental Monitoring and Audit

Although the proposed Project is not expected to generate excessive dust levels, an environmental monitoring and audit program is recommended to ensure compliance with air quality criteria and the proper implementation of mitigation measures.

1.9 Conclusion

Through proper implementation of control measures, construction dust and gaseous emissions can be controlled and hence no adverse construction air quality impacts are anticipated.

During the operational stage, no adverse air quality impact is anticipated.

2 Noise Impact

2.1 Introduction

This section reviews the noise impact assessment findings from the previously approved Section 16 submission (Application No.: A/YL-MP/344) and identifies any changes or additional noise impacts that may arise due to the proposed changes to the layout of the residential portion. At a later stage, a Noise Impact Assessment report will be conducted to review, explore, demonstrate and implement appropriate noise mitigation measures for full compliance with the relevant noise criteria and requirements under ProPECC PNs, HKPSG and NCO in both construction and operation phases of the proposed developments.

Legislation, Standards, Guidelines and Criteria

2.1.1 Construction Phase

ProPECC PN1/24 offers guidance on the existing control on noise from construction activities under the Noise Control Ordinance (NCO) and Environmental Impact Assessment Ordinance (EIAO). It also outlines the requirements and recommendations on the practices for minimizing construction noise. The noise generated by construction activities for the project during non-restricted hours (7 a.m. to 7 p.m. on any day that is not a Sunday or general holiday) should be minimized to the greatest extent practicable. Additionally, the construction noise at the facade of the respective noise-sensitive receivers should not exceed the following noise levels.

Table 2.1: Relevant Noise Standard for Daytime Construction Activities

Noise Sensitive Receivers	Leq(30min) dB(A)
All domestic premises	75
Educational institutions (including kindergartens and nurseries	70 (65 during examinations)

Notes:
[i] The above noise standards apply to uses, why rely on opened windows for ventilation
[ii] The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

2.1.2 Operational Phase

Road Traffic Noise Criteria

With reference to the guideline in Table 4.1 of Chapter 9 of the HKPSG, the summary of relevant noise criteria regarding road traffic noise is given in **Table 2.2**

Table 2.2: Relevant Road Traffic Noise Standard for Planning Purposes

below.

Table 2.2: Relevant Road Traffic Noise Standard for Planning Purposes

Uses	Road Traffic Noise, L10 (1 Hour), dB(A)
All domestic premises, including temporary housing accommodation, hotels and hostels, offices	70
Educational institutions including kindergarten, child care centres and all other where unaided voice communication is required	65
Places of public worship and courts of law	65
Hospitals, clinics, convalescences and residential care home for the elderly - Diagnostic rooms - Wards	55

Notes:
[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade

Fixed Noise Assessment Criteria

As stated by Section 4.2.13 of Chapter 9 of the HKPSG, noise assessments for fixed noise sources would normally be conducted in accordance with the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM) under the Noise Control Ordinance (NCO). The IND-TM lays down statutory Acceptable Noise Levels (ANLs). The level of the intruding noise at the facade of the nearest sensitive use should be at least 5 dB(A) below the appropriate ANL shown in Table 3 of the IND-TM or, in the case of the background being 5 dB(A) lower than the ANL, should not be higher than the background. In accordance with IND-TIM, the ANLs for the Noise Sensitive Receivers (NSRs) are determined with consideration of the Area Sensitivity Rating (ASR). The ASR depends on the type of area and the degree of impact that Influencing Factors (IF) have on the NSRs. **Table 2.3** Shows the considerations for determining the appropriate ASR for different NSRs.

Table 2.3: Area Sensitivity Ratings

Type of Area Containing NSR	Degree to which NSR is affected by IF		
	Not Affected[(c)]	Indirectly Affected[(d)]	Directly Affected[(e)]
(i) Rural area, including country parks[(a)] or village type developments	A	B	B
(ii) Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
(iii) Urban area[(b)]	B	C	C
(iv) Area other than those above	B	B	C

Definitions:
a) "Country park" means an area that is designated as a country park pursuant to section 14 of the Country Parks Ordinance.
b) "Urban area" means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.
c) "Not Affected" means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR.
d) "Indirectly Affected" means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR.
e) "Directly Affected" means that the NSR is at such a location that noise generated by the IF is readily noticeable at the NSR and is a dominant feature of the noise climate of the NSR.

The appropriate ANL, in dB(A), for a given NSR may be determined from **Table 2.4** having regard to the appropriate ASR and the time period under consideration.

Table 2.4: Acceptable Noise Levels (ANLs)

Time Period		Area Sensitivity Rating		
		A	B	C
Day	(0700 to 1900 hours)	60	65	70
Evening	(1900 to 2300 hours)			
Night	(2300 to 0700 hours)	50	55	60

Notes:
[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

The proposed development in Wo Shang Wai is situated adjacent to low density residential areas, which include low-rise private residential units such as Royal Palms and Palm Spring. The proposed development consists of numbers of 6 to 10 storey mid-rise residential towers and 3 storey houses in this S12A planning application. Therefore, when determining the type of area containing NSR, the Site is considered to be located in low density residential area consisting of low-rise or isolated high-rise development in accordance with IND-TM. In addition, the type of area containing NSR is not considered to be urban areas because the Site is not within the area of San Tin / Lok Ma Chau Development Node.

For the degree to which NSR is affected by IF, San Tin Highway (STH) is considered to be an IF since STH is an expressway that has Annual Average Daily Traffic (AADT) greater than 30,000. Since there is certain separation distance from the Site to the STH, the majority of the area of the proposed development would be indirectly affected by the IF. Therefore, Area Sensitivity Rating (ASR) "B" would be adopted in this planning application. Hence, the Acceptable Noise Levels (ANL) should be 65 dB(A) in daytime period and 55 dB(A) for nighttime period.

In accordance with Table 4.1 of chapter 9 of HKPSG, the noise standards of planned fixed noise sources should be 5 dB(A) below the appropriate the ANL shown in IND-TM. For this reason, the planning noise criteria for planned fixed noise sources should be 60 dB(A) in daytime period and 50 dB(A) for nighttime period, or the prevailing background noise level, whichever is lower.

2.2 Identification of Potential Noise Impacts

The Assessment Area for the noise impact assessment has included all areas within 300m from the boundary of the Project site boundary as shown in **Figure 2.1**. Major land use within the Assessment Area includes residential developments such as Royal Palms, Palm Springs, Mai Po San Tsuen and Wo Shang Wai village, and roads such as Castle Peak Road, San Tin Highway and San Tam Road.

The potential noise impacts associated with the construction and operational phases of the proposed development are identified and described in this section.

2.2.1 Construction Phase

Potential construction noise impact would be associated with the uses of Powered Mechanical Equipment (PME) for various construction activities of the Project. The construction activities mainly divided into 3 main categories sequentially - (1) Site Clearance, (2) Substructure Works and (3) Superstructure Works.

The construction activities for the proposed development are divided into 6 Phases. It is assumed that all the Phases (Phase 1 to Phase 6) would be under construction at the same time in the

assessment and the haul road would be equally distributed for each phase as shown in **Figure 2.2.**

Non-percussive piling shall be used for the foundation works at the subject development site. No noisy operations are expected during the 'finishing' activity of each phase as such activities are mostly confined to the inside of the already constructed houses. The above statement is the same as previously approved Section 16 submission.

2.2.1.1 Cumulative Impact from Concurrent Project

Based on the tentative construction programme, the construction of the Project will commence in 2027 and the planned population intake year for all six phases of the residential development is 2031. The construction of the Project could be carried out concurrently with the San Tin/ Lok Ma Chau Development Node (Register No.: EIA-302/2023). Location of the concurrent project is shown in **Figure 2.1**. Based on the latest information, the construction works started in 2024. The maximum sound power levels of work front falling into 300m assessment area are extracted from the EIA for quantitative assessment.

The potential noise impact during the construction phase of the development was assessed quantitatively as detailed in **Section 2.6.1**.

2.2.2 Operational Phase

2.2.2.1 Road Traffic Noise

Road traffic on nearby road network is the dominant noise source within the Assessment Area. There is potential road traffic noise impact on the proposed development.

2.2.2.2 Fixed Noise Sources

Existing Fixed Noise Sources

Based on the approved EIA report (Ref. no. AEIAR-217/2018A), STP in Royal Palms and the Mai Po Ventilation Building of the XRL near the site entrance were identified within the Assessment Area. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. Furthermore, no additional planned fixed plant has been identified since the previously approved Section 16 submission.

Planned Fixed Noise Sources

E&M buildings and one permanent on-site sewage treatment plant were proposed in the previous Section 16 submission which the plants within the buildings will be entirely enclosed and confined, hence, no adverse noise impact was concluded. According to the tentative layout, E&M buildings will be provided on-site. Given that the E&M buildings will be entirely enclosed and confined, no adverse fixed noise impact from the planned fixed noise sources is expected.

The operation noise impact assessment was detailed in **Section 2.6.2**.

2.3 Determination of Noise Sensitive Receivers

NSRs have been identified within the Assessment Area. These NSRs included all existing NSRs as well as planned/committed noise sensitive developments and uses earmarked on the relevant Outline Zoning Plans and development layout plans.

According to Planning Department's record, no planning application or rezoning application for residential development or other noise sensitive uses is identified in the nearby Other Specified

Uses (OU) and Village (V) zones. The adjacent OU zone is being used for the Mai Po Ventilation Building of XRL Project.

Any future planned residential uses of these sites require the approval from Town Planning Board and application for such uses likely have to go through the EIA process. Therefore, there are currently no known planned sensitive uses in the OU. As New Territories Exempted Houses in V zone are always permitted, representative noise sensitive receiver at the V zone in the vicinity of the proposed development is included in this assessment.

The uses and designation of the noise sensitive receivers within the Assessment Area are shown in **Table 2.5**. The assessment points for construction noise impact assessment are shown in **Figure 2.2** and summarised in **Table 2.6**.

During the operation phase of the development, NSRs will be subject to the noise impact from road traffic and fixed plant sources. As determined in the approved EIA of the proposed development (Register No. AEIAR-120/2008), the NSRs mostly affected by road traffic noise are those located close to the site access road connecting San Tin Highway. For the fixed plant noise impact, the most affected NSRs are those located nearby the XRL ventilation building (i.e. major fixed noise source). The assessment points identified for operation phase assessment are shown in **Figure 2.3a** and **Figure 2.3b** and summarised in **Table 2.7** and **Table 2.8**, respectively.

Table 2.5: Noise Sensitive Receivers Identified within the Assessment Area

Designation	Uses
Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential
Palm Springs	Residential
Royal Palms	Residential
Wo Shang Wai Village	Residential
Mai Po San Tsuen	Residential
Scenic Heights	Residential
St Lorraine English Kindergarten	Educational

Table 2.6: Horizontal Distances between the Representative NSRs and the Notional Source Position of Each Phase for Construction Phase

NSR ID	Uses	Locations / Descriptions	No. of storeys	Horizontal distance between NSRs and the notional source position of each phase, m ^					
				1	2	3	4	5	6
NSR1	Residential	House No. 5, Cherry Path, Palm Springs	3	84	220	389	577	287	414
NSR2	Residential	House No. 5, Camelia Path, Palm Springs	3	73	223	402	591	262	404
NSR3	Residential	House No. 1, Pinaceae Drive	3	85	259	439	626	218	386
NSR4	Residential	House No. 17, Wo Shang Wai Village	3	154	211	329	456	89	190
NSR5	Residential	House No. 1, Narcissus Path, Royal Palms	3	133	187	289	418	54	150
NSR6	Residential	House No. 25, Narcissus Path, Royal Palms	3	184	217	278	375	65	67
NSR7	Educational	St Lorraine English Kindergarten	3	278	321	381	457	173	167

NSR8	Residential	House No. 61, Narcissus Path, Royal Palms	3	282	294	292	335	162	66
NSR9	Residential	House No. 1, Marin Avenue, Royal Palms	3	301	269	175	173	216	69
NSR10	Residential	House No. 1, Ventura Avenue, Royal Palms	3	294	243	93	82	239	82
NSR11	Residential	House No. 202, Mai Po San Tsuen	3	577	519	340	167	518	368
NSR12	Residential	House No. 330, Mai Po San Tsuen	3	548	498	304	148	510	366
NSR13	Residential	Block A1, Scenic Heights	3	721	669	513	311	637	491

Note: (^) – For Phase 1, the horizontal distance between the NSRs and (i) the notional source position, or (ii) the notional source position of Phase 1 development area at the west of the site, whichever is the shortest, was adopted as conservative approach.

Table 2.7: Representative NSRs for Operation Phase (Road Traffic Noise)

NSR ID	Description	Uses	No. of storeys
TN1	3-Storey House	Residential	3
TN2	Tower C2-1	Residential	10
TN3	Tower C2-1	Residential	10
TN4	Tower C2-1	Residential	10
TN5	Tower C2-2	Residential	10
TN6	Tower C2-2	Residential	10
TN7	Tower C2-2	Residential	10
TN8	Tower C2-3	Residential	10
TN9	Tower C2-3	Residential	10
TN10	Tower C2-3	Residential	10
TN11	Tower C2-4	Residential	10
TN12	Tower C2-4	Residential	10
TN13	Tower C2-4	Residential	10
TN14	Tower C2-5	Residential	10
TN15	Tower C2-5	Residential	10
TN16	Tower C2-5	Residential	10
TN17	Tower C2-5	Residential	10
TN18	Tower C2-5	Residential	10
TN19	Tower C1-22	Residential	6
TN20	Tower D2-8	Residential	6
TN21	Tower D2-7	Residential	6
TN22	Tower D1-7	Residential	6
TN23	Tower D2-6	Residential	6
TN24	Tower C2-6	Residential	6
TN25	Tower C2-6	Residential	6
TN26	RCHE with EM Building below	Social Welfare & EM	4
TN27	RCHE with EM Building below	Social Welfare & EM	4
TN28	RCHE with EM Building below	Social Welfare & EM	4
TN29	RCHE with EM Building below	Social Welfare & EM	4
TN30	RCHE with EM Building below	Social Welfare & EM	4

NSR ID	Description	Uses	No. of storeys
TN31	RCHE with EM Building below	Social Welfare & EM	4
TN32	RCHE with EM Building below	Social Welfare & EM	4
TN33	RCHE with EM Building below	Social Welfare & EM	4

Table 2.8: Representative NSRs for Operation Phase (Fixed Plant Noise)

NSR ID	Description	Uses	No. of storeys
FN1	Tower C2-5	Residential	10
FN2	Tower C2-5	Residential	10
FN3	Tower C2-4	Residential	10
FN4	Tower C2-3	Residential	10
FN5	Tower C2-2	Residential	10
FN6	Tower C2-1	Residential	10
FN7	3-Storey House	Residential	3
FN8	RCHE with EM Building below	Social Welfare & EM	4
FN9	RCHE with EM Building below	Social Welfare & EM	4

2.4 Assessment Methodology

2.4.1 Construction Phase

Construction noise levels are predicted at the identified NSRs for both the foundation and superstructure work stages in order to assess the project feasibility during the planning stage and to identify if there are any potential constraints on the works programme or the use of construction equipment.

The methodology for the construction noise assessment other than percussive piling is based on the procedures set out in the GW-TM, as summarised below:

- To identify the affected NSRs within the Study Area;
- To identify the phasing of construction work and, locations and required number of construction plant items;
- To obtain the sound power levels in dB(A) of the construction equipment from the GW-TM;
- To determine the distance from the effective noise source location (or "notional source position") to the NSRs and distance attenuation (from geometric spreading and other absorption effects where appropriate), barrier corrections and reflection corrections at the NSR as prescribed in the GW-TM;
- To calculate the Corrected Noise Level (CNL) which will be generated by the construction works at the NSRs; and
- To propose direct mitigation measures, if necessary, to minimise the impact by the construction work in order to comply with the stipulated noise limits.

Construction Phases

Construction of the Project will commence in 2027 with the residential development ready for occupation in 2031. The entire site will be divided into 6 portions i.e., 6 residential development phases. It is assumed that construction works will be carried out at the same time as conservative approach. All the phases will be completed before the population intake.

Non-restriction Hours

No evening or night time (7pm to 7am the next day) construction work is anticipated. Therefore, potential construction noise impacts during restricted hours were not assessed. The potential noise impacts on the nearby NSRs arising from the construction works during non-restricted hours (7am to 7pm) were assessed. Notwithstanding the above, for any construction works to be carried out during the restricted hours, the Contractor will be required to submit CNP application to Noise Control Authority and has the responsibility to ensure compliance with the condition of CNP, if need.

Construction Plant Inventory

A typical plant inventory for the major construction works provided by the project team was shown in **Appendix 2.2.**

Whilst it is possible that the future appointed Contractor may propose a different plant inventory, this assessment has been undertaken on the anticipated plant to allow early identification of any potential noise problem and to ensure there are practicable and sufficient noise mitigation measures that can be implemented to alleviate adverse noise impacts during the planning stage. The Contractor will be required to provide an updated Construction Noise Mitigation Plan (CNMP) with details of the updated plant inventory and mitigation measures to achieve acceptable noise levels on the nearby NSRs.

2.4.2 Operational Phase

Road Traffic Noise

The road traffic noise level at the identified noise sensitive receivers were predicted based on the maximum projection of road traffic flow within 15 years upon the last phase occupation of the proposed residential development which is 2046. The traffic flow project in year 2046 as shown in **Table 2.9** is adopted.

Table 2.9: Traffic Flow Forecast of Road Networks (Year 2046) (1)

Index No.	Road Name	Direction	Road Speed (km/hr)	AM Peak		PM Peak	
				Total Flows(2) (Veh/hr)	HV% (3)	Total Flows(2) (Veh/hr)	HV% (3)
1	Mai Po South Road	EB	50	350	13%	200	16%
		WB	50	250	16%	250	14%
2	Castle Peak Road – Mai Po	2-way	50	650	24%	600	31%
3	San Tin Highway	NB	100	5300	39%	4700	37%
4	San Tin Highway	SB	100	4500	36%	4700	28%
5	San Tam Road	2-way	50	450	35%	400	28%
6	San Tam Road	2-way	50	450	32%	450	31%
7	San Tam Road	2-way	50	500	26%	500	22%
8	Ko Hang Road	2-way	50	50	30%	50	27%
9	Maple Po Gardens 1st St	2-way	50	150	16%	100	9%
10	Maple Po Gardens 1st St	2-way	50	100	16%	100	4%
11	Maple Po Gardens 5th St	2-way	50	50	11%	50	18%
12	Castle Peak Road – Mai Po	2-way	50	700	27%	600	34%
13	Mai Po Road	2-way	50	100	35%	50	28%
14	Royal Palms Boulevard	2-way	50	500	15%	500	11%

Notes:
1. The forecast data is provided by the traffic consultant;
2. Traffic flows are rounded up to the nearest 50 veh/hr;
3. Heavy vehicles include all category of motor vehicles except private car, taxi and motorcycle;
4. AM Peak is selected for assessment as worst-case scenario.

The road traffic noise calculation procedures prescribed in the "Calculation of Road Traffic Noise (1988)" (CRTN) published by the Department of Transport, UK have been adopted in this assessment. The traffic noise modelling was carried out using proprietary traffic noise model software "RoadNoise", which implements the CRTN procedures. **Figure 2.4** shows the computer plot of the input features in the noise model.

Fixed Noise

With reference to the previously approved Section 16 submission, the existing STP at Royal Palms and Mai Po Ventilation Building were identified as the potential fixed noise sources. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. As for the planned fixed noise sources (e.g., E&M Buildings) under the Project, it is similar to those previously approved in the Section

16 submission. Details of all the identified existing and planned fixed noise sources are presented below –

i. Existing Sewage Treatment Plant at Royal Palms

Within the Assessment Area, there is an existing STP at the entrance of Royal Palms at the northeast corner of the Project site. The STP at Royal Palms is located 184m from the Project site boundary. The location of the STP is shown in **Figure 2.3b**. With reference to the previously approved Section 16 submission, the noise level at 3m from the said plant is 56dB(A). The plant operates 24 hours a day and it is assumed that the operating noise is steady throughout the day.

The worst-case fixed plant noise level at the Project site was predicted using standard acoustics principles and practices. The predicted noise level at the Project Boundary is 20 dB(A) [56 - 20*log (184/3)] without background noise level superimposed which is far below the noise criteria for day and evening time (i.e., 65dB(A)) and night time (i.e., 55dB(A)). As such, it is anticipated that there will be no significant noise impact from this fixed plant.

ii. Existing Mai Po Ventilation Building (MPVB)

The noise data of the MPVB has been updated (compared to previously approved Section 16 submission) based on the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (XRL), the calculated SWLs of the MPVB ventilation openings have been adopted for assessment. The location of the louvres on the MPVB is shown in **Figure 2.3b**. Pages extracted from the Commissioning Test Report regarding the SWLs and louvre location of the MPVB are included in **Appendix 2.3**.

iii. Existing Mai Po Substation

Within the Assessment Area, there is a substation adjacent to the transitional Housing – The STEP, as shown in **Figure 2.3b**. The Mai Po Substation is located 322m from the Project site boundary, and they are separated by the San Tin Highway. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing Mai Po Substation will be insignificant.

iv. Existing Sewage Treatment Plant at Palm Springs

Within the Assessment Area, there is an existing STP at the western boundary of Palm Springs, as shown in **Figure 2.3b**. The STP at Palm Springs is located 239m from the Project site boundary. Based on the site observation, no noticeable noise was identified. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing STP at Palm Springs will be insignificant.

v. Existing Mai Po Floodwater Pumping Station

Within the Assessment Area, there is an existing floodwater pumping station adjacent to Mai Po San Tsuen, as shown in **Figure 2.3b**. The Mai Po Floodwater Pumping Station is located approximately 267m from the Project site boundary. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the Mai Po Floodwater Pumping Station will be insignificant.

vi. Planned E&M Buildings (from Project)

With reference to the current MLP, there will be E&M buildings, as shown in **Figure 2.3b**. The E&M buildings will be small in scale and the plants within the building will be entirely enclosed

and confined. Hence, the noise impact from this fixed plant is anticipated as insignificant and will not be considered in this assessment.

2.5 Prediction and Evaluation of Noise Impact

2.5.1 Construction Phase

Construction Noise

With the adoption of the approved mitigation measure (i.e. noise barrier) during the construction phase in the latest EP (EP-311/2008/E) as shown in **Figure 2.5** and adopting of QPME / Quiet Construction Method as shown in **Table 2.11**, the maximum predicted construction noise levels at the identified NSRs are summarised in **Table 2.10**. The cross-section drawings between the existing temporary noise barriers for construction phase and selected NSRs have been provided in **Figure 2.7** and **Figure 2.8**. A detailed noise calculation is provided in **Appendix 2.4**.

Table 2.10: Maximum Predicted Construction Noise Levels at Representative NSRs

NSR	Maximum Predicted Construction Noise Level, dB(A)	Daytime Construction Noise Criteria, dB(A)
NSR 1	63	75
NSR 2	64	75
NSR 3	63	75
NSR 4	64	75
NSR 5	67	75
NSR 6	67	75
NSR 7	60	70 (65 for examination period)
NSR 8	65	75
NSR 9	65	75
NSR 10	67	75
NSR 11	70	75
NSR 12	71	75
NSR 13	66	75

Table 2.11: QPME / Quiet Construction Method for Construction Phase

QPME / Quiet Construction Method	Description	SWL, dB(A)
Hydraulic Crusher	Replace traditional excavated-mounted breaker	94
Excavator, wheeled/tracked	Replace Regular PME [QPME ID: EPD-12299]	92
Bulldozer, tracked	Replace Regular PME [QPME ID: EPD-12694]	108
Crane, mobile	Replace Regular PME [QPME ID: EPD-12240]	101

The maximum predicted construction noise levels at the representative NSRs range from $L_{eq(30mins)}$ 54 dB(A) to 69 dB(A). The assessment results indicate that construction noise levels at all identified NSRs are expected to comply with the construction noise criteria for domestic premises and educational institution. Therefore, no additional mitigation measures due to the design changes are required.

2.5.2 Operational Phase

Road Traffic Noise

Table 2.12 summarises the predicted noise levels at the representative NSRs, and noise exceedance was observed. Mitigation measure is required to alleviate the predicted road traffic noise impact.

Table 2.12: Predicted Road Traffic Noise Levels at Representative NSRs (Base Case)

NSR ID	Uses	Max. Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN1	Residential	69	70	N
TN2	Residential	**71**	70	Y
TN3	Residential	**71**	70	Y
TN4	Residential	70	70	N
TN5	Residential	**71**	70	Y
TN6	Residential	**71**	70	Y
TN7	Residential	69	70	N
TN8	Residential	69	70	N
TN9	Residential	**71**	70	Y
TN10	Residential	69	70	N
TN11	Residential	70	70	N
TN12	Residential	**72**	70	Y
TN13	Residential	69	70	N
TN14	Residential	69	70	N
TN15	Residential	**73**	70	Y
TN16	Residential	**75**	70	Y
TN17	Residential	67	70	N
TN18	Residential	**74**	70	Y
TN19	Residential	50	70	N
TN20	Residential	49	70	N
TN21	Residential	56	70	N
TN22	Residential	58	70	N
TN23	Residential	56	70	N
TN24	Residential	66	70	N
TN25	Residential	67	70	N
TN26	Social Welfare & EM	**74**	70	Y
TN27	Social Welfare & EM	**75**	70	Y
TN28	Social Welfare & EM	**76**	70	Y
TN29	Social Welfare & EM	**76**	70	Y
TN30	Social Welfare & EM	**73**	70	Y
TN31	Social Welfare & EM	**72**	70	Y
TN32	Social Welfare & EM	63	70	N
TN33	Social Welfare & EM	63	70	N

Note:

[i]. **Bold** figures denote exceedance of relevant noise criteria.

Fixed Noise Sources

The potential fixed plant noise impact at the representative NSRs is assessed and the results are shown in **Table 2.13**. The detailed noise calculation is given in **Appendix 2.5**.

Table 2.13: Predicted Fixed Noise Level at Representative NSRs

NSR ID	Predicted Noise Level, dB(A)			
	Daytime	Daytime Criterion	Night-time	Night-time Criterion
FN1	39	65	39	55
FN2	41	65	41	55
FN3	41	65	41	55
FN4	40	65	39	55
FN5	39	65	38	55
FN6	37	65	36	55
FN7	35	65	34	55
FN8	39	65	39	55
FN9	39	65	39	55

Note:
[i]. **Bold** figures denote exceedance of relevant noise criteria.

No exceedances in fixed plant noise impact are predicted; therefore, no mitigation measures are necessary.

2.6 Mitigation Measures

2.6.1 Construction Phase

Construction noise assessment results show that, with the uses of QPME and noise barriers as recommended in the approved EIA of this Project, the maximum construction noise levels at all of the representative NSRs are predicted to comply with the construction noise criterion of $L_{eq(30mins)}$ 75dB(A) for domestic premises and 70 dB(A) for educational institution as stipulated in the EIAO–TM.

In addition to the measures recommended in the approved EIA of this Project, practical mitigation measures should be implemented to further alleviate the potential noise impact. It is expected that with suitable on-site supervision in limiting the number of powered mechanical equipment and good site practices, the construction noise impact can be further reduced. The following mitigation measures are recommended to further alleviate the construction noise impact:-

- Scheduling of work - The Contractor will be required to determine the number and type of construction equipment taking into account the use of quiet plant while devising a feasible work programme.
- Sitting of facilities - This includes avoiding simultaneous operation of noisy equipment; retaining existing features that can act as a noise barrier until the last phase; and erecting, as early as possible, any new structures which will have the effect of screening noise sources. Such screens can reduce noise levels by 15dB(A) or more. Noisy equipment should always be sited as far as possible from noise sensitive receivers. Consideration should also be given to the use of structures such as site offices and stores as noise barriers.
- Use of quiet Powered Mechanical Equipment (QPME) - The contractor should be requested, as far as possible, to use quiet PME, which has a lower SWL compared to one specified in GW–TM. This is one of the most effective measures to reduce noise emission at source and is increasingly practicable because of the availability of quiet equipment in the market.

Good site practices and noise management can further reduce the noise impact of the construction sites' activities on nearby NSRs. The following measures should be followed during each phase of construction:

- Only well-maintained plant should be operated on-site, and the plant should be serviced regularly during the construction programme;
- Machines and plant that may be intermittent in use should be shut down between work periods or should be throttled back to a minimum;
- Plant known to emit noise strongly in one direction, should, where possible, be oriented so that the noise is directed away from nearby NSRs;
- Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction period;
- Mobile plant should be sited as far away from NSRs as possible;
- Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; and
- The Contractor shall at all times comply with all current statutory environmental legislation.

To ensure the proper implementation of mitigation measures, a Construction Noise Management Plan (CNMP) should be prepared and submitted. The future contractor will be required through contract specifications to provide and implement sufficient direct mitigation measures with reference to the recommendations in the approved EIA and this EA or the future detailed design to achieve acceptable noise levels on the nearby NSRs. The CNMP shall identify the inventory of noise sources and assess the effectiveness and practically of all mitigation measures to minimize the construction noise impact. The CNMP should further explore and maximize the use of quiet construction methods / equipment as far as practicable. The CNMP should also confirm and summarise the mitigation measures to be implemented for the Project. The CNMP shall be submitted three months prior to the issue of tender for the construction of the Project and shall be included in the construction tender document.

2.6.2 Operational Phase

Road Traffic Noise

Table 2.12 indicates that exceedance of the relevant noise criteria is predicted at the noise sensitive facades in TN2, TN3, TN5, TN6, TN9, TN12, TN15, TN16, TN18, and TN26 - TN31. Hence mitigation measure is necessary to minimise the noise impact.

With reference to "Practice Note for the Planning of Residential Developments Against Road Traffic Noise (ProPECC PN 4/23)", acoustic window (AW) and enhanced acoustic balcony (EAB) are proven to be capable of reducing the noise inside the flats by at least 6 dB(A)[1], even in different configurations and dimensions to suit the individual needs, and at the same time allowing adequate natural ventilation.

The maximum traffic noise exceedance for the sensitive facades at residential buildings is 5 dB(A). Since AW can generally provide a notional noise reduction of about 6dB(A), it is recommended that those blocks (i.e. Tower C2-1, Tower C2-2, Tower C2-3, Tower C2-4, Tower C2-5) with exceedance up to 5 dB(A) will be provided with acoustic windows at the affected facades (i.e. facades in the vicinity of TN2, TN3, TN5, TN6, TN9, TN12, TN15, TN16 and TN18), as indicated in **Figure 2.6.**

[1] Based on the Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact and the findings from noise impact assessment reports prepared for private residential developments in the past.

For the RCHE, the predicted unmitigated noise level at the sensitive facades is up to 76 dB(A). Fixed glazing will be proposed for sensitive facades with noise level high than 70 dB(A). With reference to the noise level, uses were proposed for each NSRs and presented in **Appendix 2.6.**

With the implementation of the acoustic windows at the affected façades, the predicted road traffic noise levels at the representative NSRs are summarised in **Table 2.14** below, which are all in compliance with the noise criterion.

With reference to the latest EP under Wo Shang Wai (Figure 7 of EP-311/2008/E), the mitigation measures included a noise barrier integrated with E&M Building of total 5.5.m high and a 1m extend exterior wall. Given that the layout has been changed, the 1m extend exterior wall and E&M Building of total 5.5.m high would not be applied in this assessment.

Table 2.14: Predicted Road Traffic Noise Levels at NSRs with Exceedance in Base Case for the Residential Buildings (Mitigated)

NSR ID	Mitigation Measures	Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN2	Residential	⩽70	70	N
TN3	Residential	⩽70	70	N
TN5	Residential	⩽70	70	N
TN6	Residential	⩽70	70	N
TN9	Residential	⩽70	70	N
TN12	Residential	⩽70	70	N
TN15	Residential	⩽70	70	N
TN16	Residential	⩽70	70	N
TN18	Residential	⩽70	70	N

Fixed Noise Sources

According to **Table 2.13**, all NSRs comply with the relevant noise criteria. Therefore, no mitigation measures are necessary.

According to the latest EP under Wo Shang Wai (Figure 6 of EP-311/2008/E), the mitigation measures included 9.5m and 6.5m high noise barriers. Based on the above calculation (i.e. with adopting the latest noise data of MPVB from the Commissioning Test Report under EP-349/2009/N), both 9.5m and 6.5m high noise barriers mentioned in the VEP are not necessary in this assessment.

2.7 Conclusion

2.7.1 Construction Phase

With the implementation of noise mitigation measures during the construction phase, noise levels at the NSRs will comply with the noise criteria. Therefore, no residual noise impact is anticipated.

2.7.2 Operational Phase

For mitigating the potential traffic noise impact, it is recommended to adopt acoustic windows at the affected façades of the noise sensitive receivers. Relevant details of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms within the development

will be advised in the NIA report submitted at a later stage of the project. With this recommended measure in place, no adverse road traffic noise impacts are anticipated.

For fixed plant noise impact during the operational phase, no potential noise impacts are anticipated from the fixed noise source of XRL MPVB.

3 Water Quality Impact

3.1 Introduction

This section assesses the potential water quality impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

3.2 Legislation, Standards, Guidelines and Criteria

Water quality impacts have been assessed with reference to the relevant environmental legislation and standards, which are the same as those adopted in the previously approved Section 16 submission. The following relevant pieces of legislation and associated guidance are applicable to the evaluation of water quality impacts associated with the Project.

- Water Pollution Control Ordinance (WPCO) (Cap. 358);
- Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (WPCO, Cap. 358, S.21);
- Town Planning Board Guidelines No. 12C;
- Environmental Impact Assessment Ordinance (Cap. 499., S.16), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annexes 6 and 14;
- Marine Water Quality in Hong Kong in 2023;
- River Water Quality in Hong Kong in 2023;
- Hong Kong Planning Standard and Guidelines (Chapter 9);
- Practice Note for Professional Persons ProPECC PN 1/23 "Drainage Plan subject to Comment by the Environmental Protection Department, Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations 40(1), 40(2), 41(1) and 90;
- Practice Note for Professional Persons ProPECC PN 2/24 "Construction Site Drainage"; and
- Environmental, Transport and Works Bureau Technical Circular (Works) No.5/2005" Protection of natural streams/rivers from adverse impacts arising from construction works, ETWB TC (Works) No. 5/2005.

3.3 Existing Environment and Sensitive Receivers

Existing Environment

Baseline conditions of the Project site was identified as part of the previously approved Section 16 submission, which remain unchanged. The direction of water flow in the water ditches and drainage channels are basically from south to north diverting to the Shenzhen River in the Deep Bay Water Control Zone (WCZ). The Water Quality Objectives for Deep Bay WCZ are listed in **Table 3.1**.

Table 3.1: Summary of Water Quality Objectives for Deep Bay WCZ

Parameter	Objectives	Part(s) of Zone
Aesthetic Appearance	Waste discharges shall cause no objectionable odours or discolouration of the water.	Whole zone
	Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	
	Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	

Parameter	Objectives	Part(s) of Zone
	There should be no recognisable sewage-derived debris.	
	Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	
	Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.	
Bacteria	The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Secondary Contact Recreation Subzone and Mariculture Subzone
	The level of Escherichia coli should be zero per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	The level of Escherichia coli should not exceed 1 000 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
	The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive in one calendar year. Samples should be taken at least 3 times in a calendar month at intervals of between 3 and 14 days.	Yung Long Bathing Beach Subzone
Colour	Waste discharges shall not cause the colour of water to exceed 30 Hazen units.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the colour of water to exceed 50 Hazen units.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Dissolved Oxygen	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Inner Marine Subzone excepting Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be calculated as water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 milligrams per litre within 2 metres of the seabed for 90% of the sampling occasions during the year.	Outer Marine Subzone excepting Mariculture Subzone
	The dissolved oxygen level should not be less than 5 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to be less than 4 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone, Water Gathering Ground Subzones and other inland waters of the Zone
pH	The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 units.	Marine waters excepting Yung Long Bathing Beach Subzone
	Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones

Parameter	Objectives	Part(s) of Zone
	The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
	The pH of the water should be within the range of 6.0–9.0 units for 95% of samples. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 units.	Yung Long Bathing Beach Subzone
Temperature	Waste discharges shall not cause the natural daily temperature range to change by more than 2.0°C.	Whole zone
Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.	Whole zone
Suspended Solids	Waste discharges shall neither cause the natural ambient level to be raised by 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
	Waste discharges shall not cause the annual median of suspended solids to exceed 20 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Ganges Subzone, Indus Subzone, Water Gathering Ground Subzones and other inland waters
Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 milligram per litre, calculated as the annual average (arithmetic mean).	Whole zone
Nutrients	(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Inner and Outer Marine Subzones
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.7 milligram per litre, expressed as annual mean.	Inner Marine Subzone
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.5 milligram per litre, expressed as annual water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed).	Outer Marine Subzone
Five-Day Biochemical Oxygen Demand	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Chemical Oxygen Demand	Waste discharges shall not cause the chemical oxygen demand to exceed 15 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the chemical oxygen demand to exceed 30 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Toxins	Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone
	Waste discharges shall not cause a risk to any beneficial uses of the aquatic environment.	Whole Zone
Phenol	Phenols shall not be present in such quantities as to produce a specific odour, or in concentration greater than 0.05 milligrams per litre as C_6H_5OH.	Yung Long Bathing Beach Subzone

Parameter	Objectives	Part(s) of Zone
Turbidity	Waste discharges shall not reduce light transmission substantially from the normal level.	Yung Long Bathing Beach Subzone

Source: Statement of Water Quality Objectives (Deep Bay Water Control Zone). Water Pollution Control Ordinance (Cap. 358R), 1997.

The existing water pollution sources include the runoff from adjacent agricultural activities, effluent from fish-cum-duck activities at the northern boundary of the Project site and the disposal of domestic sewage from the adjacent developments. The routine marine water quality monitoring data collected by EPD in 2023 has been reviewed for the monitoring stations (DM1 and DM2) at Deep Bay WCZ. The location of the representative marine water quality monitoring stations are shown in **Figure 3.1**. The summary of water quality for Inner Deep Bay WCZ in 2023 is presented in **Table 3.2**. The overall WQO compliance rate for the Inner Deep Bay WCZ was 53% in 2023, as compared with a ten-year average of 47% in 2009-2018. Overall, with the measures under the Deep Bay Water Pollution Control Joint Implementation Programme taken progressively by the governments of Hong Kong and Shenzhen, there have been significant water quality improvements in Deep Bay. In particular, there has been full compliance of the NH_3-N WQO in the past seven years. Although Deep Bay, as compared with other WCZs, shows higher nutrient levels with annual depth-averaged TIN levels exceeding the respective TIN WQOs, a noticeable long-term decrease in TIN levels since mid-2000s has been seen.

Table 3.2: Summary of Marine Water Quality for the Inner Deep Bay WCZ in 2023

Parameters	DM1	DM2
Temperature (°C)	25.6 (19.0 – 31.7)	25.5 (19.0 – 31.4)
Salinity	18.6 (9.7 – 23.3)	20.5 (11.5 – 25.5)
Dissolved Oxygen (mg/L)	5.2 (3.7 – 7.7)	5.4 (3.7 – 7.6)
Dissolved Oxygen (% Saturation)	70 (54 – 112)	74 (55 – 111)
pH	7.4 (7.1 – 7.8)	7.4 (6.8 – 7.8)
Secchi Disc Depth (m)	1.2 (0.9 – 1.6)	1.1 (0.8 – 1.5)
Turbidity (NTU)	27.2 (6.0 – 52.2)	29.1 (7.2 – 55.7)
Suspended Solids (mg/L)	28.3 (15.0 -61.0)	35.5 (15.0 – 72.0)
BOD_5 (mg/L)	1.0 (0.5 – 1.8)	1.0 (0.1 – 2.5)
Ammonia Nitrogen (mg/L)	0.397 (0.170 -0.810)	0.282 (0.076 – 0.860)
Unionised Ammonia (mg/L)	0.006 (0.001 – 0.012)	0.004 (<0.001 – 0.016)
Nitrite Nitrogen (mg/L)	0.118 (0.043 – 0.350)	0.094 (0.035 – 0.280)
Nitrate Nitrogen (mg/L)	0.883 (0.580 – 1.300)	0.724 (0.250 – 1.100)
Total Inorganic Nitrogen (mg/L)	1.40 (0.83 – 1.82)	1.14 (0.60 – 2.04)
Total Kjeldahl Nitrogen (mg/L)	0.76 (0.40 – 0.98)	0.64 (0.31 – 1.00)
Total Nitrogen (mg/L)	1.76 (1.24 – 2.20)	1.50 (0.97 – 2.18)
Orthophosphate Phosphorus (mg/L)	0.123 (0.069 – 0.170)	0.119 (0.049 – 0.320)

Parameters	DM1	DM2
Total Phosphorus (mg/L)	0.20 (0.14 – 0.27)	0.19 (0.14 – 0.35)
Silica (as SiO_2)(mg/L)	5.38 (1.90 – 10.00)	4.43 (1.00 – 11.00)
Chlorophyl l-a (µg/L)	3.5 (1.7 – 6.0)	5.5 (1.4 – 13.0)
E.coli (cfu/100mL)	310 (24 - 3,300)	380 (21 – 80,000)
Faecal Coliforms (cfu/100mL)	640 (44 – 10,000)	730 (40 – 220,000)

Source: Marine Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual arithmetic means of depth-average results, except for *E.coli* and faecal coliforms which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.

The routine river water quality monitoring data collected by EPD in 2023 has been reviewed for the nearest monitoring location to Wo Shang Wai at Fairview Park Nullah (FVR1). The location of the river water quality monitoring station is shown in **Figure 3.1**. This nullah is a short concrete channel within the Fairview Park residential development, which shares the same drainage basin as the southern part of the Project site. The summary of the River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023 is presented in **Table 3.3**. It is observed that compliance with river water quality objectives in the Fairview Park Nullah is improving from 47% in 2002 to 73% in 2023. The WQI grading remained "Fair' in 2023 (EPD, 2023).

Table 3.3: Summary of River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023

Parameters	FVR1
Dissolved Oxygen (mg/L)	5.4 (3.7 – 11.7)
pH	7.4 (7.1 – 8.5)
Suspended Solids (mg/L)	11.5 (6.8 – 22.0)
BOD_5 (mg/L)	6.9 (3.0 – 13.0)
COD (mg/L)	30 (9 – 70)
Oil & Grease (mg /L)	<0.5 (<0.5 – <0.5)
E.coli (cfu/100mL)	25,146 (2,900 – 120,00)
Faecal Coliforms (cfu/100mL)	71,882 (14,000 – 440,000)
Ammonia-nitrogen (mg/L)	1.450 (0.450 – 2.800)
Nitrate-nitrogen (mg/L)	0.760 (0.340 – 1.200)
Total Kjeldahl Nitrogen (mg/L)	2.40 (0.92 – 4.00)
Orthophosphate Phosphorus (mg/L)	0.275 (0.095 – 0.530)
Total Phosphorus (mg/L)	0.45 (0.12 – 0.73)
Sulphide (mg/L)	<0.02 (<0.02 – 0.04)
Aluminium (µg/L)	<50 (<50 - <50)
Cadmium (µg/L)	<0.1 (<0.1 - <0.1)

Parameters	FVR1
Chromium (µg/L)	<1 (<1 – 1)
Copper (µg/L)	2 (<1 – 2)
Lead (µg/L)	<1 (<1 - <1)
Zinc (µg/L)	10 (<10 – 20)
Flow (m^3/s)	NM

Source: River Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual medians of monthly samples, except those for *E.coli* which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.
[iii]. NM indicates no measurement taken.

Water Sensitive Receivers (WSRs)

The existing or potential beneficial uses that are sensitive to water pollution include the fishponds in active use in the Conservation Area (CA) adjacent to the Project site and the drainage channel connecting to the water ditch at the northern boundary of the Project site. The Deep Bay Water Control Zone, the Ramsar Site and Mai Po Nature Reserve are the indirect sensitive receivers. The WSRs are listed in **Table 3.4** and locations are shown in **Figure 3.2**.

Table 3.4: Water Sensitive Receivers Identified within the Assessment Area

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR1	Fishponds near Tam Kon Chau Road	Fishpond	Active Fishponds	0m
WSR2	Pond near Wo Shang Wai Village	Pond	Individual pond, disconnected to river system	15m
WSR3	Ponds next to Palm Springs	Pond	Individual ponds, disconnected to river system	122m
WSR4	Ponds inside Palm Springs	Pond	Individual ponds, disconnected to river system	152m
WSR5	Pond near Palm Canyon Drive	Pond	Individual pond, disconnected to river system	295m
WSR6	Pond near Cypress Drive	Pond	Individual pond, disconnected to river system	474m
WSR7	Water Ditch around Tam Kon Chau Road	Water Ditch	Individual water ditch, disconnected to river system	0m
WSR8	Water Ditch near Camelia Path	Water Ditch	Water ditch downstream to Shan Pui River	137m
WSR9	Channels next to Palm Canyon Drive	Channel	Individual channels	45m
WSR10	Channel next to Castle Peak Road	Channel	Individual channel	330m

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR11	Channels next to Sam Tam Road	Channel	Individual channels	139m
WSR12	Channels around the pond near Cypress Drive	Channel	Individual channels	460m
WSR13	Channels around the ponds near Palm Springs	Channel	Individual channels	250m
WSR14	Channel next to Mai Po Floodwater Pumping Station	Channel	Individual channel	307m

3.4 Assessment Methodology

The findings from the previously approved Section 16 submission have been reviewed to identify any changes to the previous assessment due to the proposed change in layout of the residential portion, and any additional water quality impacts that need to be addressed. Where appropriate, additional mitigation measures are recommended to mitigation potential water quality impacts.

3.5 Evaluation of Water Quality Impact

3.5.1 Construction Phase

3.5.1.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during the construction phase:

- Diversion of existing water ditches and marsh;
- Draining of existing water ditches;
- Soil excavation and stockpiling;
- Chemical waste from plant and equipment; and
- Domestic effluent.

3.5.1.2 Evaluation of Impacts due to the Proposed Change in Residential Units

The proposed change in the layout of the development portion has not significantly changed the construction activities associated with the Project, with the previously identified water quality impacts reviewed below.

Diversion of Existing Water Ditches and Marsh

During construction phase, the existing water ditches and marsh within the Project Area will be filled in as part of site formation for the proposed Development, with the provision of temporary drainage channels to collect the runoff from the site area during construction phase. Good site practices outlined in ProPECC PN 2/24 and ETWB TC (Works) No. 5/2005 will be adopted to minimise runoff from construction works areas.

Draining of Existing Water Ditches

Draining of the existing water ditches within the Project Area will be carried out during site formation. The drained water should be passed through silt removal facilities before discharging offsite.

Soil Excavation and Stockpiling

Excavation works associated with establishment of the wetland restoration area has been completed. Excavation will be carried out within the proposed Development area for construction of basements. Runoff from open excavations and uncovered stockpiles could release sediment into the surrounding water ditches and channels, however this can be adequately managed through implementation of relevant runoff control measures outlined in ProPECC PN 2/24.

Chemical Waste from Plant and Equipment

On-site machinery and equipment may generate small amounts of waste oils or lubricants which can impact water quality if leaked or spilled. Relevant measures outlined in ProPECC PN 2/24 should be implemented to properly store and dispose of chemicals and chemical wastes.

Domestic Effluent

Domestic effluent generated on-site by the construction workforce will be contained via provision of chemical toilets.

3.5.2 Operational Phase

3.5.2.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during operation phase:

- Wastewater pollution;
- Diversion of existing water ditches and marsh; and
- Changes in hydrology.

3.5.2.2 Evaluation of Impacts

For the previously identified potential impacts during the operation phase, the volume of sewage generated by the Project would change because of the proposed change in the layout of the residential development portion and an increase in the design population. Other previously identified impacts would not be affected. New potential impacts arising from the offsite sewerage conveyance options would be assessed in the updated EIA.

Wastewater Pollution

As mentioned in the previously approved Section 16 submission, a permanent on-site sewage treatment plant (STP) will be established. However, no permanent on-site STP will be constructed under the proposed layout in the current Section 12A application. Instead, all sewage generated by the project will be conveyed to the public sewers, either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the Yuen Long Sewage Treatment Plant (YLSTW), or via a new connection constructed as part of the San Tin / Lok Ma Chau Development Node and ultimately directed to the San Tin / Lok Ma Chau Effluent Polishing Plant (STLMC EPP).

The total population (resident and staff) is projected to be 10,193, and the average dry weather flow (ADWF) volume of sewage is 3,788.04 m^3/day.

For the option of discharging to the planned STLMC EPP, in the event that the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned. Effluent from the STP will be treated to meet the Group C Inland Waters' discharge standard under the Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters before discharge to Mai Po Tributary. A discharge

license under WPCO will be applied for the temporary on-site STP and any discharge shall comply with the terms and conditions of the discharge license.

Diversion of Existing Water Ditches and Marsh

As evaluated in the previously approved Section 16 submission, the existing water ditches and marsh within the Project site mainly act as discharge points for the surface runoff generated within the Project site to the Mai Po River in the north. They will be filled in order to facilitate the construction of the site formation for the proposed Development. An internal drainage network underneath the future road system within the proposed development will be provided to collect the surface runoff generated within the Project site. The proposed internal drainage network will have sufficient capacity to cater for the runoff generated from the proposed Development, to replace the existing water ditches and marsh. The proposed internal drainage network and box culvert are shown in **Figure 3.3**. No potential impacts are identified during the operation phase.

Change in Hydrology

The proposed development will generate additional surface runoff due to the construction of additional paved areas, roads and facilities associated with the residential development. The additional runoff will be discharged to Mai Po River in the north of the Project site via the internal drainage system under the future internal road network. In the previously approved Section 16 application, the estimated peak runoff generated is 14.26 m^3/s under a 50-year storm. Based on the flow data obtained in the latest Drainage Impact Assessment under this Section 12A application, the estimated peak runoff generated is 14.95 m^3/s under a 50-year storm. Since the increase in the surface runoff is insignificant, no adverse effect on the existing aquatic organisms or water quality in the drainage system is anticipated.

3.6 Mitigation Measures

3.6.1 Construction Phase

The previously approved Section 16 submission identified mitigation measures to be implemented to minimise potential water quality impacts due to construction activities of the Project. As there are no changes to the identified water quality impacts due to the proposed change in layout of residential portion, the previously identified good site practices and mitigation measures remain valid, and no changes to the previously identified mitigation measures for construction phase are required. Good site practices outlined in ProPECC PN 2/24 and ETWB TC (Works) No. 5/2005 should be adopted to minimise runoff from construction works areas. The following measures are recommended to minimise the impacts of construction on water quality.

- Temporary site drainage facilities and perimeter channels shall be designed and implemented by Contractor prior to commencement of construction to convey surface runoff to silt removal facilities. The design of the silt /sand removal traps and sediment basins shall follow the design in ProPECC PN 2/24;
- Runoff into the excavation areas during rainstorm events shall be minimised as far as practicable. Any wastewater pumped out of the excavation areas shall be treated to remove suspended solids prior to discharge;
- No discharge of silty water into the drainage channel within and in the vicinity of the site;
- Maintenance and inspection of the drainage system and sediment removal facilities should be carried out regularly to remove any sediment and blockages, especially when rainstorms are forecast;
- Stockpiles of construction materials should be properly covered and located away from any natural stream/river;
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby steam/river by rain;

- Construction effluent, site run-off and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order: (1) minimisation of wastewater generation; (2) reuse and recycle; (3) treatment. Proper locations for discharge outlets of wastewater treatment facilities well away from the natural stream/river should be identified;
- Adequate lateral support may need to be erected in order to prevent soil/mud from slipping into the stream/river, but without unduly impeding the flow during heavy rain;
- Manholes (including those constructed as part of the Project) should be adequately covered and temporarily sealed at all times;
- Temporary access road should be protected by crushed stone or gravel;
- Intercepting channels should be provided to prevent storm runoff from washing across exposed soil surfaces;
- Trenches should be dug and backfilled in short sections. Measures should be taken to minimize the ingress of rainwater into trenches when rainstorms are likely;
- Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials;
- Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. There shall also be clear instructions showing what action to take in the event of an accidental;
- Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area;
- Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately;
- Spillage or leakage of chemical waste to be controlled using suitable absorbent materials;
- Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume;
- Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage; and
- Temporary sanitary facilities to be provided for on-site workers during construction.

3.6.2 Operational Phase

Under this Section 12A application, no permanent on-site STP will be constructed, as proposed in the previously approved Section 16 submission. Instead, all sewage generated during the Project's operational phase will be conveyed either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the YLSTW, or via a new connection to the public sewer to be constructed as part of the San Tin / Lok Ma Chau Development Node. In case the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned. A discharge license under WPCO will be applied for the temporary on-site STP and any discharge shall comply with the terms and conditions of the discharge license.

In addition, appropriate measures outlined in ProPECC PN 1/23 should be followed, whereby open areas subject to wind-blown rain and swimming pool main drains should be connected to storm water drains while covered areas receiving wastewater, swimming pool filtration bachwash, covered carparks and domestic wastewater should be discharged to foul sewers.

With the implementation of the recommended mitigation measures, the chances of any direct discharge of untreated sewage effluent into surrounding rivers or ponds will be adequately minimised, and no adverse water quality impact is anticipated.

3.7 Cumulative Impact

San Tin / Lok Ma Chau Development Node was identified within the 500m assessment area of the Project. San Tin / Lok Ma Chau Development Node will be developed in phases. Based on available information, the San Tan Technopole Phase 1 Stage 1 Works - Site Formation and Engineering Infrastructure (STT Phase 1) Project commenced on 31 December 2024 and is scheduled for completion in 2028. Therefore, STT Phase 1 Project is considered a concurrent project with potential cumulative water quality impacts which are evaluated below. The location of the concurrent project is presented in **Figure 3.2**.

The STT Phase 1 Project includes site formation of land, ground investigation works, land decontamination works, archaeological survey, diversion of existing infrastructure, and construction of new roads and associated facilities such as drainage, sewerage, water mains, landscaping, and slope works. As specified in the approved EIA report (AEIAR-261-2024), mitigation measures will be implemented to control construction site runoff near any inland watercourses and sewage effluent from construction works. During the operational phase, all the sewage generated from STT Phase 1 Project will be discharged to the public sewerage system and diverted to San Tin Lok Ma Chau Effluent Polishing Plant for proper treatment and precautionary measures will also be implemented to minimise the risk of emergency bypass and leakage of sewage. Therefore, with proper implementation of the recommended mitigation measures, adverse cumulative water quality impacts are not expected.

3.8 Evaluation of Residual Impact

With the implementation of the recommended mitigation measures, no adverse water quality impacts are expected during the construction and operation phases, and no residual impact on water quality is anticipated.

3.9 Environmental Monitoring and Audit

A water quality monitoring and site auditing programme has been recommended in the previously approved Section 16 submission to ensure mitigation measures during the construction phase will be implemented. No changes to the water quality monitoring and site auditing programme are required.

The need for water quality monitoring at the residential portion during operational phase will be subject to whether a temporary on-site STP is implemented and the conditions of the discharge license.

3.10 Conclusion

The proposed change in the layout of the development portion has changed the construction activities associated with the Project, but there are no expected significant changes to the previously identified water quality impacts during the construction phase. Thus, through proper implementation of water pollution mitigation measures, no adverse impact is anticipated.

During the operation phase, all sewage generated by the project will be conveyed to the public sewers either via Nam Sang Wai sewage pumping station to YLSTW or via the planned STLMC EPP with temporary on-site STP to cater the population intake prior to STLMC EPP commissioning if necessary.

With the implementation of the appropriate mitigation measures during the construction and operation phases, no adverse water quality impact is anticipated.

4 Waste Management Implications

4.1 Introduction

This section identifies the potential waste attributing to the phase of construction and operation of the Project and evaluates the potential environmental impacts that may result from waste generated. Mitigation measures and good site practices on waste handling, storage and disposal, are suggested with reference to applicable waste legislation and management guidelines with a view to mitigate potential waste management impacts.

4.2 Legislation, Standards, Guidelines and Criteria

The following legislation which relates to the handling, storage and disposal of wastes in Hong Kong are relevant in the assessment of waste management implication:

- Waste Disposal Ordinance (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);
- Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK); and
- Dumping at Sea Ordinance (Cap. 466)

Waste Disposal Ordinance (Cap. 354)

The Waste Disposal Ordinance (WDO) is the principal piece of legislation for management and control of waste disposal in Hong Kong. The WDO prohibits the unauthorised disposal of wastes. Construction waste is defined as any substance, matter or thing that is generated from construction work and abandoned, whether or not it has been processed or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any desludging, desilting or dredging works. Under the WDO, waste can be disposed of only at designated waste disposal facilities licensed by the Environmental Protection Department (EPD).

Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)

Under the WDO, the Chemical Waste (General) Regulation provides regulations for chemical waste control, and administers the possession, storage, collection, transport and disposal of chemical wastes.

According to the Waste Disposal (Chemical Waste) (General) Regulation, all producers of chemical waste must register with Environmental Protection Department (EPD) and treat their wastes, either utilising on-site plant licensed by EPD, or arranging for a licensed collector to transport the wastes to a licensed facility. The Regulation also prescribes the storage facilities to be provided on-site, including labelling and warning signs, and requires the preparation of written procedures and training to deal with emergencies such as spillages, leakages or accidents arising from the storage of chemical wastes.

The EPD has also issued a 'guideline' document, the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, which details how the Contractor should comply with the regulations on chemical wastes.

Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)

Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material, whereas construction waste delivered to a public fill reception facility for disposal must consist entirely of inert material.

Land (Miscellaneous Provisions) Ordinance (Cap. 28)

The inert portion of Construction and Demolition (C&D) materials may be taken to Public Fill Reception Facilities (PFRFs) operated by the Civil Engineering and Development Department (CEDD). PFRFs usually form part of land reclamation schemes. The Land (Miscellaneous Provisions) Ordinance requires that dumping licenses be obtained by individuals or companies who deliver public fill to public filling areas. The CEDD issues the licences under delegated powers from the Director of Lands. C&D materials that are wholly inert, namely public fill, should not be disposed of to landfill, but taken to fill banks or public filling areas.

Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)

The Public Cleansing and Prevention of Nuisances Regulation provides control on illegal tipping of wastes on unauthorised (unlicensed) sites.

Dumping at Sea Ordinance (Cap. 466)

This Ordinance came into operation in April 1995 and empowers the Director of Environmental Protection (DEP) to control the disposal and incineration of substances and particles at sea for the protection of the marine environment. Under the Ordinance, a dumping permit from the DEP is required for the disposal of regulated substances within and outside the waters of Hong Kong. The permit contains terms and conditions which include the following specifications, but not limited to:

- Type and quantity of substances permitted to be dumped;
- Location of the disposal grounds;
- Requirement of equipment for monitoring the disposal operations; and
- Environmental monitoring requirements.

Marine disposal of any dredged/excavated sediment is subject to control under the Dumping at Sea Ordinance (DASO). Dredged/excavated sediment destined for marine disposal is classified based on its contaminant levels with reference to the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sedimen*t. The *Administrative Guidance* stipulated a set of sediment quality criteria or Chemical Exceedance Levels (CEL) for contaminants including metals, metalloid and organic pollutants.

ETWB TCW No. 19/2005 Environmental Management on Construction Sites

The ETWB TCW No. 19/2005 Environmental Management on Construction Sites introduces measures to enhance waste management on construction sites. The circular sets out the policies and procedures that require the contractors to prepare and implement an Environmental Management Plan (EMP), which includes the Waste Management Plan (WMP) to encourage on-site sorting of C&D materials and to minimise generation of C&D materials during the course of construction.

Other Relevant Environmental Guidelines

Other environmental relevant circulars/guidelines applicable to waste management practices for this Project include:

- WBTC No. 2/93, Public Dumps
- WBTC No 2/93B, Public Filling Facilities
- WBTC No. 16/96, Wet Soil in Public Dumps
- WBTC Nos. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Project
- WBTC No. 12/2000, Fill Management
- WBTC No. 19/2001, Metallic Site Hoardings and Signboards
- WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates
- DEVB TCW No. 06/2010, Trip-ticket System for Disposal of Construction and Demolition Material
- DEVB TCW No. 08/2010, Enhanced Specification for Site Cleanliness and Tidiness
- DEVB TCW No. 02/2011, Encouraging Use of Recycled and other Green Materials in Public Works Projects
- DEVB TCW No. 09/2011, Enhanced Control Measures for Management of Public Fill
- CEDD TC No. 11/2019, Management of Construction and Demolition Materials
- Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes

4.3 Assessment Methodology

The methods for assessing potential waste management impacts during construction and operation phases include the following:

- Identify the types and quantity of waste arising as a result of the phase of the construction and operation activities of the Project;
- Assess the potential environmental impacts associated with the waste generation, handling, storage, transport and disposal;
- Identify the opportunities for reducing waste generation, on-site or off-site reuse and recycling prior to considering the disposal options for each type of waste; and
- Identify the disposal options for each type of waste impact associated with the storage, collection, transfer, and disposal of waste.

4.4 Identification and Evaluation of Waste Management Implications

The waste implication during construction and operational phase due to the development of the Project has been assessed and presented in the following sub-sections.

4.4.1 Construction Phase

The main activities which would potentially result in the generation of waste include:

- Site formation and substructure works; and
- Construction of new buildings and infrastructures.

A variety of type of wastes would be generated during construction phase that can be divided into the following distinct categories based on their compositions:

- Construction and demolition (C&D) materials;
- Excavated sediment (including marine deposit and pond mud);
- Chemical waste; and
- General refuse.

Each type of the above waste arising is described in ensuing paragraphs, together with an evaluation of the potential environmental impacts associated with the waste generation, handling, storage, transport, and disposal.

4.4.1.1 C&D Materials

The estimated amount of C&D Materials to be generated during construction phase is summarized in **Table 4.1**.

Table 4.1: Estimated Amount of Different Types of Wastes to be Generated During the Construction Phase

Activities	Quantity of waste to be generated (m^3)		Inert C&D Material Reused On-Site (m^3)	Disposed Offsite (m^3)		Tentative Disposal Period
	Inert C&D Material [i] (m^3)	Non-inert C&D Material [ii] (m^3)		Inert	Non-inert	
Site clearance, site formation and construction of infrastructures	383,000	95,800	40,200	342,800	95,800	Year 2027 & 2028
Construction of new buildings	21,200	5,300	3,200	18,000	5,300	Year 2027 - 2031
Total	**404,200**	**101,100**	**43,400**	**360,800**	**101,100**	

Notes:
[i]. Inert C&D material: e.g. soil, sand, clay, crushed concrete, asphalt, bitumen, brick, tile
[ii]. Non-inert C&D material: e.g. bamboo, timber, paper, glass, steel, and plastic

C&D Materials from Site Clearance, Site Formation and Construction of Infrastructures

C&D materials, comprising both inert and non-inert portions, would be generated from site clearance of ground surface, as well as excavation works during site formation. It is estimated that around 478,800 m^3 of C&D material (inert portion of 383,000 m^3 and non-inert portion of 95,800 m^3) will be generated. The quantities of material generated is shown in **Table 4.1**.

Based on the best available design, it is estimated that around 40,200 m^3 of inert C&D materials will be reused on-site subjected to site constraints, while 342,800 m^3 of inert C&D materials are expected to be delivered to the public fill reception facility. The estimated amount of non-inert C&D materials is approximately 95,800 m^3, which will be disposed of at landfill.

C&D Materials from Construction of New Buildings

C&D materials would also be generated from the construction of new buildings. The inert portion of the C&D materials is referred to broken concrete, rock etc. to be delivered to the public fill reception facility and the non-inert portion including packing materials and general refuse is referred to construction waste and would be disposed of at landfill.

In accordance with the "Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)", a C&D materials generation rate of 0.1 m^3 per 1 m^2 of GFA is adopted. It is estimated that approximately total 26,500 m^3 of C&D materials would be generated from construction of the buildings of the Project.

The estimated amount of C&D materials to be generated during the construction of new buildings is summarized in **Table 4.2**.

Table 4.2: Summary of C&D Materials Volumes Generated During Construction of New Buildings

Total estimated GFA (m^2)	Total C&D material generated (m^3) [i]	Inert C&D material (m^3) [ii][iii]	Non-inert C&D material (m^3) [ii][iv]
265,800	26,500	21,200	5,300

Notes:
[i]. Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)
[ii]. Approximately ratio for (inert waste): (non-inert waste) is 8:2 "Monitoring of Solid Waste in Hong Kong, 1997" by EPD
[iii]. The inert waste mainly is Artificial Hard Material (AHM) which includes, but not limited to, broken concrete, asphalt, bitumen and granular materials, etc.
[iv]. "Non-inert C&D material" includes, but not limited to, bamboo, timber, paper and plastic, etc.

It is expected that approximately 21,200 m^3 inert C&D material would be generated, and around 3,200 m^3 of inert C&D materials will be reused on-site subjected to site constraints, while 18,000 m^3 of inert C&D materials are expected to be delivered to the public fill reception facility. 5,300 m^3 would be non-inert material to be disposed of at landfill.

All inert C&D materials will need to be carefully stockpiled if it cannot be reused or removed directly to avoid dust and other nuisance impacts. The Contractor should separate non-inert C&D materials from inert C&D materials on-site. All segregated recyclable materials (e.g., metal) should be collected by reputable recyclers. The remaining non-inert C&D materials should be disposed of at designated landfill by dump trucks.

4.4.1.2 Excavated Sediment

Based on the existing ground investigation (GI) information, land-based sediment (including marine deposit and pond mud) is anticipated within the proposed residential development. The major source of excavated sediment comes from basement construction of the proposed residential development.

To minimize the amount of excavated sediment, the extent of the residential development basement had been reviewed and the excavation level had been optimized, with the aim to minimize the disturbance of the existing sediment. Such that the design scheme presented in this report has been evaluated with optimized basement extent to minimize excavation of excavated sediment as far as possible.

The estimated quantities of sediment to be excavated from the Project construction are shown in **Table 4.3**.

Table 4.3: Estimated Amount of Excavated Sediment

Quantity of Excavated Sediment (m^3)	Quantity of Excavated Sediment to be Reused On-Site (m^3)	Quantity of Sediment to be Disposed Off-site or Re-use in Other Projects (m^3)
77,400	77,400	0

Note:
[i]. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/ Engineer.

Reuse of Excavated Sediment

Based on the best available design, all excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials or other on-site reuse options under the Project.

Prior to commencement of construction, sampling and testing for sediment will be conducted by the Contractor for the concerned excavation area in accordance with *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment*. Based on the testing results, the sediment would be categorized in accordance with the *Administrative Guidance*.

Subjected to the testing result, excavated sediment treatment will be undertaken prior to reuse. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/Engineer.

Offsite Disposal or Offsite Re-use of Excavated Sediment

Based on the best available design, all excavated sediment will be reused onsite and no offsite disposal will be required. However, as subjected to further studies in subsequent design stage, should surplus sediment be excavated and onsite reuse option be not feasible, the project proponent will explore sediment re-use opportunities of other projects in HK. Meanwhile, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction in this area. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*.

Offsite disposal of sediment to the marine disposal facilities should be the last resort, and if required, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated materials based on their testing results in accordance with the *Administrative Guidance*.

The recommended mitigation measures for handling of excavated sediment are discussed in **Section 0**. No adverse waste management implications are anticipated if the recommended mitigation measures are implemented.

4.4.1.3 Chemical Waste

The maintenance and servicing of construction plant and equipment may generate some chemical wastes such as used solvents, cleaning fluids and waste lubricating oil. It is difficult to quantify the amount of chemical waste that will arise from the construction activities since it will be dependent on the Contractor's on-site maintenance requirements and the amount of plant utilised. However, it is anticipated that the quantity of chemical waste, such as waste lubricating oil and solvents produced from plant maintenance, will be small and in the order of few hundred litres per month. The amount of chemical waste to be generated will be quantified in the Waste Management Plan to be prepared by the Contractor for the site. For the disposal of chemical wastes, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

Chemical wastes arising during the construction phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as stipulated in the Waste Disposal (Chemical Waste) (General) Regulation.

The potential hazards include:

- Toxic effects to workers;
- Adverse impacts on water quality from spills and associated adverse impacts on marine biota; and
- Fire hazards.

Materials classified as chemical wastes will require special handling and storage arrangements before removal for off-site disposal/treatment at the approved Chemical Waste Treatment Centre (CWTC) or licensed chemical waste treatment facilities. Wherever possible opportunities should be taken to reuse and recycle materials. Provided that the handling, storage and disposal of

chemical wastes are in accordance with these requirements, adverse environmental impacts are not expected.

4.4.1.4 General Refuse

The construction workforce will generate refuse comprising food scraps, waste paper aluminium cans and plastic bottles during construction period.

Release of general refuse into watercourses is not permitted as introduction of these wastes is likely to have detrimental effects on water quality in the area. Effective collection of site waste would be required to prevent waste materials being blown around by wind, flushed or leached into the stream environment, and odour nuisance. The site may also attract pests and vermin if the waste storage area is not well maintained and cleaned regularly.

The number of work force to be employed for the Project is not available at this stage, but it is anticipated to be not to be over 300 staff at one time. Based on the generation rate of 0.65kg/person/day, the total refuse generated per day would be less than 200 kg.

Recyclable materials (i.e., paper, plastic bottles and aluminium cans) will be separated for recycling in order to reduce the amount of general refuse to be disposed of at landfill. Adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. Reputable waste collector should be employed to collect the general refuse for disposal at designated landfill sites on a regular basis.

Provided that the mitigation measures are adopted, the potential environmental impacts caused by the storage, handling transport and disposal of general refuse are expected to be minimal. Mitigation measures to minimise potential environmental impacts are recommended in **Section 4.5**.

With the implementation of good waste management practices at the site as detailed in **Section 4.5**, adverse environmental impacts are not expected to arise from the storage, handling and transportation of the general refuse from construction workforce.

4.4.1.5 Storage and Collection of Waste

Adoption of barging points and conveyor belt system for waste handling is not anticipated for the Project. Stockpiling areas would be set up on-site to handle waste generated during construction phase. Mitigation measures stipulated in **Section 4.5** will be implemented.

4.4.1.6 Transportation Arrangement for Waste Disposal During Construction Phase

Land transport should be used to deliver and dispose of the waste generated from the Project sites to the designated disposal outlets. It is expected that during the peak period of C&D material disposal, around 158 vehicle trips per day for transporting waste during the construction phase of the Project. The tentative transportation routings for the disposal of various types of wastes generated during the construction phase are shown in **Table 4.4**.

The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures (e.g. using water-tight containers and covered trucks), no adverse environmental impacts are expected due to the transportation of waste.

Table 4.4: Tentative Transportation Routings for Waste Disposal During the Construction Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing	Vehicle Trips Estimation[1] During Peak Period
Non-inert C&D Materials	North East New Territories (NENT) Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 22 Trips per day
Surplus Inert C&D Materials	Public fill reception facility in Tuen Mun Area 38 (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Lung Mun Road	Around 134 Trips per day
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway	Around 1 Trip per day
General Refuse	NENT Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 1 Trip per day

Remarks:

1. Bulk factors of 1.7 for inert C&D materials, 1 for non-inert C&D materials and 311.73kg/m^3 bulk density for general refuse have been applied in vehicle trips estimation. Also, assumptions on truck capacity of 7m^3 per truck and 26 working days a month have been applied.

4.4.2 Operational Phase

In view of the uses in the operational phase of the Project, which includes residential establishment, generation of the following categories of waste are anticipated:

- General refuse; and
- Chemical waste.

4.4.2.1 General Refuse

Municipal Solid Waste (MSW) comprises of solid waste from households, commercial and industrial sources. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2023" by EPD, the MSW disposal rate was 1.44 kg/person/day in Year 2023, and the recovery rate for recycling was 33%. By calculation, the MSW generation rate, disposal rate and recycle rate were 2.15 kg/person/day, 1.44 kg/person/day and 0.71 kg/person/day in 2023 respectively.

The estimated MSW is summarised in **Table 4.5** based on planned populations.

Table 4.5: Estimated Quantities of MSW During the Operational Phase

Estimated MSW from Residential Population				
Residential Population	Generated (tpd)	Disposal (tpd)	Recycle (tpd)	Food Waste Disposal (tpd)
10,000	21.5	14.4	7.1	6.3

Notes:
[i]. Based on MSW generation, disposal and recycling rate in 2023.
[ii]. tpd = tonne per day.
[iii]. Non-Residential Population include employment population and visitors.
[iv]. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2023" by EPD, the food waste composition of MSW disposed of was 29.3%.

General refuse would be temporarily stored in refuse collection room in each building at the ground floor for localized refuse collection and the waste would be transferred to a central collection point. Waste recycling facilities / containers are recommended to be included in the central collection point so that waste could be sorted to recover materials (such as paper and

cardboards, plastics, metals and glass etc.) as far as possible, before being collected by refuse transfer vehicles. Different containers should be provided for the storage of different recyclable materials. To avoid potential odour nuisance to the residents during transport of waste, enclosed waste collection vehicles should be used, and the collection route and time should be properly planned. At least daily collection should be arranged by the waste collector.

In order to facilitate recycling, a 4-bin recycling system for paper, metals, plastics and glass should be adopted together with a general refuse bin. They should be placed in prominent places to promote waste separation at source. All recyclable materials should be collected by recyclers.

To facilitate waste recovery of food waste, installation of food waste collection facilities such as food waste recycling machines for composting treatment, proper handling and delivery to Organic Resources Recovery Centre (ORRC) should be explored.

With the implementation of a proper waste handling system, environmental impacts associated with waste storage, collection and transportation are not anticipated.

4.4.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the site. It is anticipated that the total quantity of chemical waste such as acids, alkalis and organic solvent produced by maintenance activities would be insignificant with a few hundred litres per month.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

Registration as chemical waste producers with EPD should be made by the chemical waste producers prior to operation. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

With the implementation of mitigation measures described in **Section 4.5**, potential environmental impacts (including potential hazard, air and odour emissions, noise, wastewater discharge and public transport) are not expected.

4.4.2.3 Transportation Arrangement for Waste Disposal during Operation Phase

Land transport should be used to deliver and dispose of the waste generated from the Project site to the designated disposal outlets. It is expected that approximately 15 vehicle trips per day will be required to transport the generated waste during the operation phase. The tentative transportation routings for the disposal of various types of wastes generated during the operation phase are shown in **Table 4.6**. The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures provided in **Section 4.5**, no adverse environmental impacts are expected due to the transportation of waste.

Table 4.6: Tentative Transportation Routings for Waste Disposal During the Operation Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing	Vehicle Trips Estimation[1]
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway	Around 1 Trips per day

General Refuse	NENT Landfill (Tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 7 Trips per day
Food Waste	O·PARK1 (Tentatively selected)	Via Castle Peak Road, Tsing Long Highway, Tsing Ma Bridge and North Lantau Highway	Around 7 Trips per day

Remarks:

1. Bulk factor of 311.73kg/m^3 bulk density for general refuse have been applied in vehicle trips estimation. Also, assumptions on truck capacity of 7m^3 per truck.

4.5 Mitigation Measures

4.5.1 Construction Phase

The mitigation measures for construction phase are recommended based on the waste management hierarchy principles. Recommendations of good site practices, waste reduction measures as well as the waste transportation, storage and collection are described in following sub-sections.

4.5.1.1 Good Site Practices

Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site and effective disposal to appropriate facilities;
- Training of site personnel in proper waste management and chemical handling procedures;
- Provision of sufficient waste disposal points and regular collection of waste for disposal;
- Minimisation of windblown litter and dust/odour during transportation of waste by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- A WMP should be prepared by the Contractor with reference to the requirements in PNAP No. 243 (ADV-19), should be submitted to the Architect/ Engineer for approval prior to the commencement of construction works; and
- A WMP, as part of EMP, should be submitted to the Architect/ Engineer for approval prior to the commencement of construction works; and
- Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the C&D materials is not anticipated.

In order to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by the Contractor. Warning signs should also be displayed to remind the designated disposal sites. Reference shall be made to DEVB TCW No. 6/2010 for details.

4.5.1.2 Waste Reduction Measures

Good management and control could prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sort non-inert C&D materials to recover any recyclable portions;
- Segregation and storage of different types of waste in different containers or skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Maximising the use of reusable steel formwork to reduce the amount of C&D material;
- Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force;
- Prior to disposal of non-inert C&D material, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- It is recommended that yard waste shall be separated from C&D material for recycling through delivered to Y-park so as to minimise the quantity of waste to be disposed at landfill site;
- Proper storage and site practices to minimise the potential for damage or contamination of inert C&D materials;
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling;
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; and
- Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.

In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

4.5.1.3 General Refuse

General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&D materials. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

4.5.1.4 Construction and Demolition Material

In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the inert C&D materials should be reused on-site as far as practicable. Any surplus inert C&D materials will be disposed of at the Government’s public fill reception facilities for beneficial use by other projects in Hong Kong.

The Contractor shall record the amount of wastes generated, recycled, and disposed of (including the disposal sites). A trip ticket system (i.e., DEVB TC(W) No. 6/2010) shall be implemented for the disposal of C&D materials and/or C&D waste to any designated public filling facility and/or landfill respectively. To prohibit illegal dumping and landfilling of C&D materials, the dump trucks engaged on-site should be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations.

Non-inert C&D materials / C&D wastes should be reused and recycled on-site as far as possible before disposal at the designated landfill site. Suitable areas should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. Within stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance:

- Covering material during heavy rainfall;
- Locating stockpiles to minimise potential air quality, water quality and visual impacts; and
- Minimising land intake of stockpile areas as far as possible.

4.5.1.5 Excavated Sediment

The sediment should be excavated, handled, transported, reused and/or disposed in a manner that would minimize adverse environmental impacts. All excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials.

Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation, reused and/or disposed of the excavated sediment.

In order to minimize the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediment. Adequate washing and cleaning facilities shall also be provided on-site.

Should offsite disposal or off-site re-use of surplus excavated sediment be required, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*. For sediment to be disposed in marine disposal facilities, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated sediment based on their testing results in accordance with the *Administrative Guidance*. The Contractor, on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal.

Stockpiling of contaminated sediment should be avoided as far as possible. If temporary stockpiling of contaminated sediment is necessary, the concerned material should be covered by tarpaulin sheet and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).

In order to minimize the potential odour / dust emissions during excavation and transportation of the excavated sediment, the concerned material shall be wetted during excavation / material handling and shall be properly covered by tarpaulin sheet.

4.5.1.6 Chemical Waste

The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.

In addition, the following measures shall be observed:

- The Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes";
- Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately;

- Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc; and
- The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

4.5.2 Operational Phase

The following measures should be implemented for the development within the Project site to minimise the amount of waste to be disposed of at landfill and to maximise the recovery of material from the waste stream.

4.5.2.1 General Refuse

Recycling bins shall be placed in prominent locations to maximise the capture of recyclables from general refuse.

General refuse from residential buildings should be collected with lidded bins and delivered to a central collection point and stored in enclosed containers to prevent windblown, vermin, water pollution and visual impact. At least daily collection should be arranged by the waste collector.

4.5.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the Project site. To prevent health hazards to operators, all such chemical wastes should be collected and handled carefully.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

The producers should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

It is recommended that the chemical wastes are disposed at licensed chemical waste treatment facilities, such as the CWTC in Tsing Yi. A licensed collector should be employed for the chemical waste collection.

4.6 Evaluation of Residual Impact

With the implementation of recommended mitigation measures for the handling, transportation and disposal of the identified waste, adverse residual waste management implications are not anticipated for both the construction and operation phases.

4.7 Environmental Monitoring and Audit

4.7.1 Construction Phase

It would be the Contractor's responsibility to ensure that any wastes produced during the construction and demolition works are handled, stored and disposed of in accordance with good waste management practices and relevant regulations and other legislative requirements. The

recommended mitigation measures should form the basis of the site WMP to be developed by the Contractor in the construction stage.

It is recommended that site inspections should be undertaken each week to determine if wastes are being managed in accordance with approved procedures. The audits should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation of the recommended good site practice and other waste management mitigation measures.

A WMP, as a part of the EMP, should be prepared in accordance with ADV-19 and submitted to the Architect/ Engineer for approval. The recommended mitigation measures should form the basis of the WMP. The monitoring and auditing requirement stated in ADV-19 should be followed with regard to the management of C&D materials.

4.7.2 Operational Phase

No EM&A requirement is considered necessary during the operation phase.

4.8 Conclusion

Potential waste management implications from the generation of waste during the construction phase have been evaluated. Measures, including the opportunity for on-site sorting, reusing C&D materials etc, have been explored to minimise the surplus materials to be disposed. Recommendations have been made for implementation by the Contractor during the construction period to minimise waste generation and off-site disposal.

The types of waste that would be generated during the operation phase have been identified. Recommendations have been made to ensure proper treatment and disposal of these waste.

With the implementation of recommended mitigation measures, the storage, handling, transportation and disposal of waste during construction and operation of the Project is not anticipated to cause adverse environmental impact.

5 Environmental Monitoring and Audit

5.1 General

This Section presents a summary of Environmental Monitoring and Audit (EM&A) requirements for each impact assessment described in this EA Report. Details of the EM&A programme and the specific monitoring requirements will be provided in the updated Environmental Impact Assessment in the later stage.

5.2 Air Quality Impact

5.2.1 Construction Phase

With the implementation of the recommended mitigation measures, no adverse air quality impact is expected. However, dust monitoring is considered necessary during the construction phase of the Project and regular site audits will also be required to ensure mitigation measures are properly implemented. Details are discussed in the EM&A Manual of the approved EIA report.

5.2.2 Operational Phase

As there is no adverse air quality impact anticipated during the operation phase of the Project, monitoring and audit is not considered necessary.

5.3 Noise Impact

5.3.1 Construction Phase

The Environmental Monitoring and Audit (EM&A) program shall be established, incorporating regular site inspections based on the predicted occurrence of noisy activities. This program will assess the implementation of the recommended mitigation measures to ensure that nearby Noise Sensitive Receivers (NSRs) are not subjected to unacceptable construction noise impacts.

5.3.2 Operational Phase

Noise monitoring during the operation phase of this Project is considered not necessary as the proposed development would not be expected to generate significant noise impact to the adjacent identified NSRs with the proposed mitigation measures.

5.4 Water Quality Impact

5.4.1 Construction Phase

A water quality monitoring and site auditing programme has been recommended in the previously approved Section 16 submission to ensure mitigation measures during the construction phase will be implemented. No changes to the water quality monitoring and site auditing programme are required.

5.4.2 Operational Phase

The need for water quality monitoring at the residential portion during operational phase will be subject to whether a temporary on-site STP is implemented and the conditions of the discharge license.

5.5 Waste Management Implications

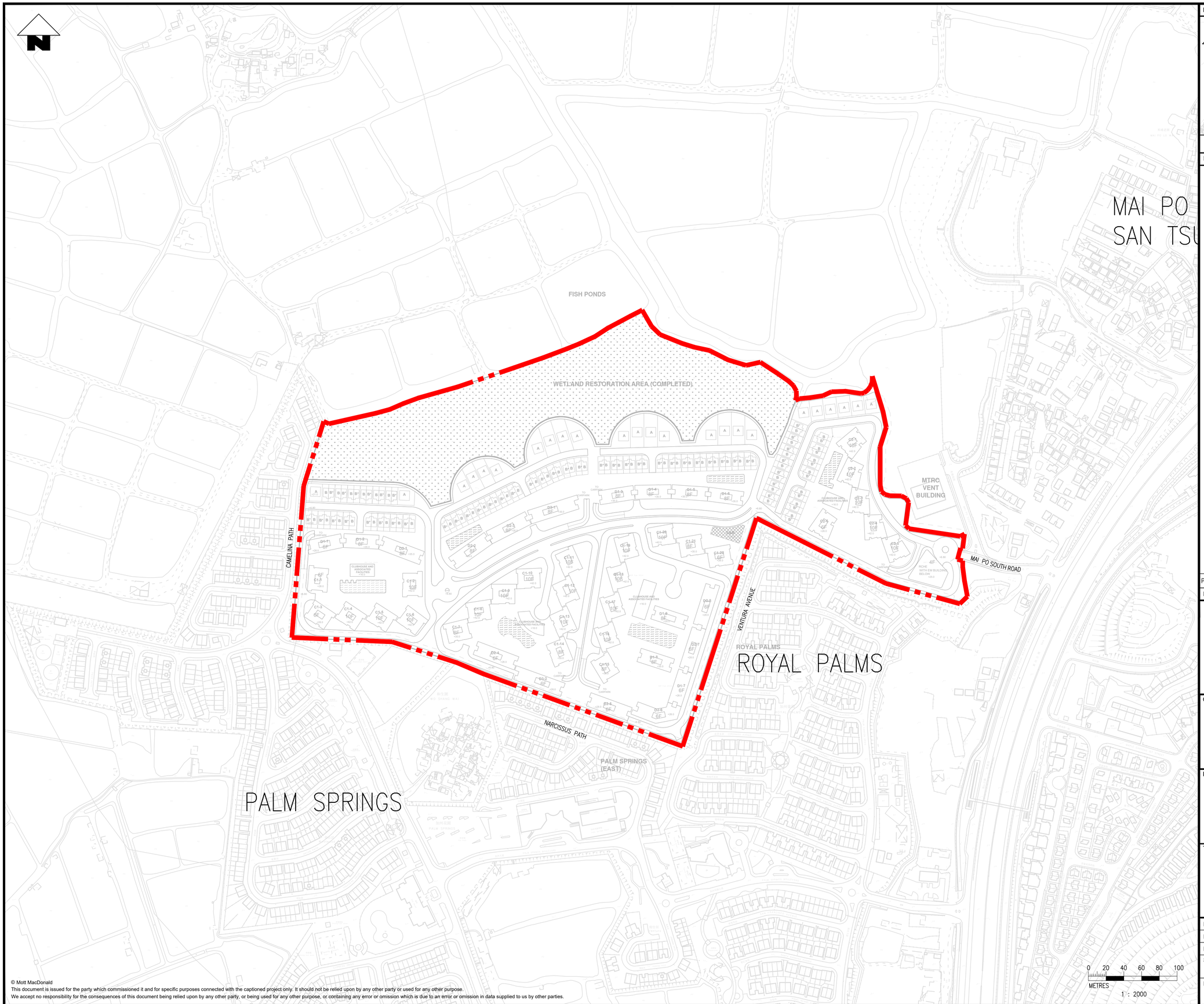
5.5.1 Construction Phase

It is recommended that site inspections should be undertaken each week to determine if wastes are being managed in accordance with approved procedures form the basis of the site WMP. The audits should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation of the recommended good site practice and other waste management mitigation measures.

5.5.2 Operational Phase

No EM&A requirement is considered necessary during the operation phase.

Figures



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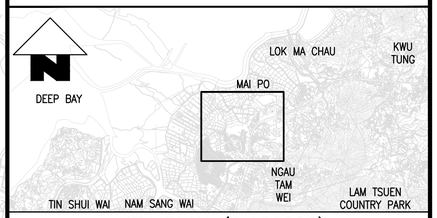

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- WETLAND RESTORATION AREA
- CLUBHOUSE AMENITY AREA/ WATER BODY
- POOL AREA
- E & M BUILDINGS (TEMPORARY DEWERAGE TREATMENT PLANT)
- A — 3 STOREY DETACHED HOUSE (+21mPD)
- B* B — 3 STOREY SEMI-DETACHED HOUSE (+21mPD)
- C1 — 6,8 &10 STOREY RESIDENTIAL TOWER
- C2 — 6 &10 STOREY RESIDENTIAL TOWER
- D1 — 6 & 8 STOREY RESIDENTIAL TOWER
- D2 — 6 & 8 STOREY RESIDENTIAL TOWER
- D3 — 6 & 8 STOREY RESIDENTIAL TOWER

NOTES:
ALL HOUSES ARE PROVIDED WITH BASEMENT CARPARK

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P1	APR 25	TW	EA FIRST DRAFT	JC	EC

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Title

PROJECT LAYOUT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:2000	Status	PRE	Rev	P1

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FIGURE 0.1

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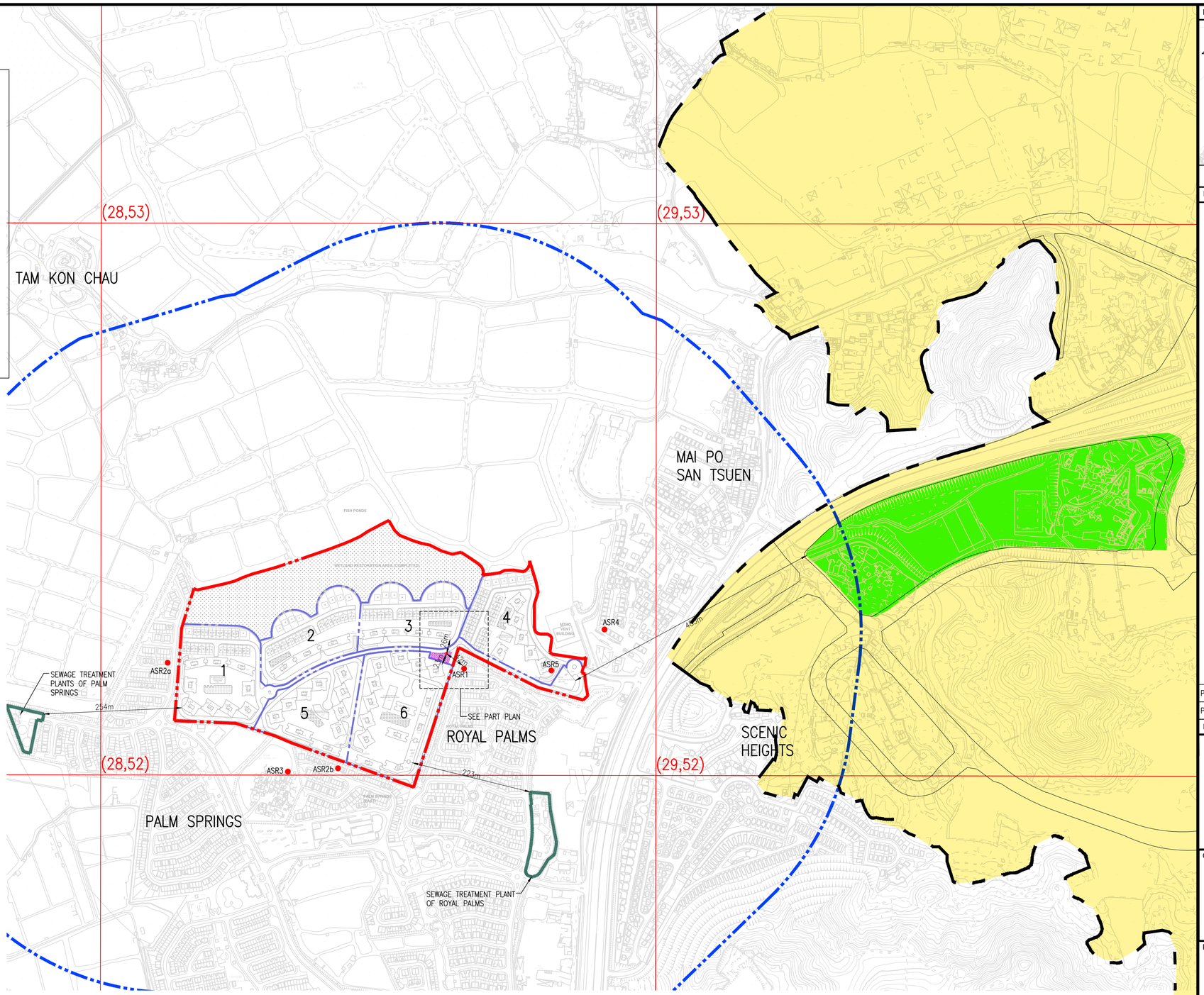
F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 0.1.dwg Apr 14, 2025 - 10:09am
WON102115

PART PLAN



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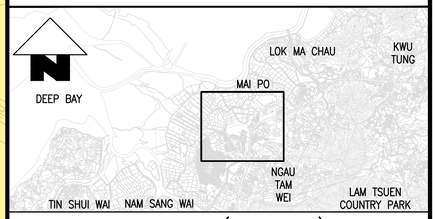

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- (28,52) REPRESENTATIVE PATH GRIDS
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE AIR SENSITIVE RECEIVERS
- SAN TIN /LOK MA CHAU (STLMC) EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES
- LOCATION OF PROPOSED TEMPORARY ON-SITE SEWAGE TREATMENT PLANT
- EXHAUST OF PROPOSED TEMPORARY ON-SITE SEWAGE TREATMENT PLANT
- BOUNDARY OF SAN TIN TECHNOPOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	APR 25	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: 1:4000 | Status: PRE | Rev: P2

Drawing Number: FIGURE 1.1

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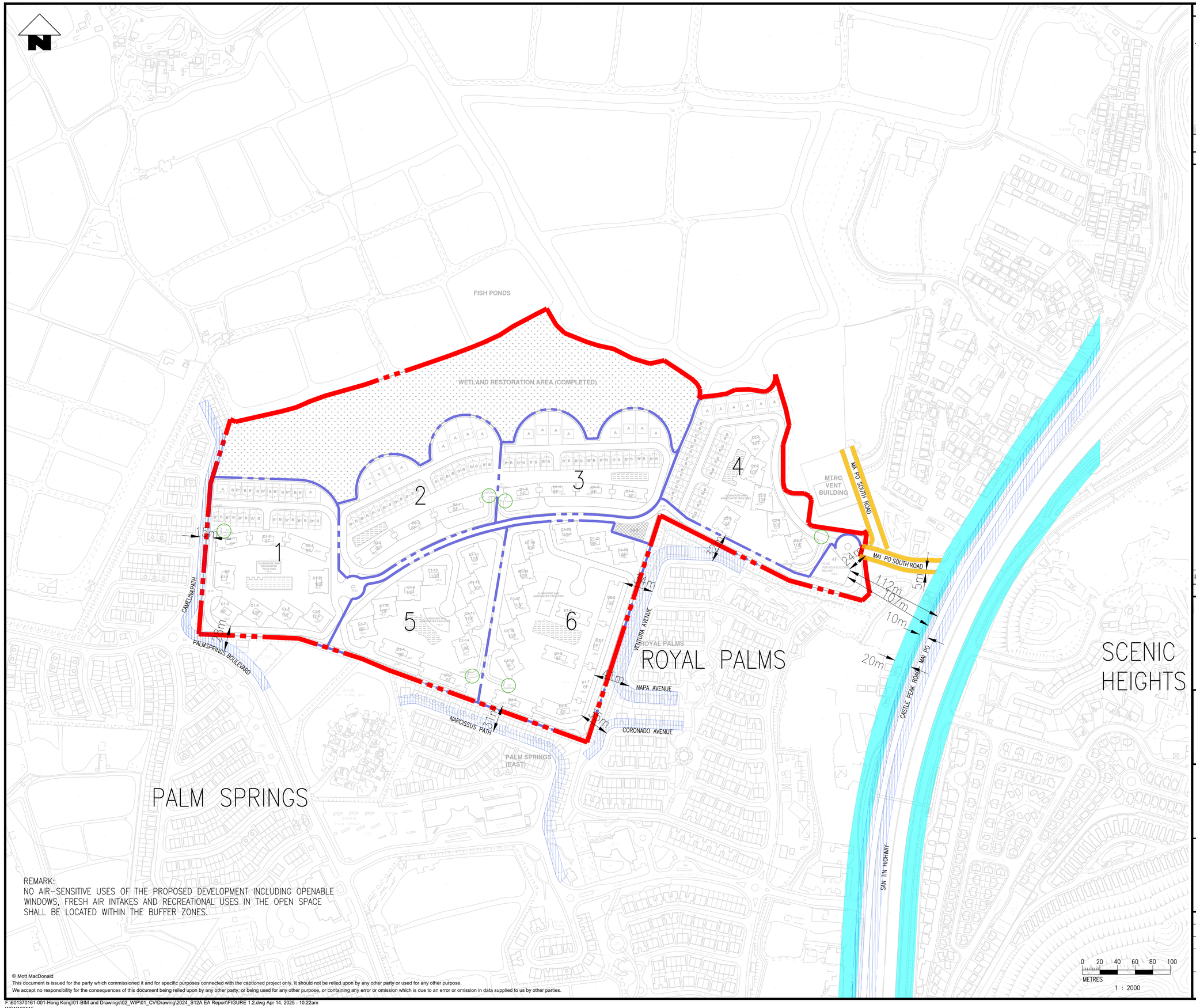
P:\60137016\1-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 1.1.dwg May 23, 2025 - 1:48pm
WON102115



REMARK:
NO AIR-SENSITIVE USES OF THE PROPOSED DEVELOPMENT INCLUDING OPENABLE WINDOWS, FRESH AIR INTAKES AND RECREATIONAL USES IN THE OPEN SPACE SHALL BE LOCATED WITHIN THE BUFFER ZONES.

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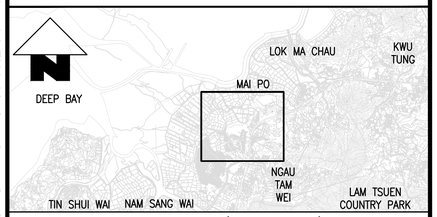
F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 1.2.dwg Apr 14, 2025 - 10:22am
WON102115

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- BUFFER ZONES(20m)
- BUFFER ZONES(10m)
- BUFFER ZONES(5m)
- INGRESS/EGRESS TO BASEMENT CARPARK

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	APR 25	TW	EA FIRST DRAFT	JC	EC

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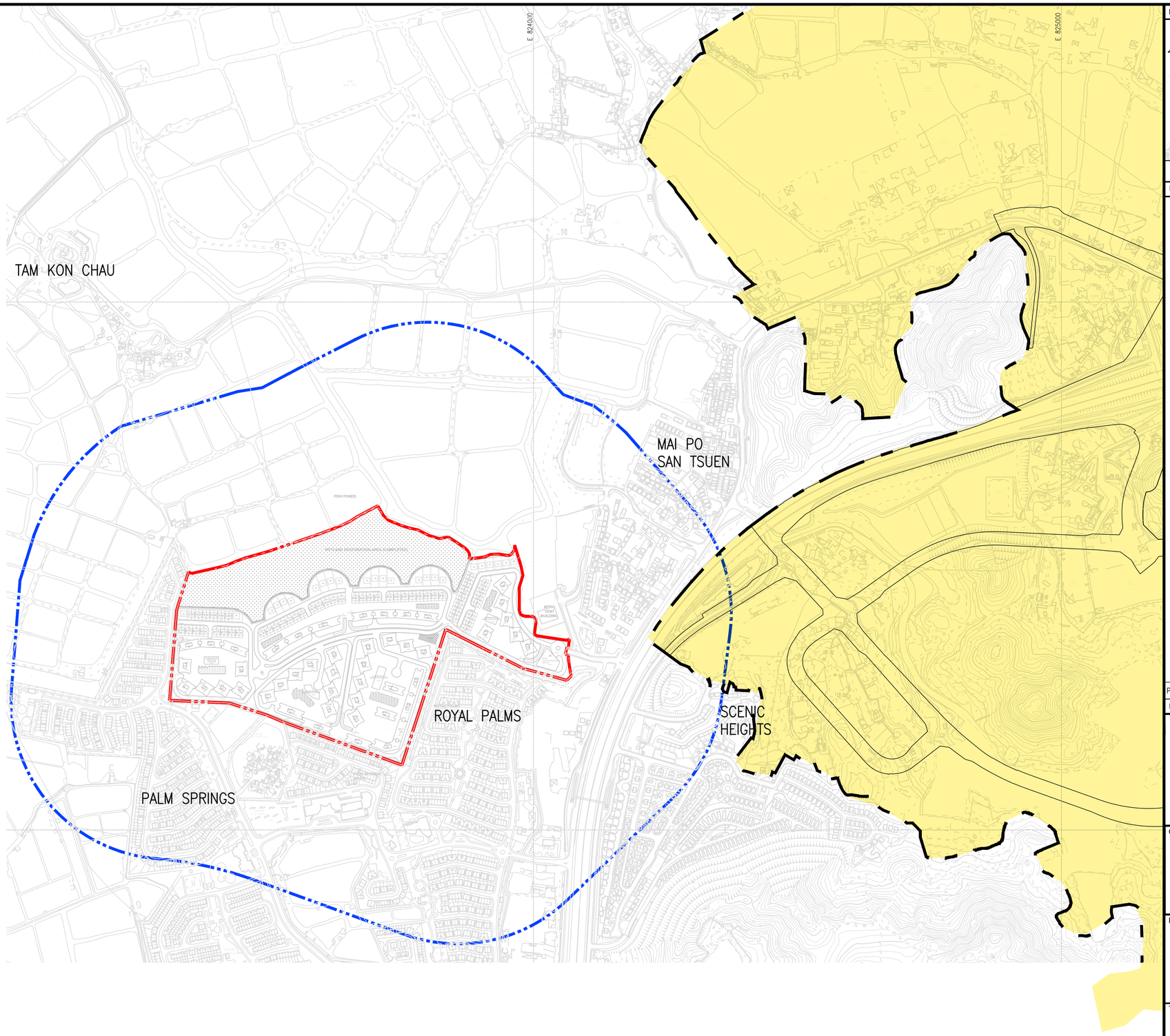
Title

BUFFER DISTANCES FOR VEHICULAR EMISSION IMPACT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1 1:2000		Status PRE		Rev P1	

Drawing Number

FIGURE 1.2



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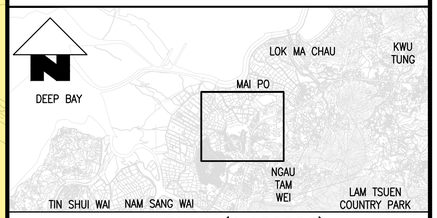

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- BOUNDARY OF SAN TIN TECHNOPOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

NOISE ASSESSMENT AREA
AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1	Status	Rev
1:4000	PRE	P1

Drawing Number

FIGURE 2.1

0 40 80 120 160 200
METRES
1 : 4000

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WON102115

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

PALM SPRINGS

ROYAL PALMS

SCENIC
HEIGHTS

FISH PONDS

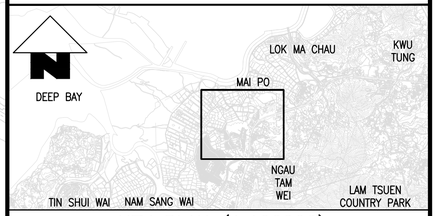
WETLAND RESTORATION AREA (COMPLETED)

1
2
3
4
5
6

NSR1
NSR2
NSR3
NSR4
NSR5
NSR6
NSR7
NSR8
NSR9
NSR10
NSR11
NSR12
NSR13

0 40 80 120 160 200
METRES
1 : 4000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

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FIGURE 2.2

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WON102115

E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU

MAI PO
SAN TSUEN

SCENIC
HEIGHTS

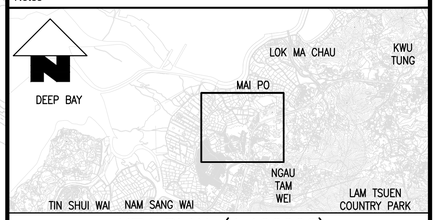
PALM SPRINGS

ROYAL PALMS

TN1
TN2
TN3
TN4
TN5
TN6
TN7
TN8
TN9
TN10
TN11
TN12
TN13
TN14
TN15
TN16
TN33
TN26
TN27
TN28
TN24
TN25
E&M BUILDING
TN19
TN20
TN21
TN22
TN23
TN17
TN18
RCHE WITH
E&M BUILDING BELOW
TN29
TN30
TN31
TN32

0 40 80 120 160 200
METRES
1 : 4000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR RCHE

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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (TRAFFIC NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.3a

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F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 2.3a.dwg May 13, 2025 - 3:44pm
WON102115

TAM KON CHAU

MAI PO FLOODWATER PUMPING STATION

MAI PO
SAN TSUEN

MAI PO SUBSTATION

FN7
FN6
FN5
FN4
MAI PO VENTILATION BUILDING OF XRL PROJECT
N1
N2
N3
E1
W1
W2
S1
S2
FN3
FN2
FN1
FN8
FN9
RCHE WITH E&M BUILDING BELOW
E&M BUILDING
SEE PART PLAN

SEWAGE TREATMENT PLANTS OF PALM SPRINGS

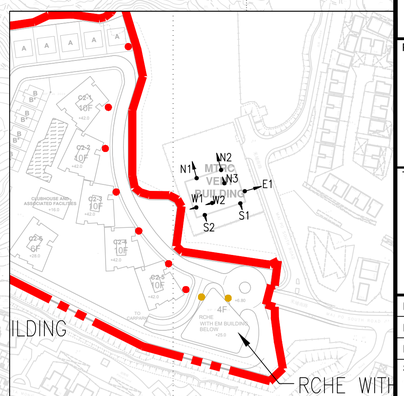
ROYAL PALMS

SCENIC
HEIGHTS

PALM SPRINGS

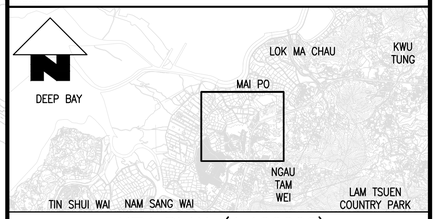
SEWAGE TREATMENT PLANT OF ROYAL PALMS

0 40 80 120 160 200
METRES
1 : 4000



PART PLAN (1:2000)

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR RCHE
- LOUVER LOCATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	MAY 25	TW	EA SECOND DRAFT	JC	EC
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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (FIXED NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000/ 1:2000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.3b

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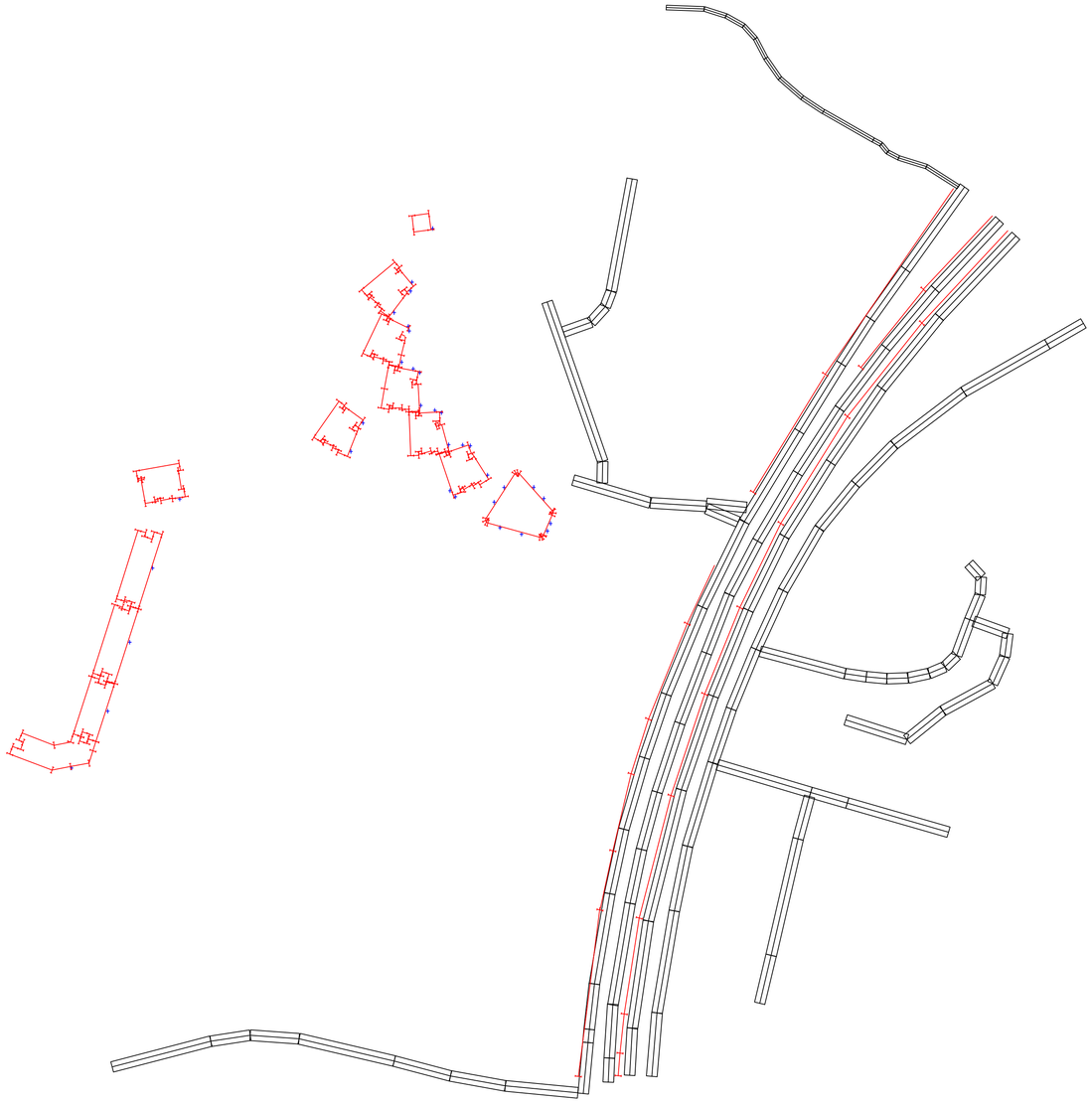
WON102115



Notes

Key to symbols

Rev	Date	Drawn	Description	Ch'k'd	App'd
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P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

COMPUTER PLOT OF NOISE MODEL

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	

Scale at A1	Status	Rev
1:2000	PRE	P2

Drawing Number

FIGURE 2.4

0 20 40 60 80 100
METRES
1 : 2000

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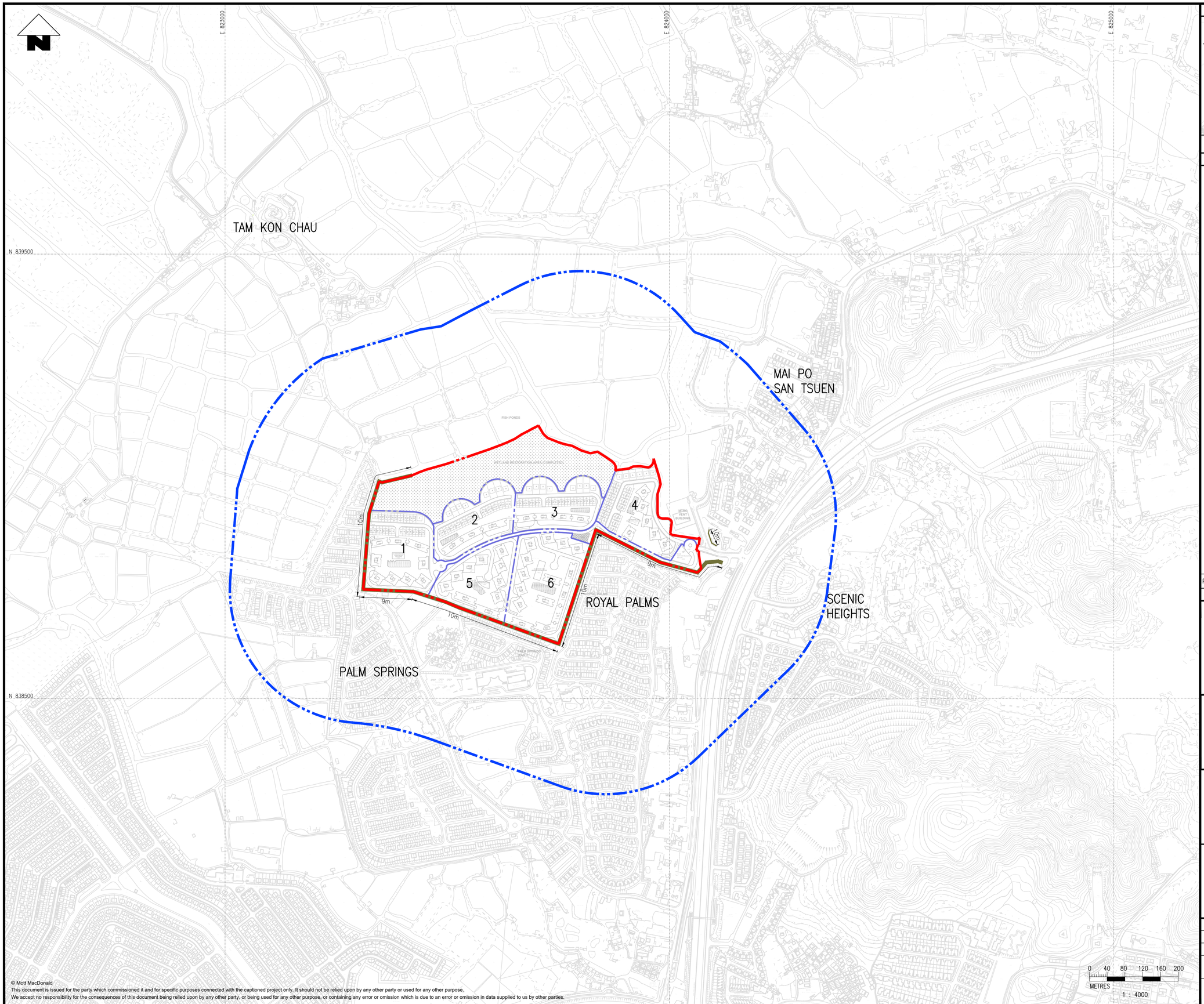
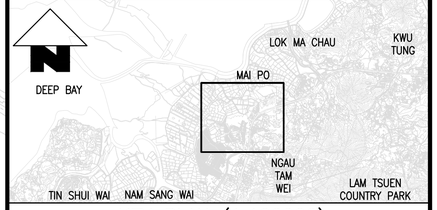
WON102115



Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 — CONSTRUCTION PHASE NO.
- EXTENT OF TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

PROPOSED NOISE BARRIERS LOCATIONS FOR CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.5

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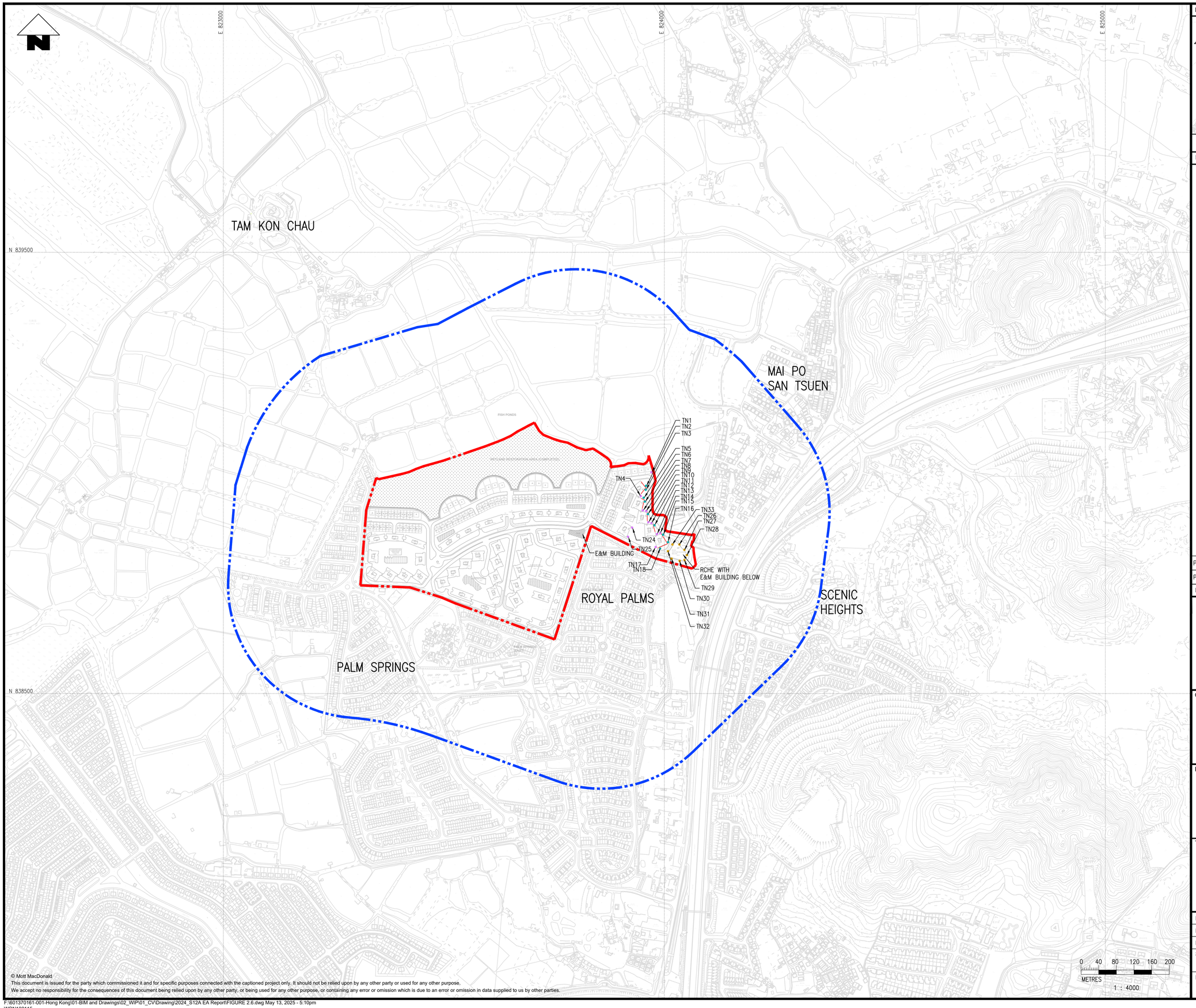
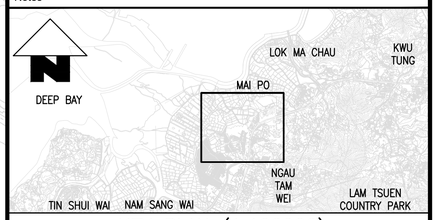
WON102115



Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- NSR (WITHOUT EXCEEDANCE / WITH EXCEEDANCE)
- FACADE WITH THE ADOPTION OF ACOUSTIC WINDOW
- NSR FOR RCHE

REMARKS:
FOR THE MITIGATION MEASURES OF THE RCHE PLEASE REFER TO APPENDIX 2.6

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Title

LOCATION OF MITIGATION MEASURES FOR TRAFFIC NOISE

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

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FIGURE 2.6

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WON102115

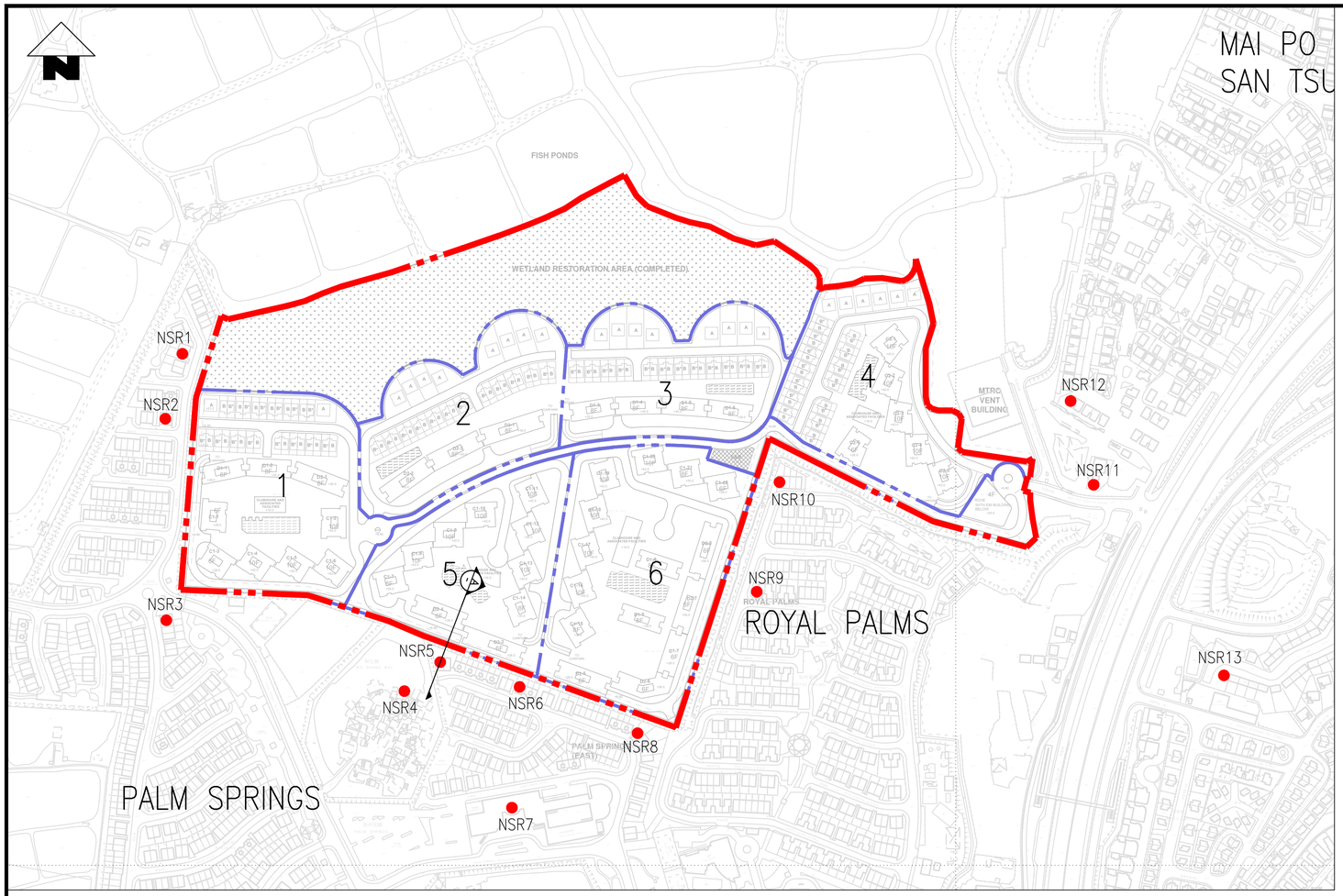
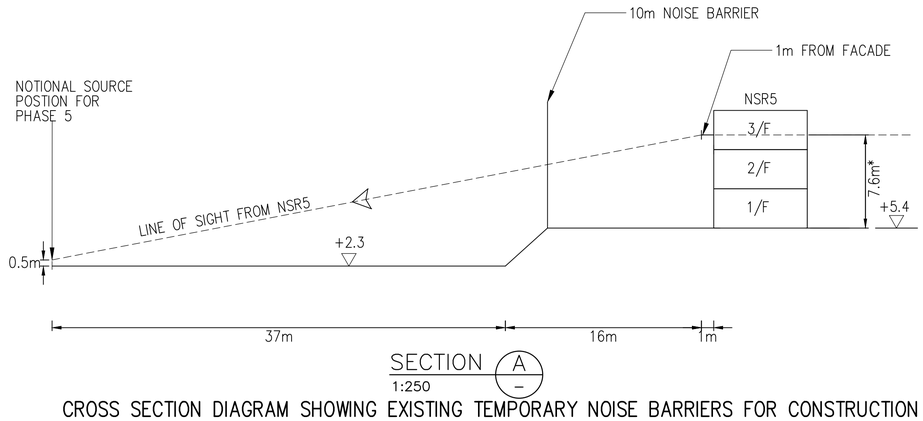


FIGURE 2.2
1:2500

0 25 50 75 100 125
METRES
1 : 2500



SECTION A
1:250

CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

* BUILDING HEIGHT INFORMATION IS OBTAINED FROM https://eiaced-noise.epd.gov.hk/noiseapplication/. LAST ACCESSED ON 17 DEC 24

0 2.5 5 7.5 10 12.5
METRES
1 : 250

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

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Title
CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 1 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
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Scale at A1: AS SHOWN
Status: PRE
Rev: P1

Drawing Number
FIGURE 2.7

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WON102115

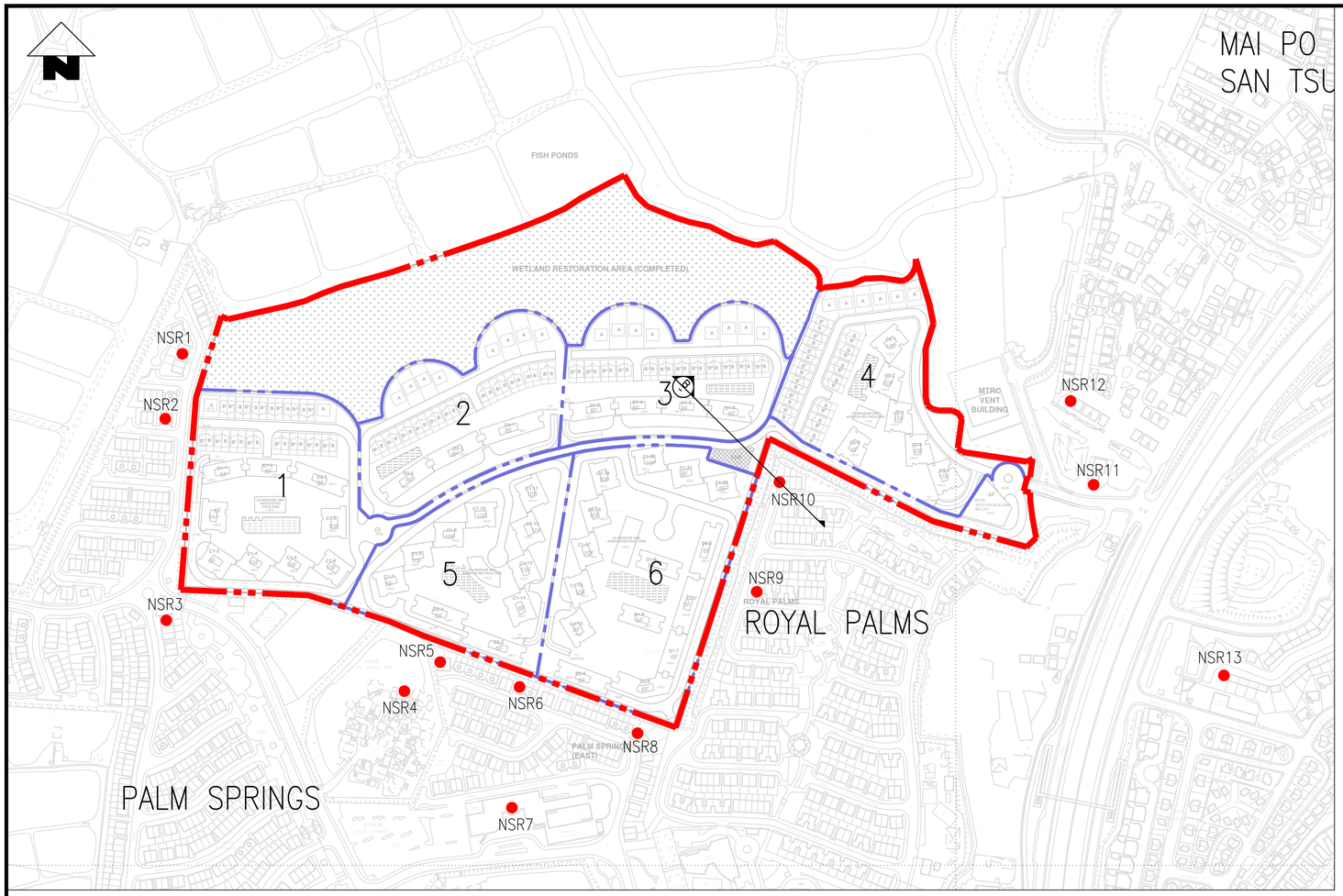
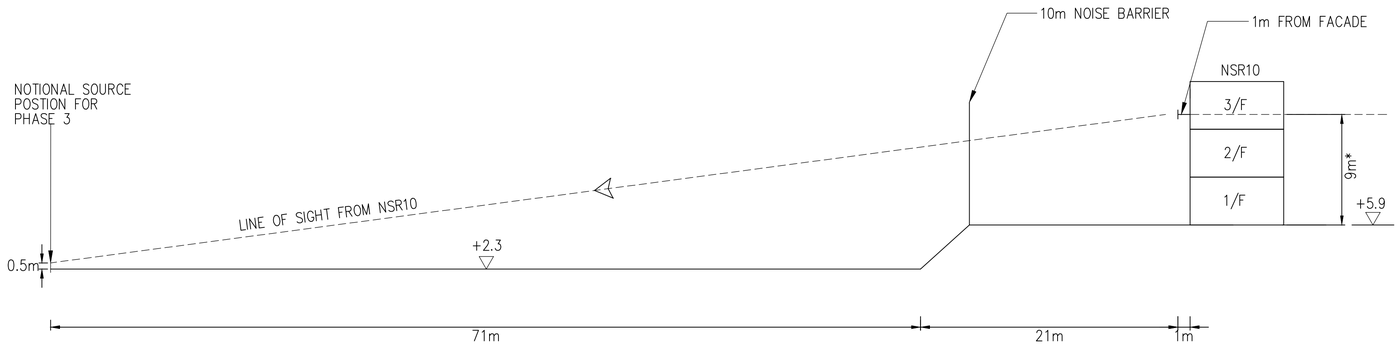


FIGURE 2.2
1:2500

0 25 50 75 100 125
METRES
1 : 2500



SECTION B
1:250

CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

* BUILDING HEIGHT INFORMATION IS OBTAINED FROM https://eiaced-noise.epd.gov.hk/noiseapplication/. LAST ACCESSED ON 17 DEC 24

0 2.5 5 7.5 10 12.5
METRES
1 : 250

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title
CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 2 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
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Status: PRE
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FIGURE 2.8

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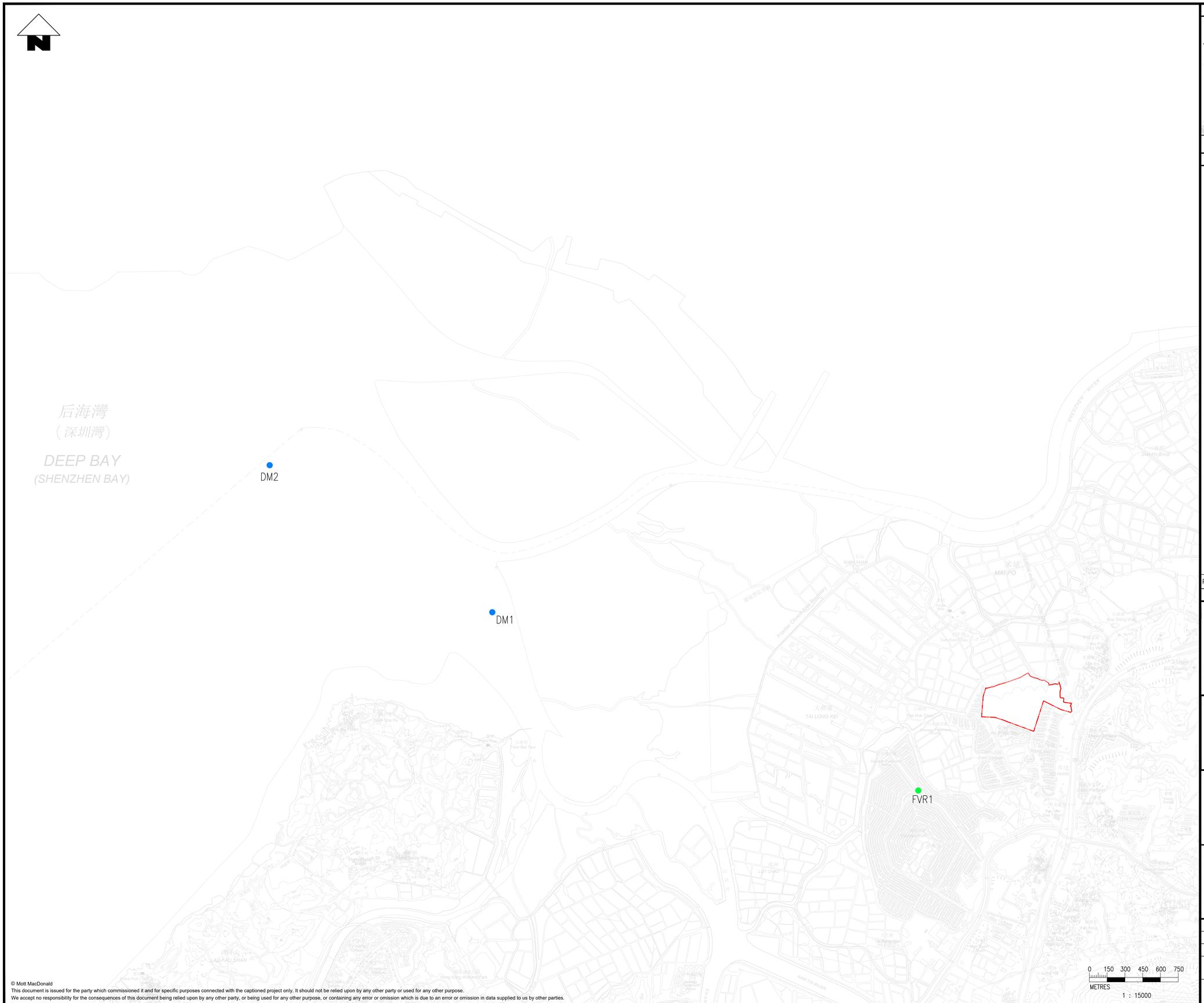
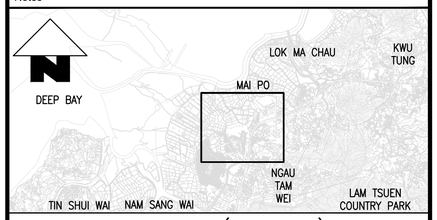
WON102115



Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

SITE BOUNDARY

MARINE WATER QUALITY MONITORING STATION

RIVER WATER QUALITY MONITORING STATION

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Title

LOCATION OF REPRESENTATIVE WATER QUALITY MONITORING STATIONS

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	
Scale at A1	1:15000	Status	PRE	Rev	P1

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FIGURE 3.1

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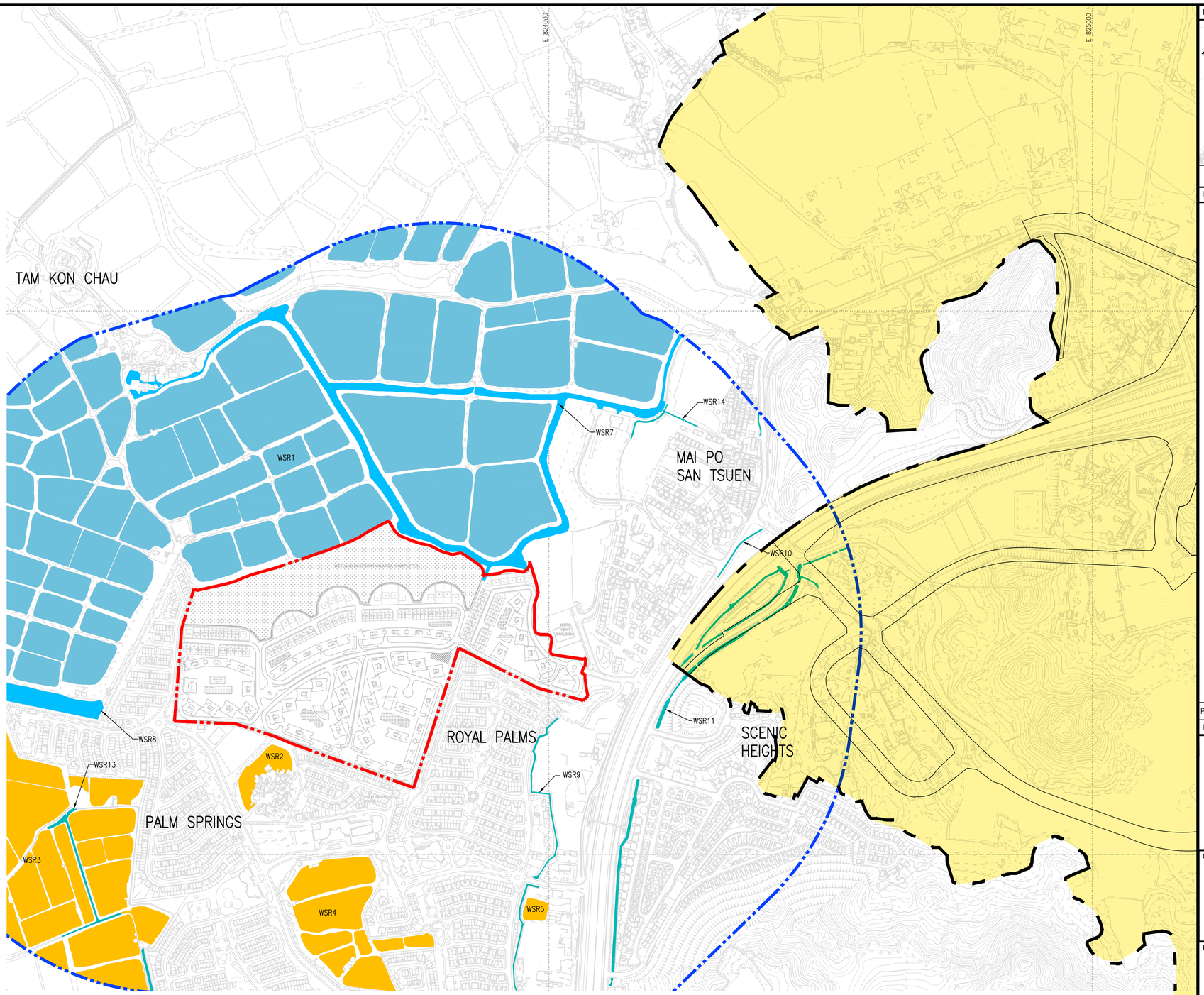
WON102115



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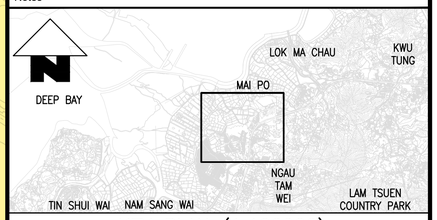

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- WATER DITCH
- FISH POND
- POND
- CHANNEL
- BOUNDARY OF SAN TIN TECHNOPOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

LOCATION OF REPRESENTATIVE WATER QUALITY SENSITIVE RECEIVERS AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 3.2

0 40 80 120 160 200
METRES
1 : 4000

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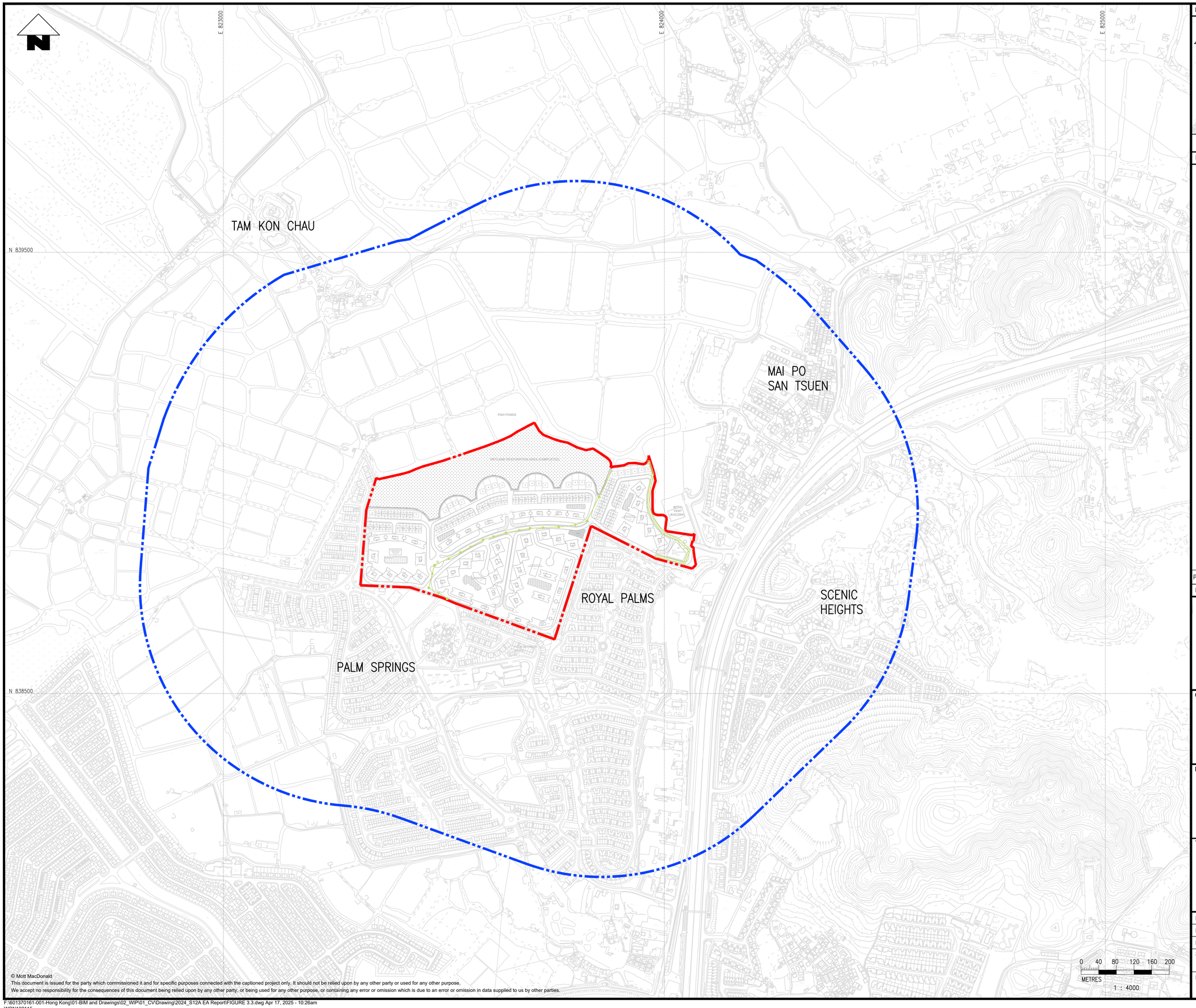
WON102115



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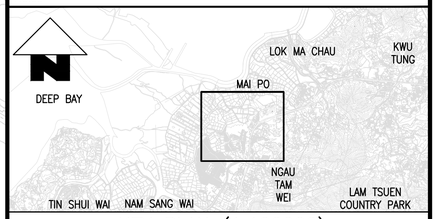

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- PROPOSED DRAINAGE SYSTEM
- PROPOSED BOX CULVERT
- PROPOSED MANHOLE

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Title

PROPOSED DRAINAGE SYSTEM AND BOX CULVERT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	

Scale at A1: 1:4000

Status: PRE

Rev: P1

Drawing Number

FIGURE 3.3

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WON102115

Appendices

Nick Sin

From: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Sent: Thursday, December 21, 2023 2:33 PM
To: CHAN Kelvin
Cc: Chi Kong LEUNG; Ming Yip TSE
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

Dear Kelvin,

Please be advised that I have no comment on your proposed classification of Mai Po South Road as "Feeder Road" from traffic engineering point of view.

Thank you very much.

Regards,

Florence KWAN
E/B2, Traffic Engineering (NTW) Division
Transport Department
Tel. No.: 2399 2727

From: CHAN Kelvin <kchan2@systra.com>
To: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Cc: Ming Yip TSE <mingyiptse@td.gov.hk>, Chi Kong LEUNG <chikongleung@td.gov.hk>
Date: 21/12/2023 12:29 PM
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

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Dear Florence,

Thanks for your prompt reply.

Therefore, it is proposed that Mai Po South Road should be classified as **"Feeder Road"** under the road classification in rural areas.

We would be most grateful if you could reply to us at your earliest convenience. Should you have any enquiries or require further information, please do not hesitate to contact the undersigned at 2864 6462.

Regards,

Kelvin Chan
Principal Traffic Engineer
Tel: +852 2864 6462 (Direct Line) • Gen: +852 2529 7037 • Fax: +852 2527 8490

SYSTRA MVA

22nd Floor • Genesis • 33-35 Wong Chuk Hang Road • Hong Kong

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Royal Palms
Description:	No noticeable noise was heard at the side facing Castle Peak Road - Mai Po or the side facing Palm Canyon Drive.
Record Photo:	View 1: Facing Castle Peak Rod - Mai Po  View 2: Facing Palm Canyon Drive 
Remark:	

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Ventilation Building (MPVB)
Description:	No noticeable noise from Mai Po Ventilation Building was heard from the side facing Mai Po South Road.
Record Photo:	View 1: Facing Mai Po South Road  
Remark:	Mai Po Ventilation Building was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Substation
Description:	No noticeable noise from Mai Po Substation was heard from the side facing San Tam Road. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing San Tam Road 
Remark:	Mai Po Substation was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Palm Springs
Description:	No noticeable noise was heard from the side facing Springs Boulevard Road.
Record Photo:	View 1: Facing Palm Springs Boulevard Road 
Remark:	The sewage treatment plant at Palm Springs was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Floodwater Pumping Station
Description:	No noticeable noise from Mai Po Stormwater Pumping Station was heard from the side facing Mai Po Road or at the entrance of the Station. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing the brownfield land adjacent to Mai Po Road  View 2: Facing the entrance of the Floodwater Pumping Station 
Reference:	Mai Po Floodwater Pumping Station was inaccessible to public. Site photos of other angles could not be taken. 

Typical Plant Inventory (per phase)						
QPME / Quiet Consturction Method (QCM) ?	**PME**	**TM or Other Reference [1][2][3][4][5]**	**SWL, dB(A)**	**No. of PME**	**% on time**	**Total SWL, dB(A)**
Group A - Site Clearance						
Group A1 - Pavement Breaking / Excavation						
✓	Hydraulic Crusher for Concrete Breaking / Demolition Works	QME IN4	94	1	100%	94
✓	Excavator, wheeled/tracked (QPME)	QPME EPD 12299	92	1	80%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	1	100%	100
	Water pump (electric)	CNP 281	88	1	100%	88
						102
Group A2 - Compacting						
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	2	50%	105
✓	Bulldozer, tracked (QPME)	EPD- 12694	108	1	50%	105
	Roller, vibratory	CNP 186	108	1	60%	106
						110
Group B - Substructure Works						
Group B1 - Piling Works (Option A)						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
✓	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	1	80%	91
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	3	60%	108
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	2	100%	103
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Piling, large diameter bored, reverse circulation drill	CNP 166	100	2	60%	101
						115
Group B1 - Raft Foundation (Option B)						
	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	2	80%	94
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator (QPME)	QPME EPD 14730	95	2	100%	98
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Saw, circular, wood	CNP 201	108	2	50%	108
	Bar bender and cutter (electric)	CNP 021	90	4	50%	93
						115
Group C - Superstructure Works						
Group C1 - General Superstructure						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	3	60%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Compactor, vibratory	OCUPME 050	105	1	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	70%	93
	Concrete lorry mixer	CNP 044	109	2	70%	110
	Generator (QPME)	QPME EPD 14730	95	1	100%	95
	Drill/grinder, hand-held (electric)	CNP 065	98	5	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	60%	93
	Water pump (electric)	CNP 281	88	6	100%	96
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	100%	106
						115

Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

Commissioning Test Report for the Fixed Plant Noise at Mai Po (MPV), Ngau Tam Mei (NTV) and Shing Mun (SMV) Ventilation Buildings; ERS Plant Building – North (SPN) and ERS Plant Building – South (SPS)

MTR Corporation

July 2018

Location	NSR	Description
SMV	SM1	Sau Shan House, Cheung Shan Estate
	SM4	Shui Hong Nursing House
SPN	SS7	Leung Uk Tsuen Village House
	SS10	DD110 LOT 452, Wang Toi Shan
	SS15[(a)]	Abandoned village house in Shek Kong
SPS	SS11a[(a)]	Leung Uk Tsuen Squats
	SS20[(a)]	Village house in Shek Kong

Note:

(a) Certain direction of the ventilation shaft is totally or partially screened by the proposed noise barriers at Shek Kong Stabling Sidings (SSS).

3.2.4 Measurement Schedule

The noise measurements were carried out at the monitoring location for MPV, NTV, SMV, SPN and SPS, where the fixed plant items were operated steadily and continuously at their noisiest operating mode under normal scenario. The noise measurement schedule is shown in **Table 3.5**. Sample measurement photos of MPV, NTV, SMV, SPN and SPS are shown in **Appendix A3**.

Table 3.5 Measurement Schedule

Location	Date
MPV	25 – 26 Apr 2018
NTV	17 – 18 May 2018
SMV	8 – 9 Jun 2018
SPN	24 – 25 May 2018
SPS	24 – 25 May 2018

4 Measurement Results

4.1 The Noise Levels of Fixed Plant Noise Sources

The noise levels measured under the worst case scenario are determined and presented in **Table 4.1**. Details of the measurement results are shown in **Appendix A3**.

Table 4.1 Summary of Sound Power Levels for Fixed Plants

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
MPV	North N1 [(a)]	67
	North N2	69
	North N3	72
	East E1	74
	South S1	74
	South S2	75
	West W1	70
	West W2 [(a)]	69
NTV	North N1	72

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	North N2	69
	North N3	61
	North N4 [(a)]	73
	East E1	77
	East E2	72
	South S1	78
	South S2	78
	South S3 [(a)]	71
	South S4 [(a)]	71
	South S5 [(a)]	76
	South S6 [(a)]	88
	West W1 [(a)]	82
SMV	North N1	80
	North N2	63
	North N3	77
	North N4	61
	North N5 [(a)]	74
	East E1 [(a)]	89
	East E2	81
	East E3	62
	East E4 [(a)]	74
	East E5 [(a)]	67
	South S1	89
	South S2	84
	South S3	86
	South S4	86
	South S5 [(a)]	68
	West W1	76
	West W2	76
	West W3 [(a)]	97
	West W4	78
SPN	North N1	84
	North N2	84
	North N3	66
	East E1	85
	East E2	64
	East E3	68
	South S1	90
	South S2	89
	West W1	87
	West W2	72
SPS	North N1	88
	North N2	90
	North N3	71

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	East E1	84
	East E2	90
	East E3	89
	East E4	78
	East E5	76
	South S1	82
	South S2	84
	South S3	82
	West W1	84
	West W2	76
	West W3	80
	West W4	74

Note:

(a) The plant would be operated during day and evening time only under normal scenario.

A compliance check against the fixed plant noise criteria at NSR was conducted. The cumulative noise levels from noise sources were assessed to ensure the compliance with the noise criterion. **Table 4.2** shows the results, details of the calculation are also given in **Appendix A3**.

Table 4.2 Cumulative Fixed Plant Noise at NSR

NSR	Source Location	Cumulative SPL, dB(A)		Noise Criteria, dB(A)		Compliance (Y/N)	
		Day and Evening Time	Night-time	Day and Evening Time	Night-time	Day and Evening Time	Night-time
MP1	Ventilation Shaft and Building Service	29	28	60	50	Y	Y
MP5	Ventilation Shaft and Building Service	34	33	51	45	Y	Y
MP6	Ventilation Shaft and Building Service	35	35	60	50	Y	Y
NT1	Ventilation Shaft for N/B [(a)] and Building Service	42	36	55	44	Y	Y
	Ventilation Shaft for S/B [(a)] and Building Service	43	40	55	44	Y	Y
NT1a	Ventilation Shaft for N/B [(a)] and Building Service	43	40	55	44	Y	Y
	Ventilation Shaft	44	42	55	44	Y	Y

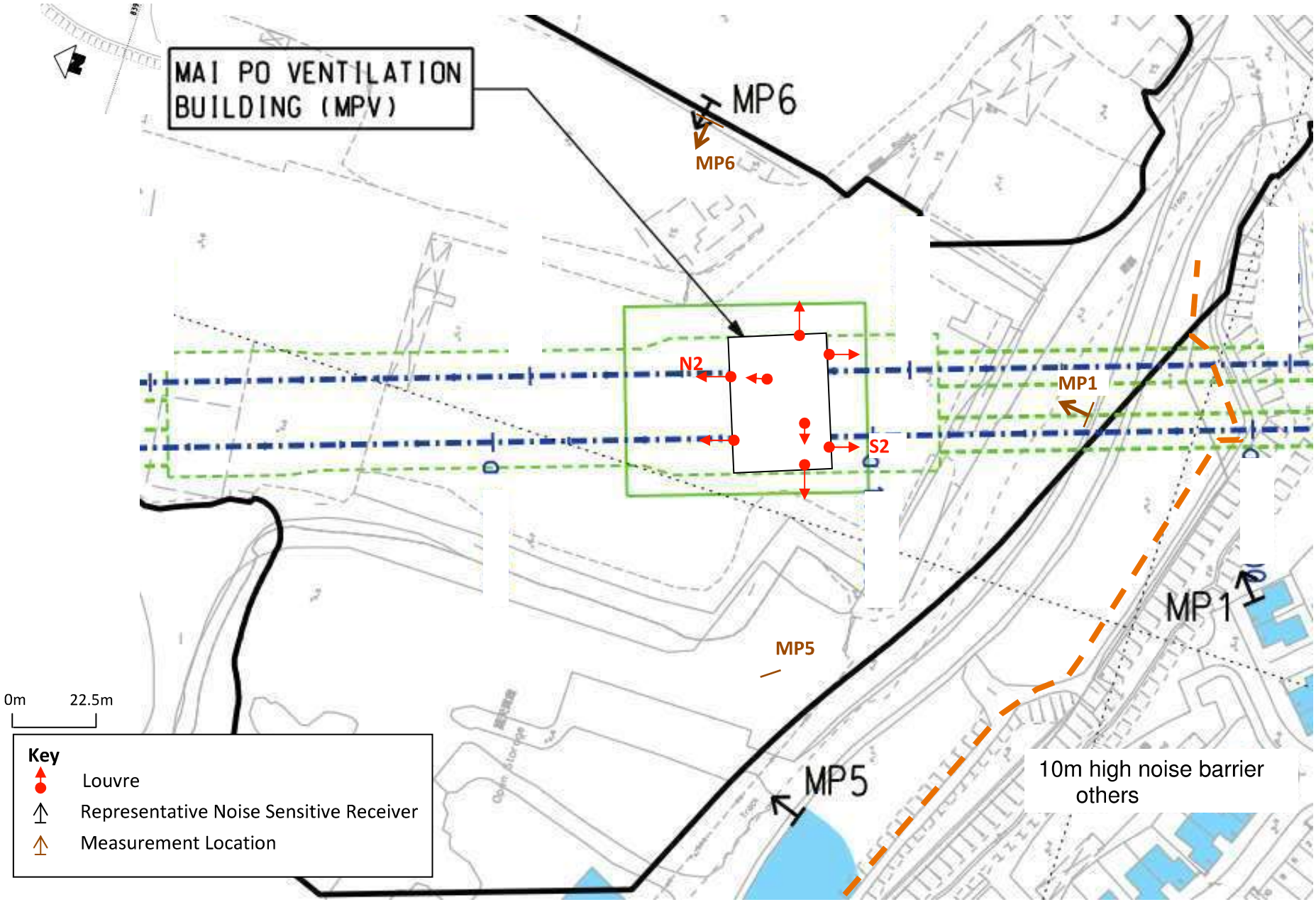


Figure 2. Representative Noise Sensitive Receiver (NSR), Noise Measurement Location and Fixed Plant Sources at MP

Appendix 2.4 Construction Noise Assessment

NSR: NSR1

	Max. SWL		[3] Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	[1]	84	-46	-10	3	62	
Phase 2	115	[1]	220	-55	-10	3	53	
Phase 3	115	[1]	389	-60	-10	3	48	
Phase 4	115	[1]	577	-63	-10	3	45	
Phase 5	115	[1]	287	-57	-10	3	51	
Phase 6	115	[1]	414	-60	-10	3	48	
						WSW (max spl)	**63**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR2

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	73	-45	-10	3	63	
Phase 2	115	(1)	223	-55	-10	3	53	
Phase 3	115	(1)	402	-60	-10	3	48	
Phase 4	115	(1)	591	-63	-10	3	45	
Phase 5	115	(1)	262	-56	-10	3	52	
Phase 6	115	(1)	404	-60	-10	3	48	
						WSW (max spl)	**64**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR3

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	85	-47	-10	3	61	
Phase 2	115	(1)	259	-56	-10	3	52	
Phase 3	115	(1)	439	-61	-10	3	47	
Phase 4	115	(1)	626	-64	-10	3	44	
Phase 5	115	(1)	218	-55	-10	3	53	
Phase 6	115	(1)	386	-60	-10	3	48	
						WSW (max spl)	**63**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR4

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	154	-52	-10	3	56	
Phase 2	115	(1)	211	-54	-10	3	54	
Phase 3	115	(1)	329	-58	-10	3	50	
Phase 4	115	(1)	456	-61	-10	3	47	
Phase 5	115	(1)	89	-47	-10	3	61	
Phase 6	115	(1)	190	-54	-10	3	54	
						WSW (max spl)	**64**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR5

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	133	-50	-10	3	58	
Phase 2	115	(1)	187	-53	-10	3	55	
Phase 3	115	(1)	289	-57	-10	3	51	
Phase 4	115	(1)	418	-60	-10	3	48	
Phase 5	115	(1)	54	-43	-10	3	65	
Phase 6	115	(1)	150	-52	-10	3	56	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR6

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	184	-53	-10	3	55	
Phase 2	115	(1)	217	-55	-10	3	53	
Phase 3	115	(1)	278	-57	-10	3	51	
Phase 4	115	(1)	375	-59	-10	3	49	
Phase 5	115	(1)	65	-44	-10	3	64	
Phase 6	115	(1)	67	-45	-10	3	63	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR7

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	278	-57	-10	3	51	
Phase 2	115	(1)	321	-58	-10	3	50	
Phase 3	115	(1)	381	-60	-10	3	48	
Phase 4	115	(1)	457	-61	-10	3	47	
Phase 5	115	(1)	173	-53	-10	3	55	
Phase 6	115	(1)	167	-52	-10	3	56	
						WSW (max spl)	**60**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR8

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	282	-57	-10	3	51	
Phase 2	115	(1)	294	-57	-10	3	51	
Phase 3	115	(1)	292	-57	-10	3	51	
Phase 4	115	(1)	335	-59	-10	3	49	
Phase 5	115	(1)	162	-52	-10	3	56	
Phase 6	115	(1)	66	-44	-10	3	64	
						WSW (max spl)	**65**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR9

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	301	-58	-10	3	50	
Phase 2	115	(1)	269	-57	-10	3	51	
Phase 3	115	(1)	175	-53	-10	3	55	
Phase 4	115	(1)	173	-53	-10	3	55	
Phase 5	115	(1)	216	-55	-10	3	53	
Phase 6	115	(1)	69	-45	-10	3	63	
						WSW (max spl)	**65**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR10

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	294	-57	-10	3	51	
Phase 2	115	(1)	243	-56	-10	3	52	
Phase 3	115	(1)	93	-47	-10	3	61	
Phase 4	115	(1)	82	-46	-10	3	62	
Phase 5	115	(1)	239	-56	-10	3	52	
Phase 6	115	(1)	82	-46	-10	3	62	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR11

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	577	-63	-10	3	45	
Phase 2	115	(1)	519	-62	-10	3	46	
Phase 3	115	(1)	340	-59	-10	3	49	
Phase 4	115	(1)	167	-52	-10	3	56	
Phase 5	115	(1)	518	-62	-10	3	46	
Phase 6	115	(1)	368	-59	-10	3	49	
Concurrent Project	113	(3)	86	-47		3	69	
						WSW (max spl)	**70**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.4 Construction Noise Assessment

NSR: NSR12

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	548	-63		3	55	
Phase 2	115	(1)	498	-62		3	56	
Phase 3	115	(1)	304	-58		3	60	
Phase 4	115	(1)	148	-51		3	67	
Phase 5	115	(1)	510	-62		3	56	
Phase 6	115	(1)	366	-59		3	59	
Concurrent Project	113	(3)	115	-49		3	67	
						WSW (max spl)	**71**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.4 Construction Noise Assessment

NSR: NSR13

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	721	-65	-10	3	43	
Phase 2	115	(1)	669	-65	-10	3	43	
Phase 3	115	(1)	513	-62	-10	3	46	
Phase 4	115	(1)	311	-58	-10	3	50	
Phase 5	115	(1)	637	-64	-10	3	44	
Phase 6	115	(1)	491	-62	-10	3	46	
Concurrent Project	113	(3)	138	-51		3	65	
						WSW (max spl)	**66**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.5 - Fixed Plant Noise Assessment

Daytime Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Daytime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	67	81	-46	0	0	3	0	24	39	65
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	67	62	-44	0	0	3	0	26	41	65
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	69	51	-42	0	0	3	0	30		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	67	54	-43	0	0	3	0	27	41	65
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	69	52	-42	0	0	3	0	30		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	67	51	-42	0	0	3	0	28	40	65
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	69	59	-43	0	0	3	0	29		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	67	56	-43	0	0	3	0	27	39	65
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	71	-45	0	0	3	0	27		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	67	68	-45	0	0	3	0	25	37	65
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	69	86	-47	0	0	3	0	25		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	67	97	-48	0	0	3	0	22	35	65
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	69	116	-49	0	0	3	0	23		
FN8	Mai Po Ventilation Building	MPVB North N1 (N1)	67	82	-46	0	0	3	0	24	39	65
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	80	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	79	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	70	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	58	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	63	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		
FN9	Mai Po Ventilation Building	MPVB North N1 (N1)	67	84	-47	0	0	3	0	23	39	65
		MPVB North N2 (N2)	69	87	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	78	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	74	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	66	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	60	-44	0	0	3	0	34		
		MPVB West W1 (W1)	70	66	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.

(2) The above results only apply to uses which rely on opened windows for ventilation.

Appendix 2.5 - Fixed Plant Noise Assessment

Night time Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Nighttime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	0	81	-46	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	0	62	-44	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	0	51	-42	0	0	3	0	0		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	0	54	-43	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	0	52	-42	0	0	3	0	0		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	0	51	-42	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	0	59	-43	0	0	3	0	0		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	0	56	-43	0	0	3	0	0	38	55
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	71	-45	0	0	3	0	0		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	0	68	-45	0	0	3	0	0	36	55
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	0	86	-47	0	0	3	0	0		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	0	97	-48	0	0	3	0	0	34	55
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	0	116	-49	0	0	3	0	0		
FN8	Mai Po Ventilation Building	MPVB North N1 (N1)	0	82	-46	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	80	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	79	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	70	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	58	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	63	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		
FN9	Mai Po Ventilation Building	MPVB North N1 (N1)	0	84	-47	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	87	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	78	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	74	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	66	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	60	-44	0	0	3	0	34		
		MPVB West W1 (W1)	70	66	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.

(2) The above results only apply to uses which rely on opened windows for ventilation.

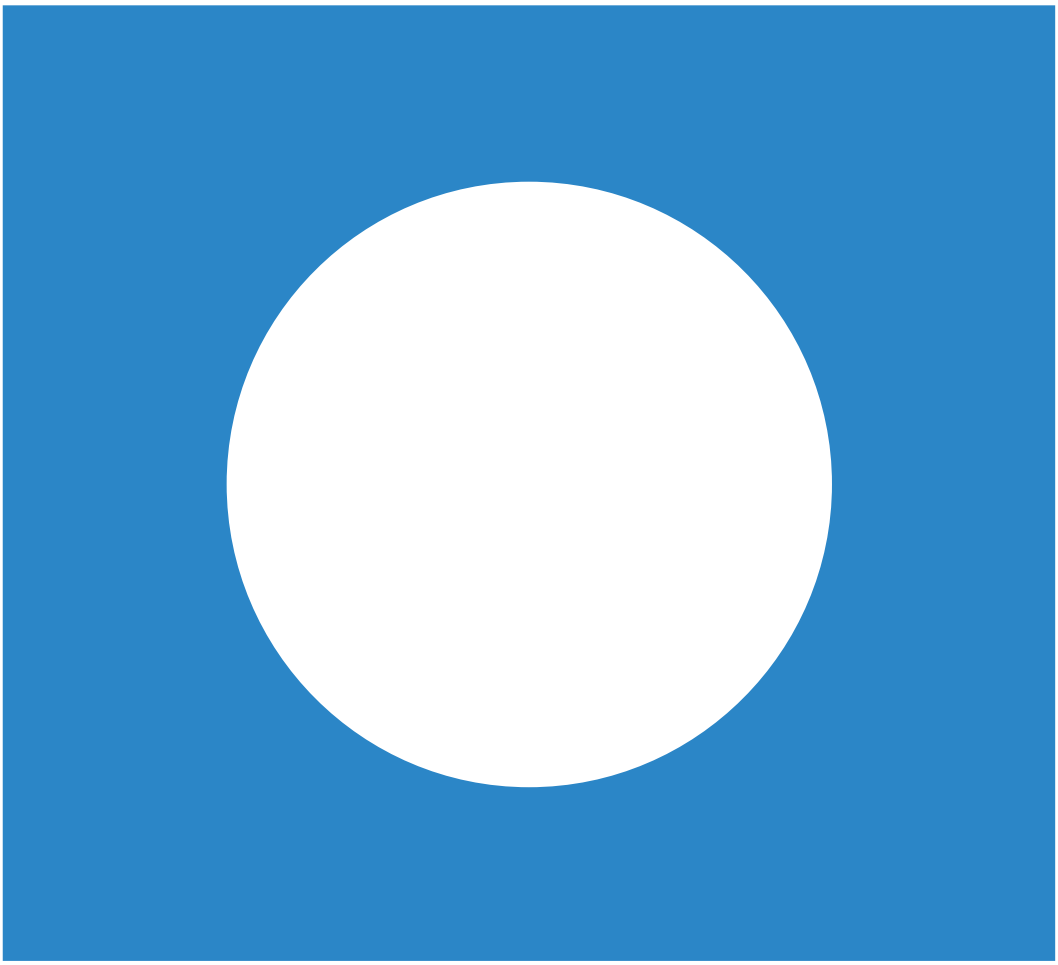
Proposed Use of Project NSRs (RCHE)

RCHE	TN26	TN27	TN28	TN29	TN30	TN31	TN32	TN33
G/F	For EM purpose							
1/F	F.G.	F.G.	F.G.	F.G.	F.G.	70	60	60
2/F	F.G.	F.G.	F.G.	F.G.	F.G.	F.G.	61	61
3/F	F.G.	F.G.	F.G.	F.G.	F.G.	F.G.	63	63

Min	60
Max	70

	Proposed Use
≤65	All type of uses, except hospitals, clinics, convalescences and residential care homes for the elderly (diagnostic rooms, wards)
≤70	Offices, Hotels & Hostels and all domestic premises including temporary housing accomdation
F.G.	Fixed glazing will be adopted

Note: The above results only apply to uses which rely on opened windows for ventilation.



Gold Ram Engineering and Development Limited

Drillhole Record

Contract No.

Drillhole No. PRELIMINARY BH10a

Sheet 1 of 1

PROJECT **Proposed Residential Development at Wo Shang Wai, Yuen Long, NT**

METHOD **Rotary Drilling**	CO-ORDINATES	Works Order No.
Machine & No. **DR-31**		Date **09/01/16** to **11/01/16**
FLUSHING MEDIUM **Water**	ORIENTATION **VERTICAL**	GROUND LEVEL mPD

Drilling Progress (dd/mm/yyyy)	Casing depth (m) /Size (mm)	Water level (m) /Time (hh:mm)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	F.I./Test Depths (m)	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
09/01/2016												0.00			Wash boring
				74						0.50		0.50			Light grey and light brown, subangular COBBLE with some coarse gravel sized rock fragments. (FILL)
										T6-116 1.30					
				68						T6-116 2.60					
09/01/2016		2.50m at 18:00		48						T6-116 3.00		3.00			
11/01/2016		2.80m at 08:00													Wash boring
				100						1 4.50		4.50			Firm, greenish grey, silty CLAY with occasional shell fragments. (MARINE DEPOSIT)
				60						2 4.95 3 5.00					
				100						4 5.45 5 5.50					
	6.50 140mm			100						6 5.95 7 6.00					
				100						8 6.45 9 6.50		6.50			Firm, light grey mottled reddish brown, silty CLAY. (ALLUVIUM)
				100						10 6.95 11 7.00					
11/01/2016		3.10m at 13:00								12 7.45		7.50			Drillhole completed at 7.50m

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- Pressuremeter Test
- Impression Packer Test
- Vane Shear Test

LOGGED M.Chiu

DATE 12/01/2016

CHECKED Miranda Mok

DATE 13/01/2016

REMARKS

Gold Ram Engineering and Development Limited

Drillhole Record

Contract No.

Drillhole No. **BH17a**

Sheet **1** of **1**

PROJECT **Proposed Residential Development at Wo Shang Wai, Yuen Long, NT**

METHOD **Rotary Drilling**	CO-ORDINATES	Works Order No.
Machine & No. **DR-31**		Date **21/01/16** to **21/01/16**
FLUSHING MEDIUM **Water**	ORIENTATION **VERTICAL**	GROUND LEVEL mPD

Drilling Progress (dd/mm/yyyy)	Casing depth (m) /Size (mm)	Water level (m) /Time (hh:mm)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	F.I. / Test Depths (m)	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
21/01/2016				60								0.00					Light grey, angular coarse GRAVEL sized rock fragments. (FILL)
											T6-116						
												0.50		0.50			Firm, greyish brown, slightly sandy clayey SILT with some subangular fine to medium gravel. (FILL)
1				100						1		1.00					
										2		1.45		1.50			
				100						3		1.50					Firm, dark brownish grey mottled black, silty CLAY with some rootlet. (POND DEPOSIT)
2										4		1.95		2.00			
				100						5		2.00					Firm, greenish grey, silty CLAY. (MARINE DEPOSIT)
										6		2.45					
				100						7		2.50					
3										8		2.95					
	3.50 140mm			100						9		3.00					
										10		3.45		3.50			
				100						11		3.50					Firm, light grey mottled reddish brown, silty CLAY. (ALLUVIUM)
4										12		3.95					
				100						13		4.00					
21/01/2016		Dry at 13:00								14		4.45		4.50			
																	Drillhole completed at 4.50m
5																	
6																	
7																	
8																	
9																	
10																	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- Pressuremeter Test
- Impression Packer Test
- Vane Shear Test

LOGGED **M.Chiu**

DATE **23/01/2016**

CHECKED **Miranda Mok**

DATE **25/01/2016**

REMARKS

PRELIMINARY

Gold Ram Engineering and Development Limited

Drillhole Record

Contract No.

Drillhole No. **BH23-1a**

Sheet **1** of **1**

PROJECT **Proposed Residential Development at Wo Shang Wai, Yuen Long, NT**

METHOD **Rotary Drilling**	CO-ORDINATES	Works Order No.
Machine & No. **DR-31**		Date **30/12/15** to **30/12/15**
FLUSHING MEDIUM **Water**	ORIENTATION **VERTICAL**	GROUND LEVEL mPD

Drilling Progress (dd/mm/yyyy)	Casing depth (m) /Size (mm)	Water level (m) /Time (hh:mm)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D. %	Fracture Index	F.I. / Test Depths (m)	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
30/12/2015															Wash boring
	2.00 168mm			44						1 2.00		2.00			Firm, brown mottled black, silty sandy CLAY with some fine to medium gravel. (FILL)
				100						2 2.45 3 2.50 4 2.95		3.00			
				100						5 3.00 6 3.45 7 3.50					Firm, grey, silty CLAY with some shell fragments. (MARINE DEPOSIT)
				100						8 3.95 9 4.00					
				100						10 4.45 11 4.50					
30/12/2015	5.00 140mm	Dry at 13:00		100						12 4.95		5.00			
30/12/2015		Dry at 13:00		100						13 5.00 14 5.45		5.50			Firm, light grey mottled reddish brown, silty CLAY. (ALLUVIUM)
															Drillhole completed at 5.50m

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Water Level
- Standard Penetration Test
- Permeability Test
- Piezometer Tip
- Standpipe Tip
- Pressuremeter Test
- Impression Packer Test
- Vane Shear Test

LOGGED **M.Chiu**

DATE **02/01/2016**

CHECKED **Miranda Mok**

DATE **04/01/2016**

REMARKS

Estimation of Excavated Sediment

*Pond Mud and Marine Deposit are collectively presented as "Excavated Sediment" in main text.

Estimated Pond Mud and Marine Deposit from Excavation

Excavation Area	% of Area Enchroached into Grid 1 (A)	% of Area Enchroached into Grid 2 (B)	% of Area Enchroached into Grid 2 (C)	Assumed Existing Ground Level (mPD)	Basement Bottom level (mPD)	Excavation Depth	Area (m^2) (J)	Pond Mud (m^3) =(A)x(D)x(J)+(B)x(F)xJ(J)+(C)x(H)x(J)	Marine Deposit (m^3) =(A)x(E)x(J)+(B)x(G)xJ(J)+(C)x(I)x(J)	Estimated Thickness of Pond Mud and Marine Deposit According to Avaliable Ground Investigation Record					
										Grid 1 (Thickness of Pond Mud and Marine Deposit)		Grid 2 (Thickness of Pond Mud and Marine Deposit)		Grid 3 (Thickness of Pond Mud and Marine Deposit)	
										Pond Mud/ m (D)	Marine Deposit/m (E)	Pond Mud/m (F)	Marine Deposit/m (G)	Pond Mud/m (H)	Marine Deposit/m (I)
Phase 1 (shallow)	85%	15%	0%	4.09	1.6	5.2	20,400.00	-	-	0	0	0	0	0	0
Phase 1 (deep)	50%	35%	15%	2.7	-5.2	12.0	16,320.00	-	**31,416.00**	0	2	0	2	0	1.5
Phase 2 (shallow)	50%	30%	20%	7.03	1.6	5.2	14,030.00	-	-	0	0	0	0	0	0
Phase 2 (deep)	80%	20%	0%	5.59	-3.2	10.0	9,821.00	**982.10**	**19,642.00**	0	2	0.5	2	1	1.5
Phase 3 (shallow)	25%	50%	25%	10.11	1.6	5.2	12,900.00	-	-	0	0	0	0	0	0
Phase 4 (shallow)	90%	10%	0%	9.52	1.6	5.2	17,220.00	-	-	0	0	0	0	0	0
Phase 5 (deep)	50%	40%	10%	6.43	-5.2	12.0	13,064.00	**3,919.20**	**20,249.20**	0.5	1.5	0	1.5	0.5	2
Phase 6 (shallow)	20%	40%	40%	6.11	1.6	5.2	30,774.00	-	-	0	0	0	0	0	0

Estimated Pond Mud and Marine Deposit from Pilling

Pilling Area	No. of Tower (K)	Nos. of Piles (L) =(K)x8	Diameter (M)	Area of Each Pile (N)	Pond Mud (Thickness) (O)	Marine Deposit (Thickness) (P)	Excavated Pond Mud* (m^3) =(L)x(N)x(O)	Excavated Marine Deposit* (m^3) =(L)x(N)x(P)
Phase 3	6	48	1.65	2.14	1.50	2.00	**115.56**	**154.08**
Phase 4	2	16	1.65	2.14	1.00	1.50	**25.68**	**38.52**
Phase 6	19	152	1.65	2.14	0.50	2.50	**121.98**	**609.90**

* Remark 0.75 reduction factor applied to Area of each Pile

	Pond Mud (m^3)	Marine Deposit (m^3)
Sub-total from Excavarion	**4,901.30**	**71,307.20**
Sub-total from Piliing	**263.22**	**802.50**
TOTAL	**5,164.52**	**72,109.70**

Total Excavated Sediment to be generationed **77,274.22**

Total Excavated Sediment to be generationed (Rounded) **77,300**

Section 12A Rezoning Application No. Y/YL-MP/9

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Response to Comments (Batch 2)

28 May 2025

Response to Comments

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

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Attachments

Attachment A: Air Ventilation Assessment (Updated)

Attachment B: Traffic Impact Assessment (Updated)

Response to Departmental Comments of UD&L Air Ventilation, PlanD

Comments from the Chief Town Planner/Urban Design and Landscape, PlanD (Contact Person: Ms Nicole LEE; Tel: 3565 3945 (Urban Design Unit)/ Mr Samuel HUI; Tel: 3565 3957 (Landscape Unit))	**Response(s):**
AVA (a) **Table 2.1** - the approximate building heights of the existing developments within the assessment boundary are as follow – - Royal Palms: 14.5 to 17.7mPD - Palm Springs – Arcadia: 13.9 to 16.5mPD - Palm Springs – Westwood: 13.6 to 17.4mPD - Palm Springs Plaza: 13.6mPD - Wo Shang Wai Village: 7.7mPD - Mai Po Ventilation Building: 21.5mPD - Mai Po San Tsuen: 6.4 to 13.3mPD We defer to the Consultant to determine whether the building heights of the listed existing developments should be presented in ranges instead of absolute values.	Table 2.1 revised accordingly. (**Attachment A**)
(b) **Planned / Committed development of San Tin Technopole** (section 4, 3rd paragraph) – Information reported in this paragraph is incorrect. The Consultant claimed that no building structures, elevated structures or noise barriers are proposed in the region at the western trip of the development of San Tin Technopole. It is also noted from Appendix H that the existing temporary transitional housing development may have been adopted in the model. With reference to Appendix G, areas zoned "Government, Institution or Community", "Other Specified Uses" annotated "Amenity Area" and area shown as 'Road' on the approved San Tin Technopole Outline Zoning Plan No. S/STT/2 (the OZP), fall within the assessment boundary (i.e. 2H boundary on Appendix G). According to the Explanatory Statement of the OZP, the concerned "G/IC" zones are for an existing Mai Po Substation, and reserved for government reserve and a workshop and related facilities of the Fire Services Department. While there is no building	Based on government archives, we acknowledge that there will be planned developments for government related facilities in the region at the western tip of the development of San Tin Technopole falls within the Surrounding Area of the current AVA. However, further to our discussion with District Planning Office, it is noted that there is currently no available data for the planned developments in San Tin Technopole to adopt into our model hence our AVA report assumes there are no developments within this region.

height restriction for the subject "G/IC" zone, the Consultant may consider making reference to the Consolidated Report of the First Phase Development of the New Territories North – San Tin /Lok Ma Chau Development Node –Investigation (the Study) and the approved EIA Report of the Study for the assumed building blocks layout and building height.	
(c) **Proposed Scheme (section 4.2)** – Referring to Appendix B, it appears that part of the identified building separations are not well aligned and may not form the effective air paths /wind corridors within the Project Site. The proposed development should refer to the design guidelines of Building Disposition outlined in "Hong Kong Planning Standard and Guidelines" (HKPSG). The consultant should clearly highlight and illustrate the identified building separations on plan.	The alignment and width of the identified building separations are updated accordingly in Section 4.2 and Appendix B. (**Attachment A**)
(d) **Value of H** (section 5.1, 1st para. and Table 5.1) – According to the HPLB-ETWB Technical Circular No. 1/06 on AVA, H is referred to the height of the tallest building on site but not the coverage of Assessment Area. Therefore, the consultant should report the correct value of H as well as the coverage of Assessment Area and Surrounding Area in text.	Section 5.1 is updated accordingly to report the correct value of H and coverage of Assessment Area and Surrounding Area as well as the actual value of H adopted for the study in order to incorporate special surrounding features and open spaces. (**Attachment A**)
(e) **Table 5.1** – The consultant should report the correct information about the blockage ratio and convergence criteria in text.	Typo rectified. Table 5.1 is updated accordingly. (**Attachment A**)
(f) **Demarcation of Focus areas** (Section 5.5 and Table 5.3) – For better understanding the potential air ventilation impact on the residential development nearby, the consultant should demarcate the focus areas on development basis (i.e. Wo Shang Wai, Royal Palms and Palm Springs, etc.) but not along each avenue /drive.	The demarcation of focus areas in Section 5.5, Table 5.3 as well as Figures 5.10 to 5.15 are updated accordingly on development basis. (**Attachment A**)
(g) **NNE wind** (section 6.1.1) – The simulation results show that the Proposed Scheme would create much larger wake on Monterey of Palm Springs when compared with the Baseline Scheme under NNE wind. However, no such discussion has been provided in text.	The discussion on the larger wake on Monterey of Palm Springs induced by the Proposed Scheme is included in Section 6.1.1 accordingly. (**Attachment A**)

(h) **ENE wind (section 6.1.3)** – The simulation results show that the Proposed Scheme would have lower VR in area between Mai Po San Tsuen and eastern part of the Project Site when compared with the Baseline Scheme under ENE wind. However, no such discussion has been provided in text.	The discussion on the lower VR at the area between Mai Po San Tsuen and eastern part of the Project Site induced by the Proposed Scheme is included in Section 6.1.3 accordingly. (**Attachment A**)
(i) **E wind** (section 6.1.4) – The simulation results show that the Proposed Scheme would have lower VR in area immediate east of Blocks D1-7, D2-7, D2-8 and C1-22 when compared with the Baseline Scheme under E wind. However, no such discussion has been provided in text.	The discussion on the lower VR along the south eastern portion of the Project Site and west of Royal Palms induced by the Proposed Scheme is included in Section 6.1.4 accordingly. (**Attachment A**)
(j) **ESE and SE winds** (section 6.1.5) – The simulation results show that the Proposed Scheme would have larger wake and lower VR around Westwood of Palm Springs when compared with the Baseline Scheme under both ESE and SE winds. However, no such discussion has been provided in text.	The discussion on the larger wake and lower VR around Westwood of Palm Springs induced by the Proposed Scheme is included in Section 6.1.5 accordingly.
(k) **SSE wind** (section 6.1.6) – The simulation results show that the Proposed Scheme would have larger wake on the fish ponds located to the north of the Project Site when compared with the Baseline Scheme under both SSE wind. However, no such discussion has been provided in text.	The discussion on the larger wake on the fish ponds located to the north of the Project Site induced by the Proposed Scheme is included in Section 6.1.6 accordingly.
(l) **S wind** (section 6.1.7) – The simulation results show that the Proposed Scheme would have larger wake on the further north of the Project Site when compared with the Baseline Scheme under both S wind. However, no such discussion has been provided in text.	The discussion on the larger wake on the fish ponds located to the north of the Project Site induced by the Proposed Scheme is included in Section 6.1.7 accordingly.
(m) **SSW wind (section 6.1.8)** – The simulation results show that the Proposed Scheme would have larger wake on the further north of the Project Site when compared with the Baseline Scheme under both SSW wind. However, no such discussion has been provided in text.	The discussion on the larger wake on the fish ponds located to the north of the Project Site induced by the Proposed Scheme is included in Section 6.1.8 accordingly.
(n) **Summary of SAVRs** (sections 6.2 and 6.3) – The consultant should update these sections	The summary is updated with reference to the updated demarcation of focus area.

taking into account our comment (see Item 6) above.	
(o) **Conclusion** (section 7) i. The consultant should discuss and conclude whether the Proposed Scheme would result in a significant adverse air ventilation impact on the pedestrian wind environment in the area surrounding the Project Site when compared with the Baseline Scheme. ii. Para. 5 – As mentioned in our previous comments on the pre-submission documents, we would reiterate that the Proposed Scheme is taller and more massive when compared with the Baseline Scheme. As such, we have reservation that the building density of the Proposed Scheme has been reduced.	i. The conclusion is updated accordingly with the discussion of the Proposed Scheme. ii. Noted and this has been removed accordingly. (**Attachment A**)

Response to Departmental Comments of Highways Department (HyD)

Comments from the Chief Highway Engineer/New Territories West, Highways Department (HyD) (Contact Person: Mr Stanley CHOI; Tel: 2762 4905)	**Response(s):**
1. The Traffic Impact Assessment (TIA) should be reviewed and commented by Transport Department (TD). If any proposed road improvements in the TIA are considered necessary by TD due to the subject development, they shall be implemented by the Applicant to the satisfaction of TD and HyD at the applicant's own cost.	TIA has also been submitted for TD's review. Applicant would take up the necessary road improvement works, as stated in the final approved TIA, if necessary.
2. The proposed access arrangement to the application site should be commented by TD. HyD is not/ shall not be responsible for the maintenance of any access connecting the application site and Mai Po South Road.	Noted.
3. HyD shall not be responsible for the maintenance of any internal transport facilities within the site, if any.	Noted.
4. Adequate drainage measures should be provided at the site access to prevent surface water flowing from the site to nearby public roads or exclusive road drains.	Noted.

5. For the impact assessments which we have no direct input from highways maintenance perceptive, we assumed that the relevant departments will provide you their comments directly. The applicant should highlight in the future submission if there be any latest findings/recommendations/ revisions that may affect our inventories including slope features or require HyD's particular input.	Noted.

Response to Departmental Comments of Railway Development Office, Highways Department (HyD)

Comments from the Chief Engineer/Railway Development 1-1, Railway Development Office, Highways Department (HyD) **(Contact Person: Mr Philip CHAN; Tel: 3525 0039)**	**Response(s):**
The subject site is within or close to the railway protection boundary of the High Speed Rail which has been fully commissioned. With reference to DEVB TC(W) No. 1/2019 and/or Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-24, please consult MTR Corporation Limited (MTRCL) with respect to the operation, maintenance, safety and any future works required for the existing railways.	Noted. MTRCL would be consulted, if necessary.

Response to Departmental Comments of Commissioner for Transport

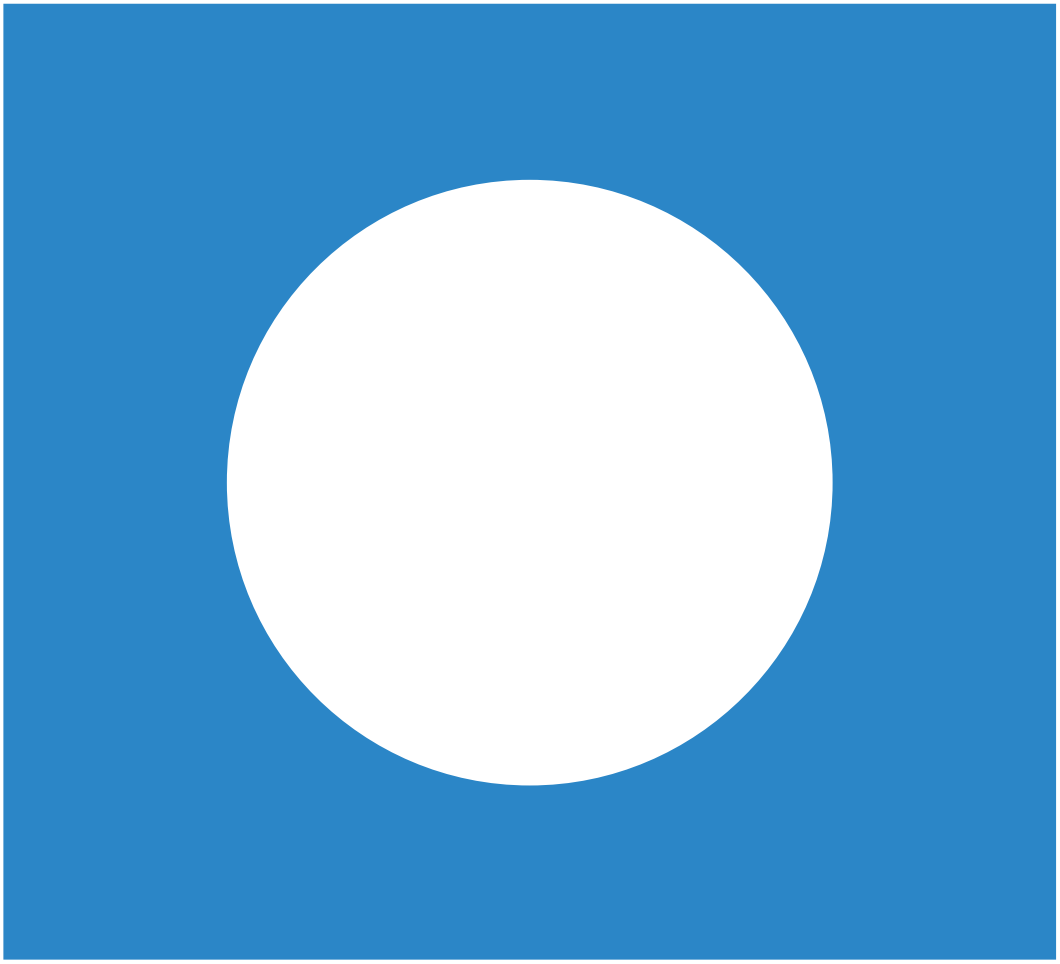
Comments from the Commissioner for Transport (Contact Person: Mr Donald Leung; Tel: 2399 2778)	**Response(s):**
1. As commented in the pre-submission, the forecast trip generation is significantly greater than 100pcu/hr with the total population approach 10,000 (i.e. 9,999), thus the projects are considered not fulfilling the criteria using 1-tier LATM. The developments are expected to directly generate significant flow into Castle Peak Road and San Tin Highway, a 2-Tier Modeling should be adopted to provide more realistic forecast.	Reference has been made from on-going planning application "Y/YL-MP/10" for proposed development in various lots and adjacent Government Land in DD 104, Yuen Long, N.T., with the review of the adjacent planned development. (**Attachment B**)
2. Table 2.2: Please provide reference on the provision of parking space, loading/ unloading bay as well as taxi/PC pick-up/drop-off space to justify the sufficiency of current parking provision.	With reference to the approved planning application for RCHE development, the parking provision has been updated in the revised TIA. (**Attachment B**)
3. Para. 2.3.4: a. Noted there would be a waiting space between the drop-bar gate and the public road. Please identify it on drawing and specify how many vehicles could be queued within this area. b. Noted a drop-bar gate would be provided within the site for access control. Given a significant number of trips (i.e. over 200 pcu/hr) would be attracted to the subject site in both AM and PM peak, please advise how many entrance gate would be provided to handle the access checking and to demonstrate the access control arrangement would not cause vehicle to queue back onto public road at all time.	In Drawing No.2.2, it is shown that there would be different accesses connecting G/F and basement carpark floor. As mentioned in the TIA, drop bar would be indicated in the layout in later detailed design stage. In Drawing No.2.2, it is shown that there would be different accesses connecting G/F and basement carpark floor. Drop bar would be indicated in detailed design stage and sufficient queuing area would be provided to avoid vehicles queuing back onto public road. (**Attachment B**)
4. Table 3.1: a. As per my comments in the pre-submission, please include San Tin Highway in the road link assessment. b. Noted some of the junctions such as San Tin Interchange and J/O Castle Peak Road – San Tin/ Kwu Tung Road, which have been assessed in the previous planning application (MP/344) are not included in the captioned TTIA Report. Please supplement.	San Tin Highway is included in the road link assessment in the revised TIA. (**Attachment B**) San Tin Interchange and J/O Castle Peak Road – San Tin/ Kwu Tung Road are included in the observed scenario. However, the ingress and egress traffic in the Design Year of 2034 would adopt Junction A (Shek Wu Wai Road / San Tin Highway Slip Road) and Junction B (Shek Wu Wai Road / Road D3 / Road L11 / Road L12) instead.

5. Table 3.3: The 2024 observed traffic flows in the table does not tally with the flow diagram in Drawing No. 3.13. Please revise.	Traffic flow in Table 3.3 has been revised.
6. Drawing No. 3.13: For Junction H (Fairview Park Interchange), please explain why the 2024 observed traffic flows in arm G is exactly the same as the 2023 observed traffic flows under the previous approved planning application (MP/344).	Further to discussion with TD, though the observed traffic flow in traffic survey in a typical weekday in April 2024 was considered under normal traffic condition, the traffic flow in arm G in Fairview Park Interchange under previous approved Planning Application A/YL-MP/344 was adopted in the assessment in conservative approach.
7. Para. 4.2.10: please explicitly state that the planned/committed developments shown in Table 4.5 are already endorsed by PlanD.	PlanD's comments on the planned/committed developments have been received and reflected in the revised TIA. Please refer to para. 4.2.6 in the revised TIA for an indication of this.
8. Table 4.6: a. The trip generation from residential development should be estimated in accordance to TPDM by breaking down into different range of flat size instead of taking the average flat size of the residential development. Please review. b. Please provide reference for the derivation of RCHE trips. c. Noted only 49% of the daily mechanized trips would use public transport mode while the remaining trips 51% would be rely on other road traffic such as taxis and private car. Hence, it is advised to adopt the high end in the trip rate generation for residential development. Please review.	The trip generation derived by different range of flat size of the subject residential development has been adopted in the assessment of the revised TIA. Based on the in-house traffic survey from the existing similar social welfare development, the RCHE trips are revised with reference to the surveyed trip rates. In accordance with TO/TD comment in item 13, the Public Transport Model Share of TCS (82%) is adopted in the assessment. Therefore, the mean trip rate of residential section would be considered reasonable to be adopted for the induced trip generation.
9. Para. 5.1.3: It is assumed that the junction improvement works in Fairview Park Interchange under Public Housing Developments at Sha Po would be completed before the population intake of the proposed development. Nonetheless, should there be any delay whatsoever such that the abovementioned junction improvement works are not in place, the applicant should carry out those junction improvement works instead. Please explicitly mention in the TTIA report.	Noted. The TIA has been revised accordingly.
10. Para. 5.2.4: Noted the applicant proposes to widen the queuing area at the concerned bus stops such that the	Noted. The TIA has been revised accordingly.

LOS C could be achieved. The proposed widening works should be undertaken by the applicant. Please explicitly mention it in the TTIA report.	
11. Para. 5.3.3: a. Understand that this paragraph is referring to Junction B instead of Junction C. Please review the text in this paragraph. b. In case there is a delay on the proposed road works under San Tin Technopole such at Junction A and Junction B are still under existing setting, the proposed junction improvement works in Junction B stated in this paragraph should be undertaken by the applicant. Please explicitly mention I in the report.	Noted. The TIA has been revised accordingly. Noted. The TIA has been revised accordingly.
12. Para. 5.3.8 and Drawing 5.11: a. Noted there would be proposed junction improvement works undertaken by other planning application. Please clarify these proposed junction improvement works for Junction H should be under planning application of Y/YL-MP/7 or planning application of Y/YL-NSW/7. b. Further junction improvement works are proposed by the applicant as stated in Para 5.3.8. Please explicitly mention that those improvement works should be undertaken by the applicant.	The concerned improvement work in Sensitivity Test 2 is referring to the planning application Y/YL- MP/10, as stated in the revised TIA. Noted. The TIA has been revised accordingly.
<u>Transport operation comment:</u> 13. Table 4.7 (Estimated Passenger Demand): a. According to TCS, the average daily mechanized trips should be 1.83. Please provide the rationale of excluding NHB and EB trips. b. For the public transport modal share, the reference case of Royal Palms (49%) seems not relevant to the current case, as it is unclear whether non-franchised bus would be provided/ approved. Please adopt the Public Transport Model Share of TCS as appropriate and review the estimated passenger demand (e.g. franchised bus and green minibus)	The average daily mechanized trips of 1.83 in accordance with TCS 2011 is adopted in the revised TIA. Subject to review of TCS 2011 Appendix A.3, the 82% of PT model share (exclude private car and taxi) is adopted for the estimated passenger demand.
14. In light of the above, please update the estimated peak hour passenger demand and ascertain the impact to the public transport services.	The estimated peak hour passenger demand has been updated in the revised TIA.

15. Please propose the required enhancement of existing public transport (PT) services and ascertain whether new PT services should be provided to cater for the new PT demand generated from the proposed new development.	Subject to the estimated peak hour PT demand induced by the subject development, the proposed enhancement of existing PT service of franchised bus service (proposed increase of bus frequency and widening works of bus stop) has been included in the assessment.
16. Subject to the updates to the proposed PT services, sufficient PT facilities should be provided to support the operation of the proposed public transport services.	The Level-Of-Service (LOS) of the queuing area is calculated at bus stops, and local widening of footpath at bus stops is also proposed accordingly.

MOTT MACDONALD



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

May 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

May 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

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1 Introduction

1.1 Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the Approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	39,072m^2
Communal Streetside Landscape	2,988m^2
Communal Water Body	5,103m^2
Private Garden	15,444m^2
Domestic Buildings and Clubhouse	42,078m^2
Internal Road/Driveway	34,120m^2
Domestic Components	
Plot Ratio Domestic Non-Domestic	1.3 1.28 0.02
Maximum Domestic GFA (Approx.)	265,847m^2
Maximum Non-Domestic GFA (Approx.)	3,800 m^2
Site Coverage (not more than)	25%
Total Number of Units	3,751
Average Unit Size (Approx.)	74.45m^2
Ancillary Recreational Facilities (Approx.)	3,800 m^2
Estimated Population	9,998*
Completion Year	2031

Building Height	
3-storey House	+21mPD
6--storey Residential Tower	+28mPD
8-storey Residential Tower	+35mPD
10-storey Residential Tower	+42mPD
Clubhouse (2-storey)	+16 mPD

Remarks:
* Based on person per flat ration of 2.8.

1.2 Study Objectives

In order to assess if any potential adverse air ventilation impacts might be induced on the surrounding pedestrian wind environment due to the proposed residential development, a site-specific AVA-IS using Computational Fluid Dynamics (CFD) has been conducted to demonstrate that the building's potential impact on the local wind environment has been duly considered by comparing the Proposed Scheme with a Baseline Scheme.

The objective of this study is to assess quantitatively the potential air ventilation impacts of the Proposed Scheme and the Baseline Scheme on the surroundings using the methodology of AVA, based on the "Housing Planning and Lands Bureau – Technical Circular No. 1/06, Environment, Transport and Works Bureau – Technical Circular No. 1/06" issued on 19th July 2006 (the Technical Circular) and "Technical Guide for Air Ventilation Assessment for Development in Hong Kong – Annex A" (the Technical Guide) of the Technical Circular.

2 Site Characteristics

2.1 Project Site and Its Surrounding Area

The Project Site is located at Wo Shang Wai, Yuen Long, with an area of approximately 207,408 m^2. The Project Site is currently a land area zoned as OU(CDWRA) under the Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8 ("OZP"). Location of the Project Site is shown in **Figure 2.1**.

There are fish ponds from the south to the north of the Project Site and mountains such as Ki Lun Shan, Ngau Tam Shan and Pine Tree Hill at the east of the Project Site. Please refer to **Appendix E** for the topography around the Project Site.

To the north of the Project Site lies a cluster of low-lying fishponds within the "Other Specified Uses" ("OU") zone. Royal Palms with building height of approximately 16mPD under "Residential (Group C)" ("R(C)") zone is located at the east and southeast of the Project Site. Mai Po Ventilation Building with building height of approximately 21.5mPD under OU (CDWRA) zone lies to the east of the Project Site. There is also a cluster of village houses under "Village Type Development" ("V") zone at the east of the Site across Mai Po South Road, namely Mai Po San Tsuen with building height of approximately 12.7mPD.

To the south of the Project Site lies a cluster of residential developments under R(C) zone, namely Wo Shang Wai Village, Palm Springs – Arcadia and Palm Springs Plaza with building height of approximately 7.7mPD, 16mPD and 13.6mPD respectively.

To the west and southwest of the Project Site also lies a cluster of residential developments under R(C) zone, namely Palm Springs – Westwood with building height of approximately 16mPD. To the further west of the Project Site across Palm Springs – Westwood is a low-lying area with numerous fishponds under OU zone.

Figure 2.1 shows an overview of the Project Site and its surroundings. **Figure 2.2** shows an overview of the Project Site and its surroundings as shown on the OZP. The building height for the existing developments in the vicinity of the Project Site are listed out in **Table 2.1**.

Table 2.1: Existing Developments around the Project Site

Name of Existing Developments	Building Height (mPD)
Royal Palms	14.5 - 17.7
Palm Springs - Arcadia	13.9 - 16.5
Palm Springs - Westwood	13.6 - 17.4
Palm Springs Plaza	13.6
Wo Shang Wai Village	7.7
Mai Po Ventilation Building	21.5
Mai Po San Tsuen	6.4 - 13.3

Figure 2.1: Overview of the Project Site and its Surroundings

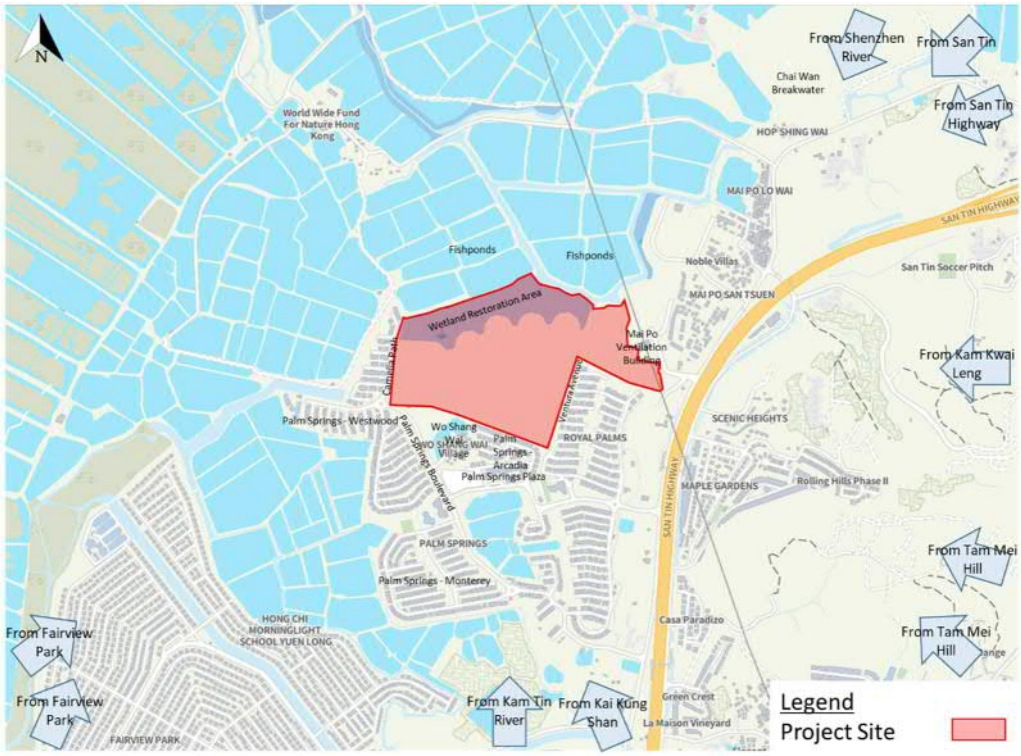
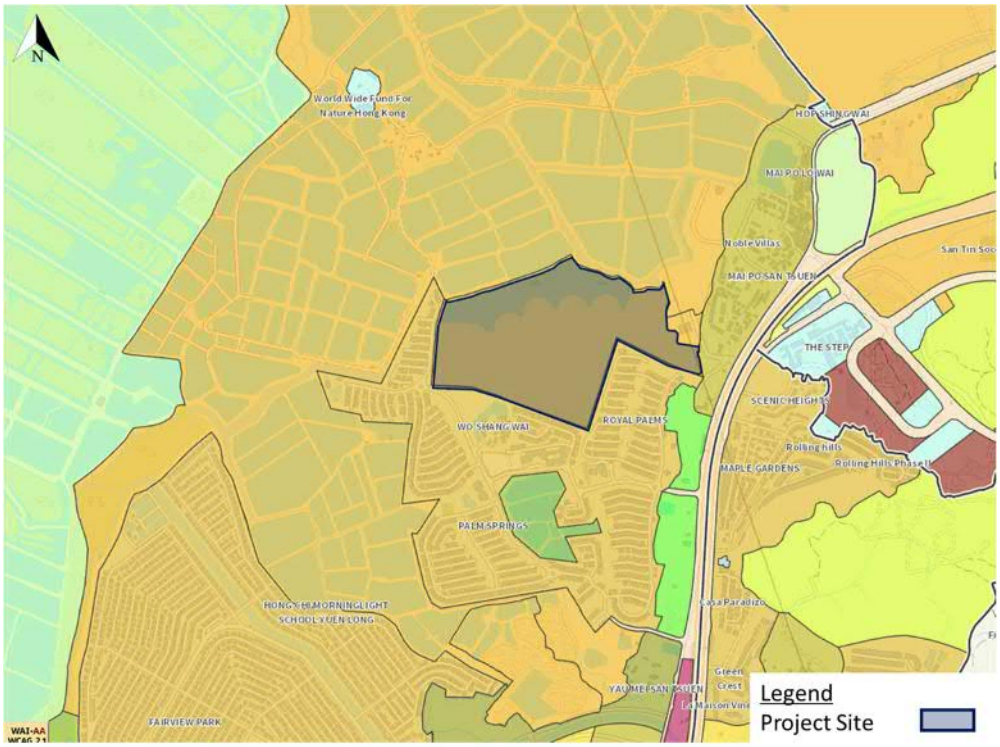


Figure 2.2: Overview of the Project Site and its Surroundings as shown on the OZP



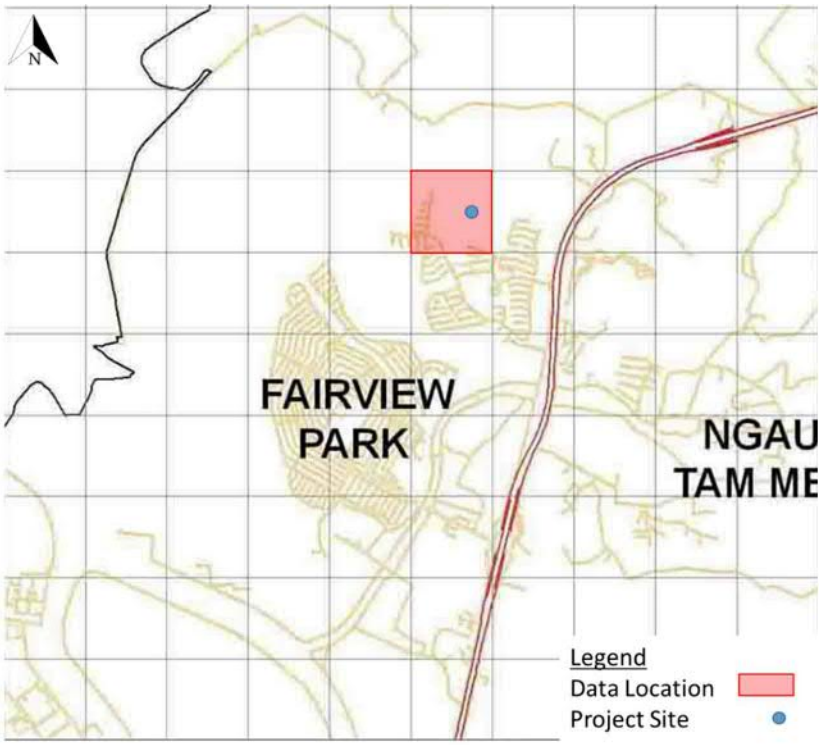
3 Wind Availability Data

The wind profile input for the CFD simulation requires wind data at different heights and at the wind boundary level. The characteristics of the site wind availability should be identified in order to investigate the wind performance of the Project Site and its surrounding area. Site wind availability data could be used to assess the wind characteristics in terms of the magnitude and frequency of approaching wind from each wind direction. In this study, the simulated Regional Atmospheric Modelling System (RAMS) wind data from Planning Department (PlanD) has been used for the quantitative assessment.

3.1 Site Wind Availability Data

City University of Hong Kong (CityU) utilized the meso-scale numerical model Regional Atmospheric Modeling System (RAMS) to produce site wind availability data for Hong Kong and is available at PlanD's database[1]. Based on the archived dataset, wind statistics and wind roses for each 0.5km×0.5km grid box at different height levels could be extracted. Simulated data at grid (X055, Y080) corresponds to the location of the Project Site and annual wind conditions at 500m above ground are referenced in this study. The location of grid (X055, Y080) is shown in **Figure 3.1**. The extracted wind roses show that easterlies dominate under the annual wind condition while south westerly winds dominate under the summer wind condition. **Figure 3.2** and **Figure 3.3** shows the annual and summer wind roses at 500m above ground level for grid (X055, Y080) respectively.

Figure 3.1: Location of the Selected RAMS Wind Data - Grid (X055, Y080)



[1] http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/index.html

Figure 3.2: Annual Wind Rose at 500m – Grid (X055, Y080)

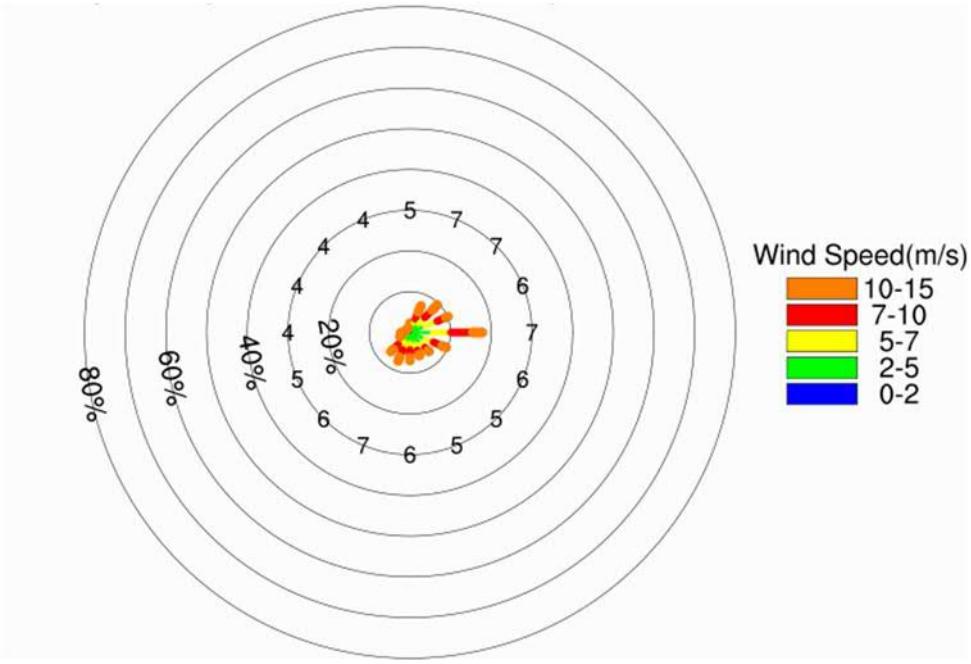
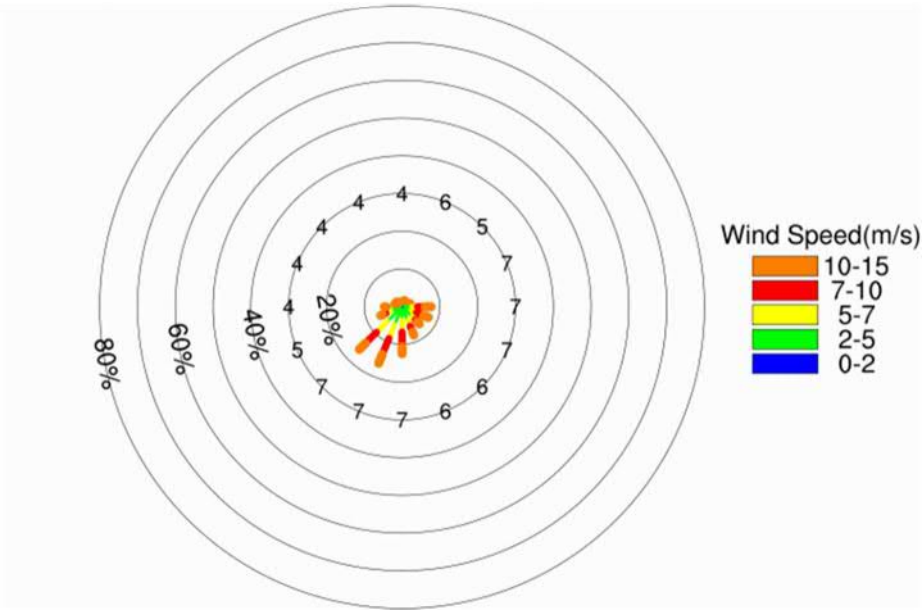


Figure 3.3: Summer Wind Rose at 500m – Grid (X055, Y080)



3.2 Annual Prevailing Wind

Nine prevailing wind directions (**bolded** in **Table 3.1**) are considered in this quantitative assessment which covers 83.2% of the total annual wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are North-Northeast (7.2%), Northeast (9.8%), East-Northeast (10.2%), East (18.1%), East-Southeast (9.8%), Southeast (6.7%), South (7.0%), South-Southwest (7.7%) and Southwest (6.7%) winds.

Table 3.1: Annual Wind Frequency at 500m

Direction	N	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	SSE
Frequency (%)	2.3	**7.2**	**9.8**	**10.2**	**18.1**	**9.8**	**6.7**	6.2
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**7.0**	**7.7**	**6.7**	2.7	2.2	1.1	1.1	1.1

3.3 Summer Prevailing Wind

Seven prevailing wind directions (**bolded** in **Table 3.2**) are considered in this quantitative assessment which covers 76.4% of the total summer wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are East (8.1%), East-Southeast (7.8%), Southeast (6.6%), South-Southeast (8.2%), South (12.9%), South-Southwest (16.5%) and Southwest (16.3%).

Table 3.2: Summer Wind Frequency at 500m

Direction	N	NNE	NE	ENE	**E**	**ESE**	**SE**	**SSE**
Frequency (%)	1.4	1.8	1.6	2.4	**8.1**	**7.8**	**6.6**	**8.2**
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**12.9**	**16.5**	**16.3**	6.2	4.7	2.1	1.8	1.4

3.4 Wind Profile

As mentioned in Section 5.1, the RAMS wind data extracted from Planning Department's Website will be adopted in this AVA Initial Study. The wind profile data from 10 – 500m will be directly adopted as it reflects the exact wind data whereas the power law equation will be used to approximate near ground wind profile (i.e. 0 – 10m). For wind data above 500m, wind velocity shall be assumed as the wind velocity at 500m. **Figure 3.4** to **Figure 3.7** indicates the overall wind profile curve adopted for the CFD simulation.

The vertical discretization of velocity profile is approximated by using an exponential law, which is a function of ground roughness and height:

$$U_Z = U_G \left(\frac{z}{z_G} \right)^n$$

where

U_G = reference velocity at height z_G

Z_G = reference height

Z = height above ground

U_Z = velocity at height z

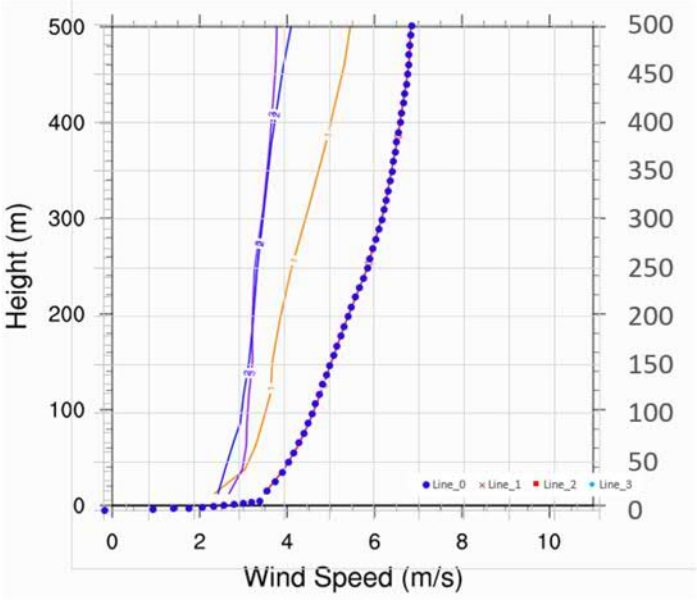
n = power law exponent

The power n is related to the ground roughness. A larger value of the power n represents the higher roughness of the ground i.e. the dense city. Alternatively, smaller n represents the lower ground roughness, i.e. the sea surface. **Table 3.3** shows the n value adopted for CFD simulation.

Table 3.3: Value of n (Power Law Exponent) Adopted for CFD Simulation

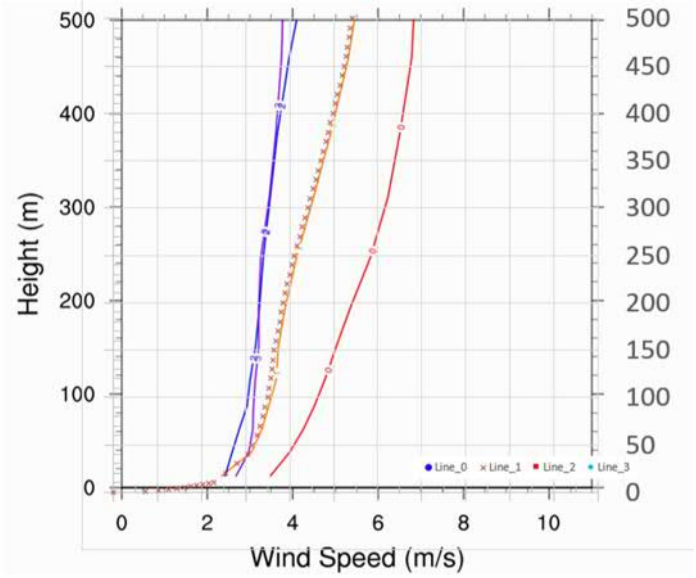
Direction	NNE	NE	ENE	E	ESE	SE
Value of n	0.35	0.35	0.35	0.35	0.35	0.35
Direction	**SSE**	**S**	**SSW**	**SW**	**WSW**	
Value of n	0.35	0.35	0.35	0.35	0.35	

Figure 3.4: Wind Profile Curve for Wind Directions of 22.5º - 112.4º at Grid (X055, Y080)



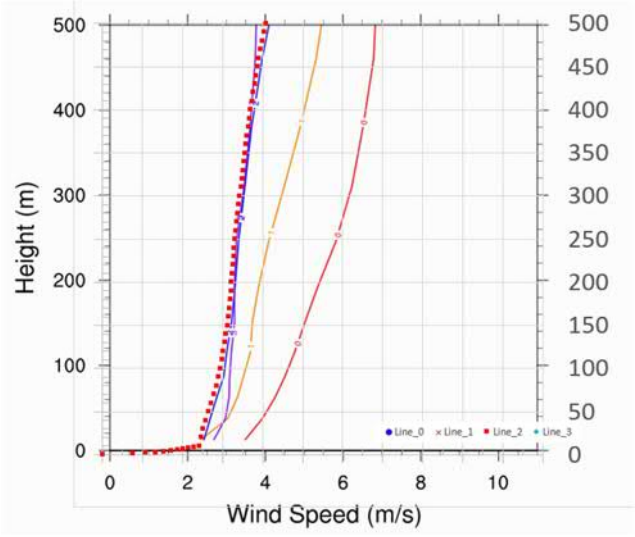
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.5: Wind Profile Curve for Wind Directions of 112.5º - 202.4º at Grid (X055, Y080)



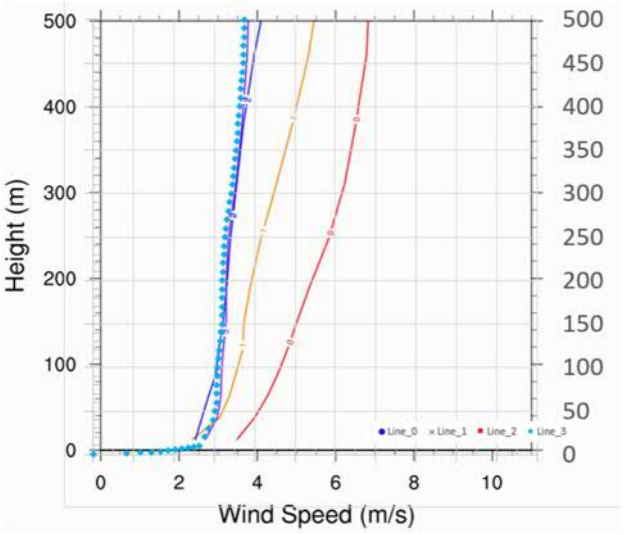
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.6: Wind Profile Curve for Wind Directions of 202.5º - 292.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.7: Wind Profile Curve for Wind Directions of 292.5º - 22.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Table 3.4 shows the data for each wind profile curve adopted in the current AVA Initial Study, which acts as the inlet boundary data in the CFD simulation.

Table 3.4: Wind Profile Data for All Wind Directions

Height	Wind Speed (m/s)			
	22.5˚ – 112.4˚	112.5˚ – 202.4˚	202.5˚ – 292.4˚	292.5˚ – 22.4˚
0	0.00	0.00	0.00	0.00
10	3.44	2.27	2.42	2.64
20	3.61	2.55	2.46	2.76
40	3.95	3.05	2.59	2.98
60	4.21	3.25	2.73	3.05
80	4.43	3.39	2.87	3.07

100	4.61	3.51	2.96	3.10
150	5.01	3.65	3.12	3.20
200	5.40	3.85	3.23	3.20
250	5.83	4.10	3.31	3.26
300	6.15	4.41	3.44	3.42
350	6.38	4.71	3.56	3.54
400	6.56	4.98	3.70	3.63
450	6.73	5.24	3.88	3.72
500	6.81	5.42	4.08	3.75

4 Design Schemes for Initial Study

Two schemes were studied for the AVA, namely Baseline Scheme and Proposed Scheme based on the design options provided by the project team.

The 3D simulation model takes information via the Geographical Information System (GIS) platform to construct the surrounding buildings and site topography. All major elevated structures such as elevated walkway have been incorporated in the simulation model. No noise barriers are located within the Surrounding Area.

In addition, the western tip of a planned/committed development of San Tin Technopole under the approved EIA Report, "*Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation*" is located within the Surrounding Area. It is noted that there are planned developments reserved for government reserve and workshop and related facilities of the Fire Services Department within this region but there is no available data for the planned developments. Please refer to **Appendix G** for the location of this planned / committed development.

Overviews of the whole domain 3D simulation model are provided in **Appendix H**.

4.1 Baseline Scheme

The Baseline Scheme is referred to the previous approved scheme under Planning Application No. A/YL-MP/344. It comprises of 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. **Figure 4.1** to **Figure 4.4** shows the simulation model of the Baseline Scheme. Architectural layout drawings of the Baseline Scheme are provided in **Appendix A**.

Chapter 11 of "Hong Kong Planning Standards and Guideline" on Air Ventilation was referenced in order to determine the good design features in the Baseline Scheme from an air ventilation standpoint. The following good design feature of the Baseline Scheme is identified and shown in **Appendix A**.

- At least 7.5m-wide building setback from the eastern site boundary.

Figure 4.1: Simulation Model of the Baseline Scheme (Part 1 of 4)

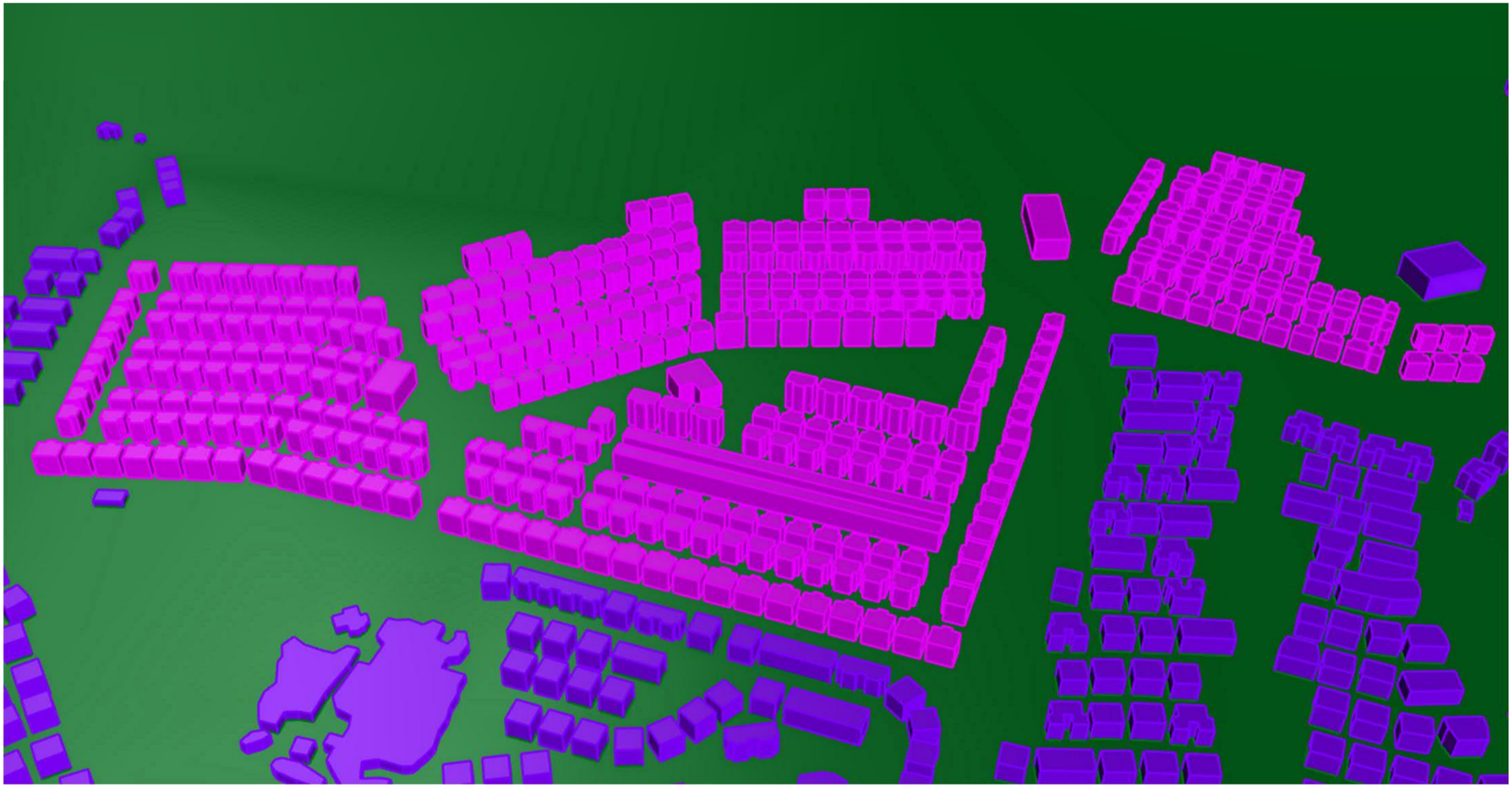


Figure 4.2: Simulation Model of the Baseline Scheme (Part 2 of 4)

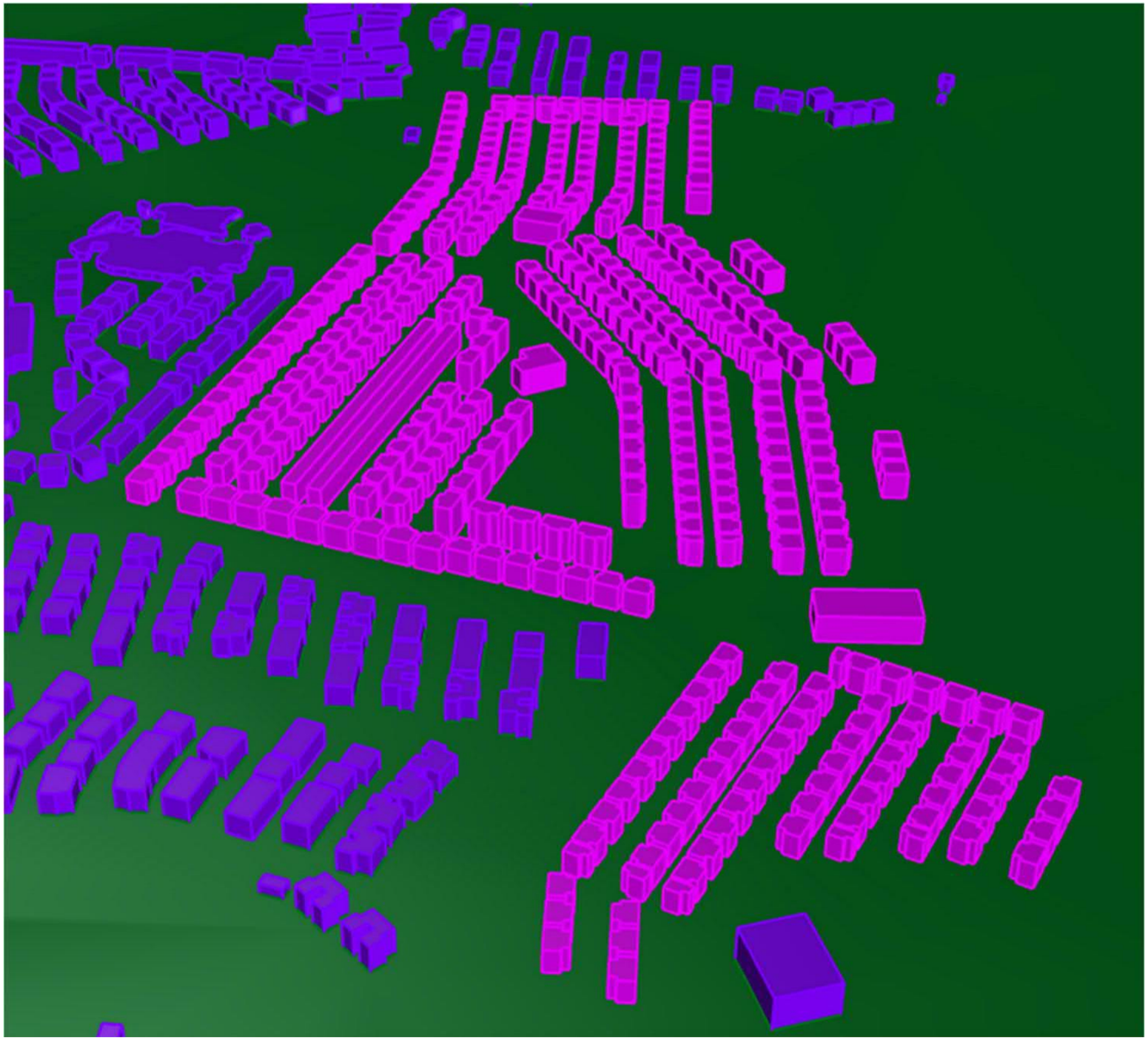


Figure 4.3: Simulation Model of the Baseline Scheme (Part 3 of 4)

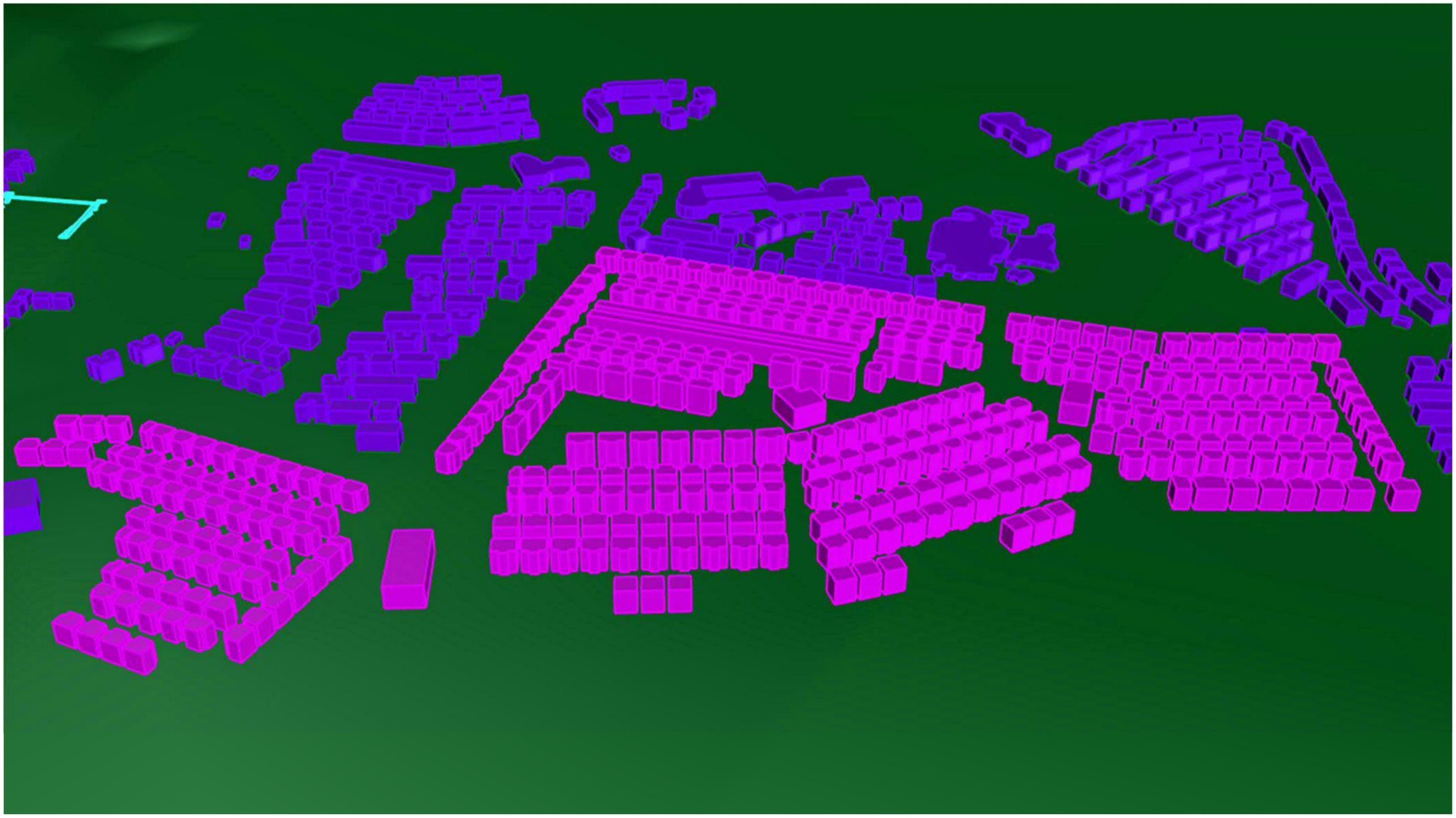
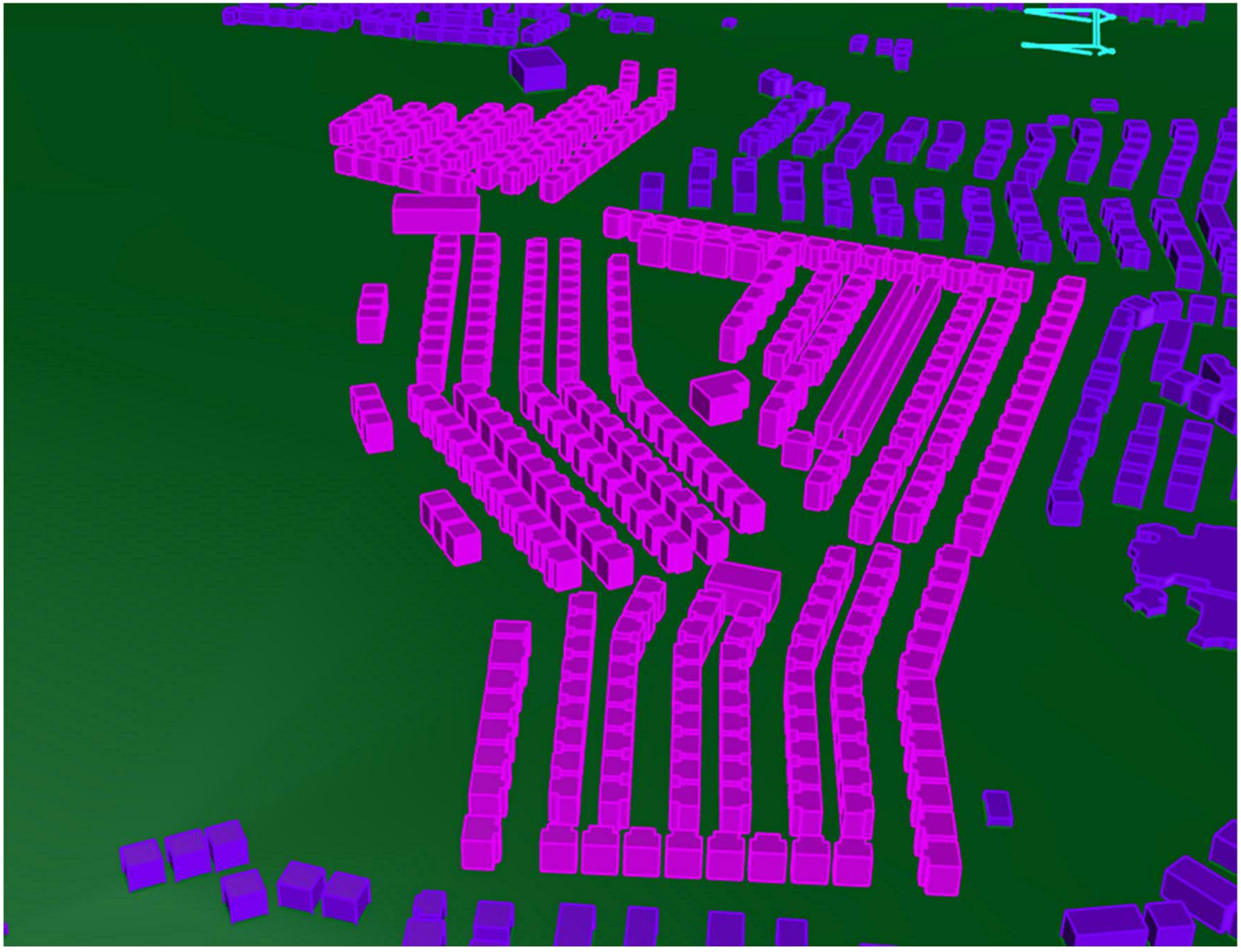


Figure 4.4: Simulation Model of the Baseline Scheme (Part 4 of 4)



4.2 Proposed Scheme

The Proposed Scheme comprises of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey Residential Care Home for the Elderly (RCHE) above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. In comparison with the Baseline Scheme, the number of buildings is reduced whilst more open spaces and building separations are introduced. The introduction of more open spaces and building separations are expected to enhance the site permeability at pedestrian level.

Chapter 11 of "Hong Kong Planning Standards and Guideline" on Air Ventilation was referenced in order to determine the good design features in the Proposed Scheme from an air ventilation standpoint. The following good design features of the Proposed Scheme are identified and shown in **Appendix B**.

- At least 15m-wide building separation between domestic blocks at the eastern side of the Proposed Scheme.
- At least 9m-wide building separation between domestic blocks at the center of the Proposed Scheme.
- At least 15m-wide building separation between domestic blocks at the western side of the Proposed Scheme.

Figure 4.5 to **Figure 4.8** shows the simulation model of the Proposed Scheme. Architectural layout drawings of the Proposed Scheme are provided in **Appendix B**.

Figure 4.5: Simulation Model of the Proposed Scheme (Part 1 of 4)

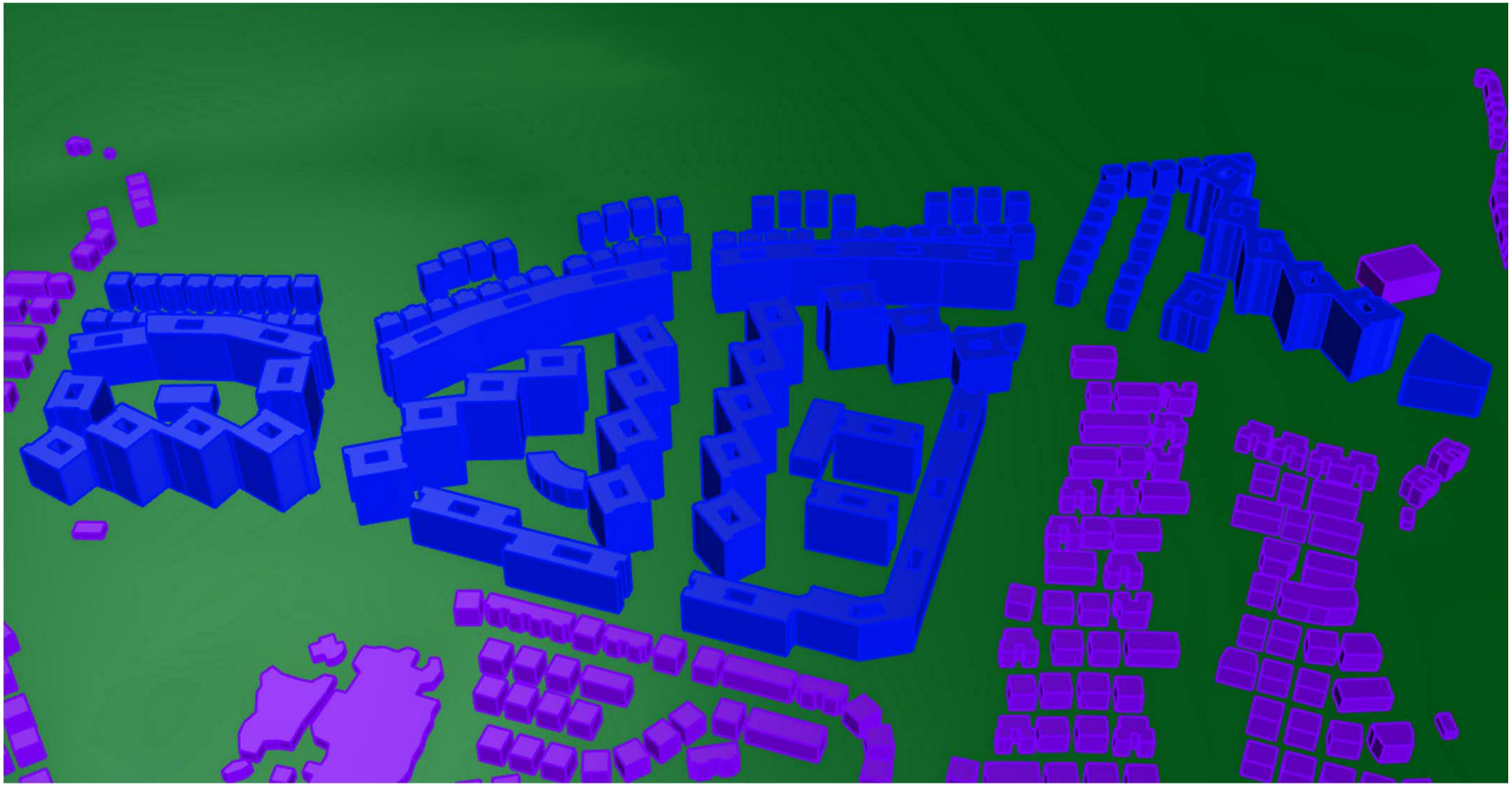


Figure 4.6: Simulation Model of the Proposed Scheme (Part 2 of 4)

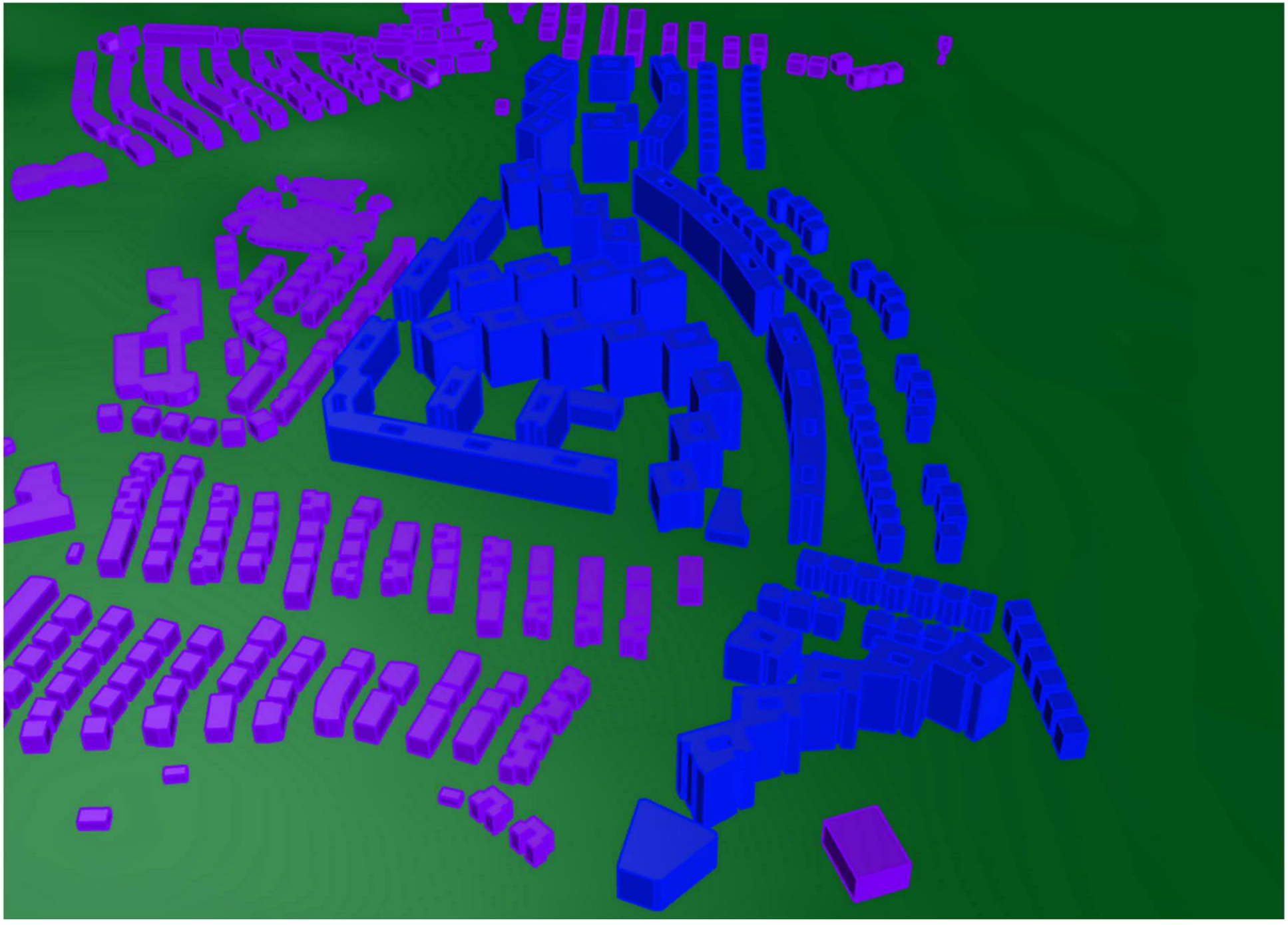


Figure 4.7: Simulation Model of the Proposed Scheme (Part 3 of 4)

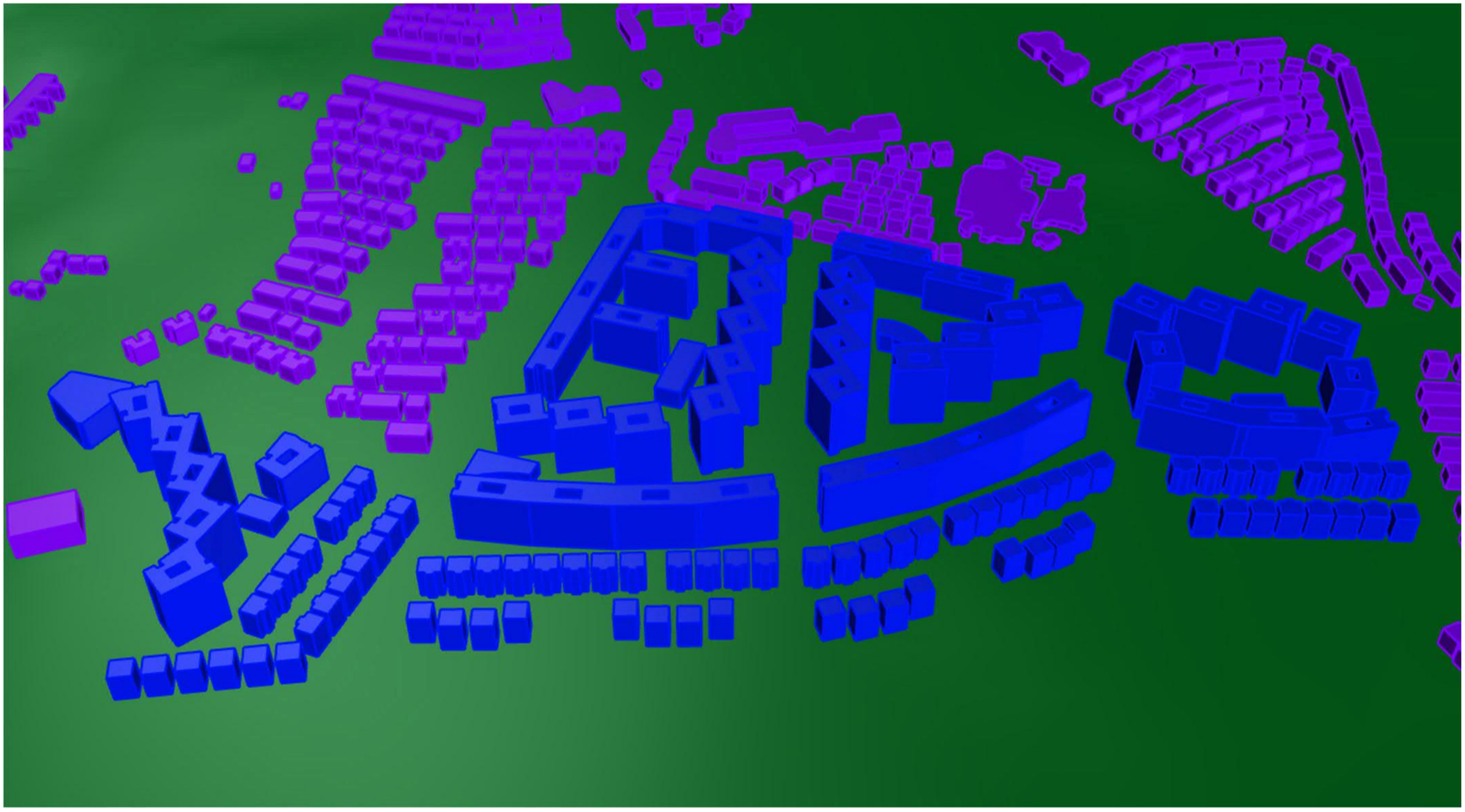
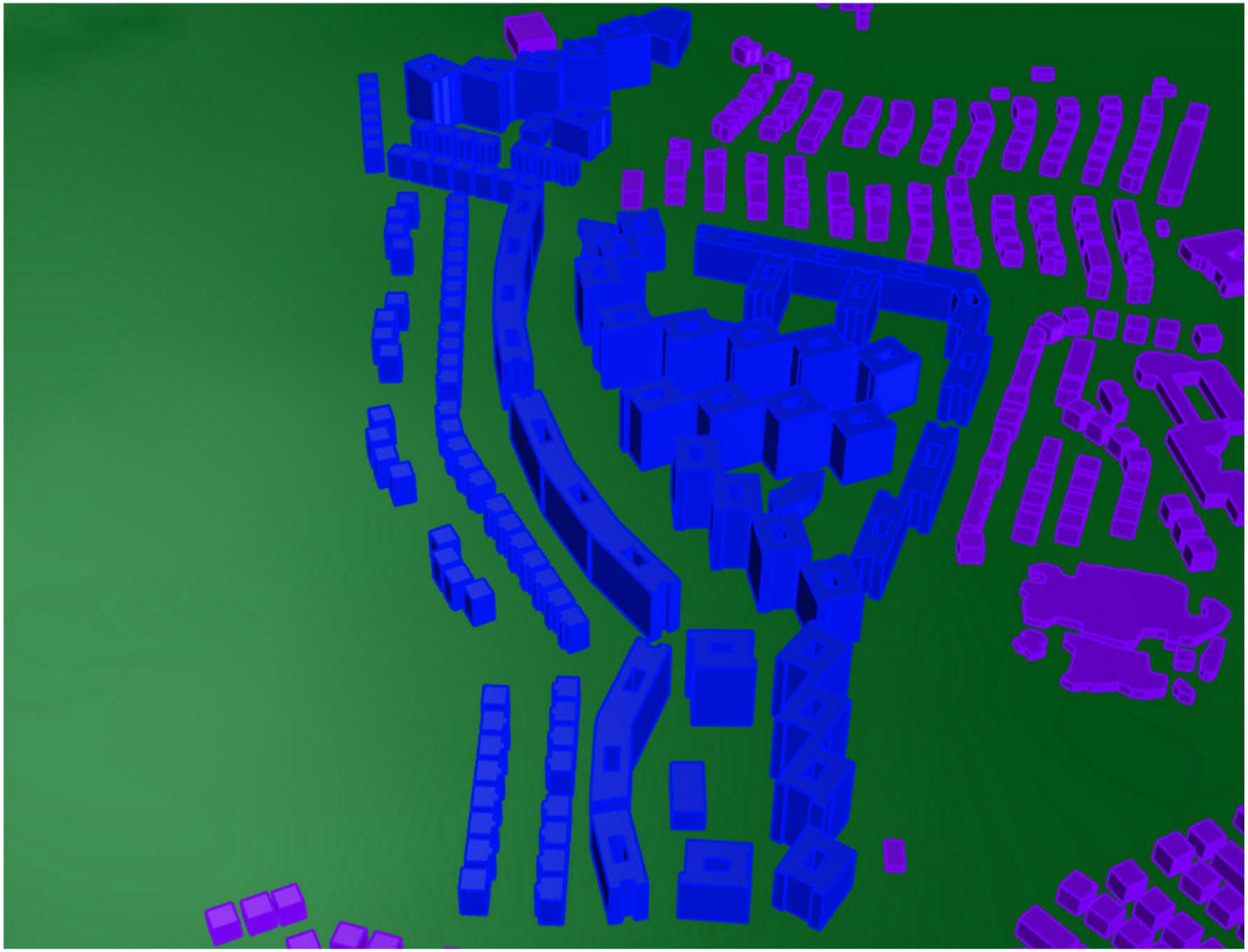


Figure 4.8: Simulation Model of the Proposed Scheme (Part 4 of 4)



5 Methodology

Computational Fluid Dynamics (CFD) was utilized for the AVA. With the use of three-dimensional CFD method, the local airflow distribution can be visualized in detail. The velocity distribution within the flow domain, being affected by the site-specific design and the nearby topography, was simulated under the studied prevailing wind conditions.

5.1 Assessment and Surrounding Areas

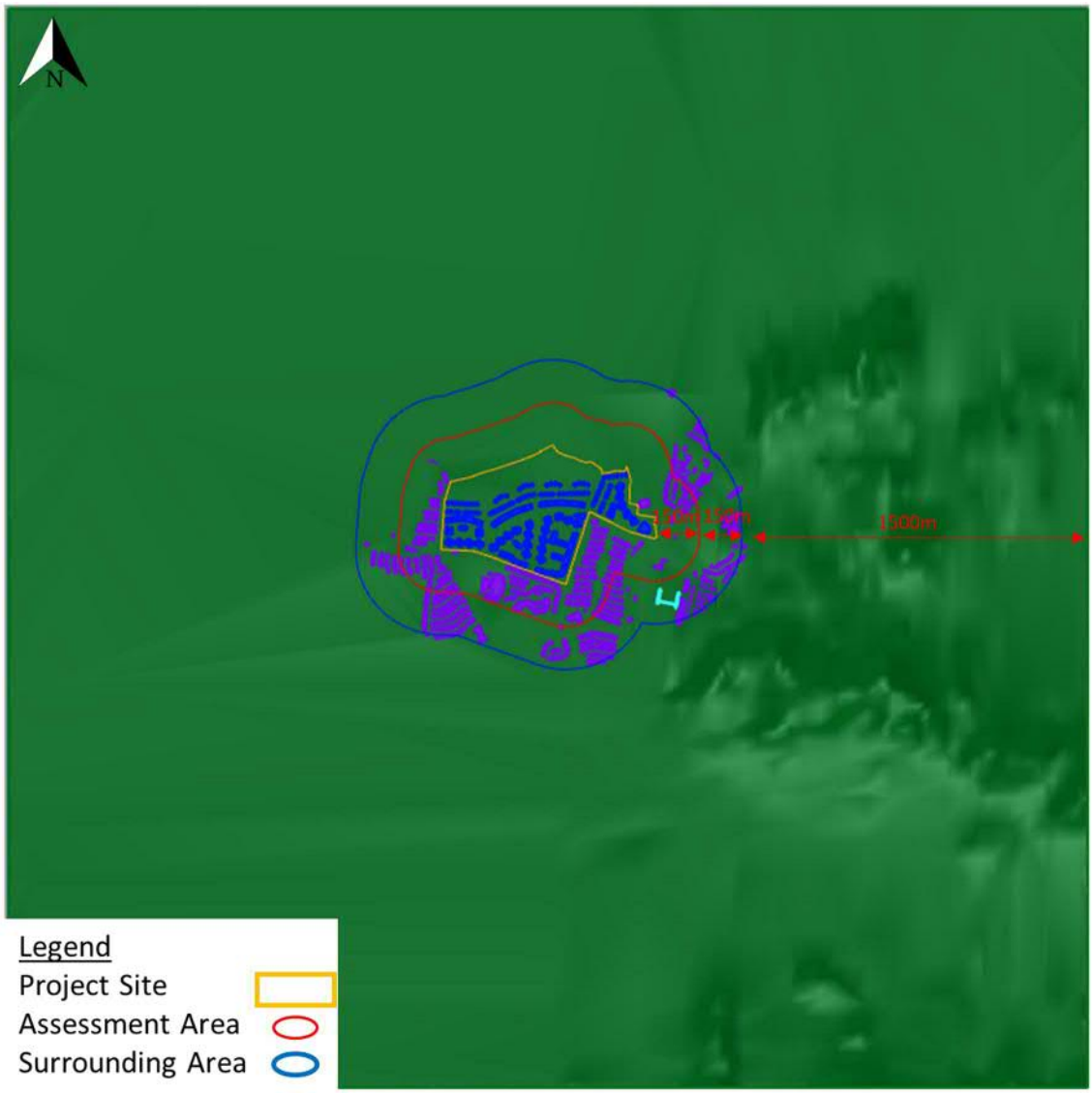
With reference to the Technical Guide, the Assessment Area should include the project's surrounding up to a perpendicular distance 1H from the site boundary of the Project Site with H being the height of the tallest building on site, which is equivalent to approximately 42m hence the Assessment Area is deduced to be 1H=42m and the Surrounding Area will be 2H=84m.

However, in order to incorporate special surrounding features and open spaces beyond the Assessment Area, the H is extended to 150m hence the new Assessment Area for the current study will be 1H=150m and the Surrounding Area will be 2H=300m.

The model takes information on the surrounding buildings and site topography via the Geographical Information System (GIS) platform. The computational domain of the CFD model for this AVA Initial Study is approximately 3800 m (L) x 3800 m (W) x 1000 m (H).

Figure 5.1 shows the size and location of the Project Site, Assessment Area, Surrounding Area and the computational domain. The whole computational domain in different directions are shown in **Appendix H**.

Figure 5.1: Project, Assessment and Surrounding Areas along Computational Domain



5.2 Technical Details for CFD Simulation

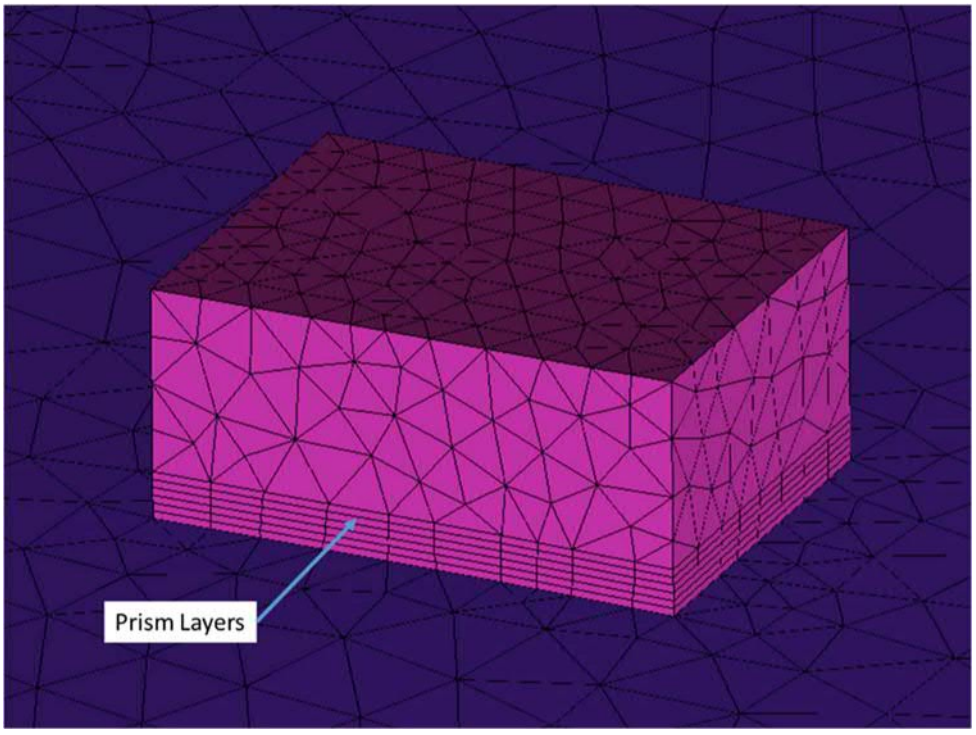
5.2.1 Modelling Tool

A commercial CFD package STAR-CCM+ was used which is widely adopted in the industry for AVA studies and other types of complex fluid flow related problems.

5.2.2 Mesh Setup

Body-fitted unstructured grid technique is used to fit the geometry to reflect the geometry details which is essential for proper modeling on turbulence flow. A prism layer of 3m above ground (totally 6 layers and each layer is 0.5m) is incorporated in the meshing so as to better capture the approaching wind near ground as shown in **Figure 5.2**. The expansion ratio is not greater than 1.1 while the maximum blockage ratio is 2%.

Figure 5.2: Prism Mesh Layers at Ground Level



5.2.3 Mesh Setup

According to COST Action C14 (2004)[2], realizable k – ε turbulence model is adopted as it is recommended for modeling pedestrian wind environment. This turbulence model provides more accurate representation of the levels of turbulence that can be expected in an urban environment.

5.2.4 Calculation Method and Boundary Condition

Pressure-Based segregated algorithm will be adopted to solve the governing equations. The pressure and velocity coupling will be handled by SIMPLE algorithm or its variation. A collocated variable arrangement with Rhie-and-Chow-type approach is also adopted to prevent checker board problem. A higher order differencing scheme is applied to discretize all governing

[2] J. Franke, C. Hirsch, A.G. Jensen, H.W. Krüs, M. Schatzmann, P.S. Westbury, S.D. Miles, J.A. Wisse and N.G. Wright, Recommendations on the use of CFD in Wind Engineering, In J.P.A.J. van Beek (Ed.), Proc. Int. Conf. on Urban Wind Engineering and Building Aerodynamics: COST C14 – Impact of Wind and Storm on City life and Built Environment, Rhode-Saint-Genèse, 2004.

equations. The convergence criterion is set to 0.0001 on mass, momentum and turbulence equations. The calculation will repeat until the solution satisfies this convergence criterion. The prevailing wind direction is set to inlet boundary of the model with respective wind profile as detailed in **Section 3**. The downwind boundary is set to pressure with value of atmospheric pressure. The top and side boundaries are set to symmetry. In addition, to eliminate the boundary effects, the model domain is built more than 5H from the Surrounding Area as recommended in the Technical Circular.

5.2.5 Summary

Based on previous sections, the detail parameters of the model are summarized in **Table 5.1**.

Table 5.1: Summary of CFD Model

	CFD Model
Computational Model Scale	1:1 scale to real environment
Model details	Topography, Buildings blocks, Streets/highways, all major elevated structures and noise barriers are included. No minor structures like signboard, street light, trees, shrubs, turfs, etc are included in the simulation model.
Domain	3800m(L) x 3800m(W) x 1000m(H)
Assessment Area	Within 1H (150m) Area
Surrounding building Area	Within 2H (300m) Area
Turbulence Model	Realizable k-ε model
Grid Expansion Ratio	Maximum expansion ratio = 1.1
Prismatic layer	6 layer of prismatic layers and 0.5m each (i.e. total 3m above ground)
Inflow boundary Condition	Respective wind profile obtained from RAMS
Outflow boundary	Pressure boundary condition with pressure equal to zero
Wall boundary condition	Logarithmic law boundary
Solving algorithms	SIMPLE with Rhie and Chow approach + Higher order differencing scheme
Blockage ratio	Maximum = 2%
Convergence criteria	Below $1.0E^{-4}$

5.3 AVA Indicator

5.3.1 Wind Velocity Ratio

The Wind Velocity Ratio (VR) as stipulated in the Technical Circular will be used to assess the ventilation performance of the proposed development and its surrounding environment. Higher VR implies better ventilation. The calculation of VR is given by the following formula:

$$VR = \frac{V_p}{V_\infty}$$

V_P= the wind velocity at the pedestrian level (2m above ground).

V_∞= the wind velocity at the top of the wind boundary layer (typically assumed to be around 500m above the center of the site of concern, or at a height where wind is unaffected by the urban roughness below).

The Average VR is defined as the frequency weighted average VR with respect to the percentage of occurrence of all considered wind directions. This gives a general idea of the ventilation performance at the considered location at both annual and summer wind conditions.

5.3.2 Spatial Average Velocity Ratio

CFD simulations will be conducted to study the wind environment under annual and summer wind conditions. As specified in the Technical Circular, indicator of ventilation performance should be the VR, defined as the ratio of the wind velocity at the pedestrian level to the wind velocity at the top of the wind boundary layer. Site spatial average velocity ratio (SVR) and a Local spatial average velocity ratio (LVR) should be determined.

The SVR gives an idea of how the lower portion of the proposed development may affect the immediate surroundings. When problems are detected, it is likely that design changes may be needed for the lower portion of the development (e.g. the coverage of the podium).

The LVR gives an idea of how the upper portion of the proposed development may affect the local surroundings. When problems are detected, it is likely that design changes may be needed for the upper portion of the development (e.g. re-orientation of blocks and building height adjustment on the towers).

Table 5.2: Terminology of the AVA Initial Study

Terminology	Description
Site spatial average velocity ratio (SVR)	The SVR represent the average VR of all perimeter test points along the site boundary as identified in the report.
Local spatial average velocity ratio (LVR)	The LVR represents the average VR of all points, i.e. perimeter and overall test points within the Assessment Area, as identified in the report.

5.4 Locations of Test Points

Test points are evenly placed along the site boundary as well as open spaces, along streets and places within the Assessment Area which are frequently accessed by pedestrians. Test points have been placed at 2m above ground or podium level to determine the pedestrian ventilation performance. Three types of test points have been adopted in this study.

5.4.1 Perimeter Test Points

Perimeter test points are the points positioned at the site boundary of the Project Site. In accordance with the Technical Guide, 50 perimeter test points are positioned along the site boundary as shown in **Figure 5.3** to **Figure 5.4**.

Figure 5.3: Demarcation of the Perimeter (P) Test Points in Baseline Scheme

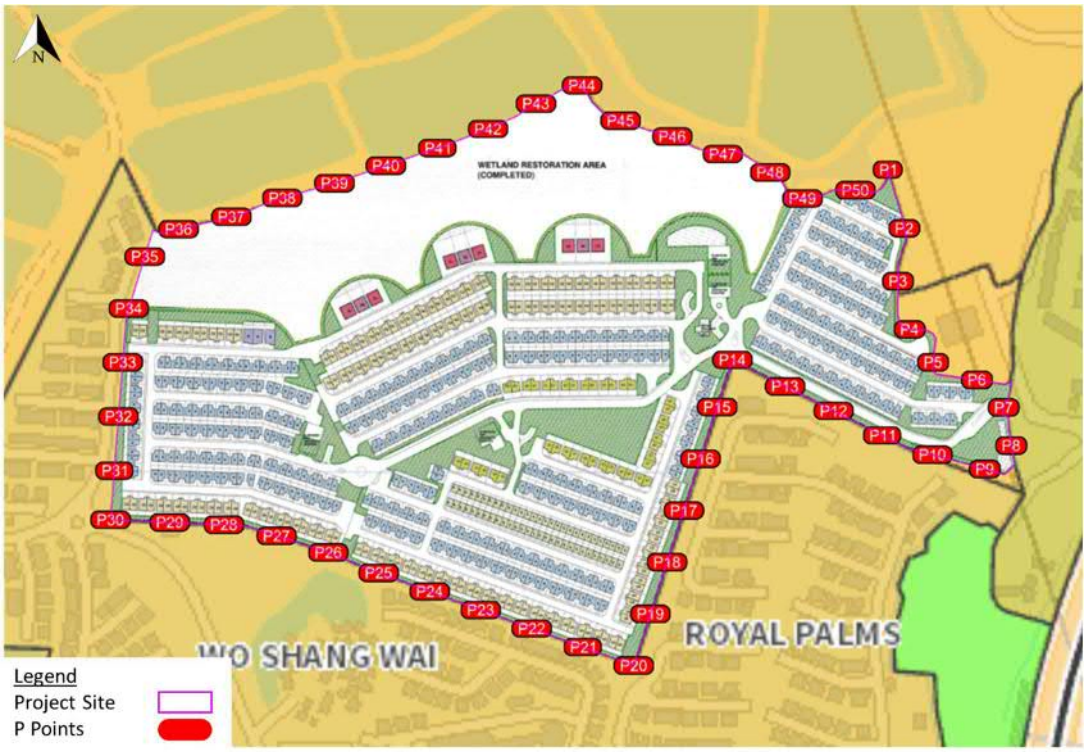
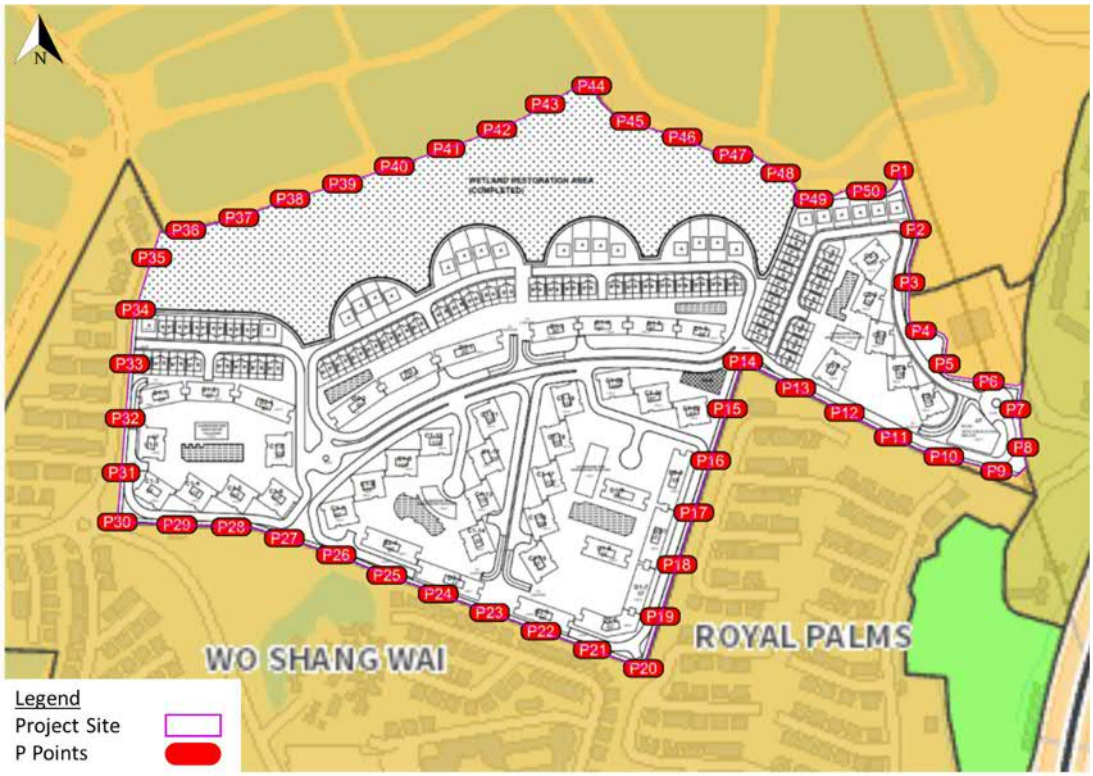


Figure 5.4: Demarcation of the Perimeter (P) Test Points in Proposed Scheme



5.4.2 Overall Test Points

177 overall test points are evenly distributed at open spaces, streets and places that are frequently accessed by pedestrians within the Assessment Area. The locations of the overall test points are shown in **Figure 5.5** to **Figure 5.6**.

Figure 5.5: Demarcation of the Overall (O) Test Points in Baseline Scheme

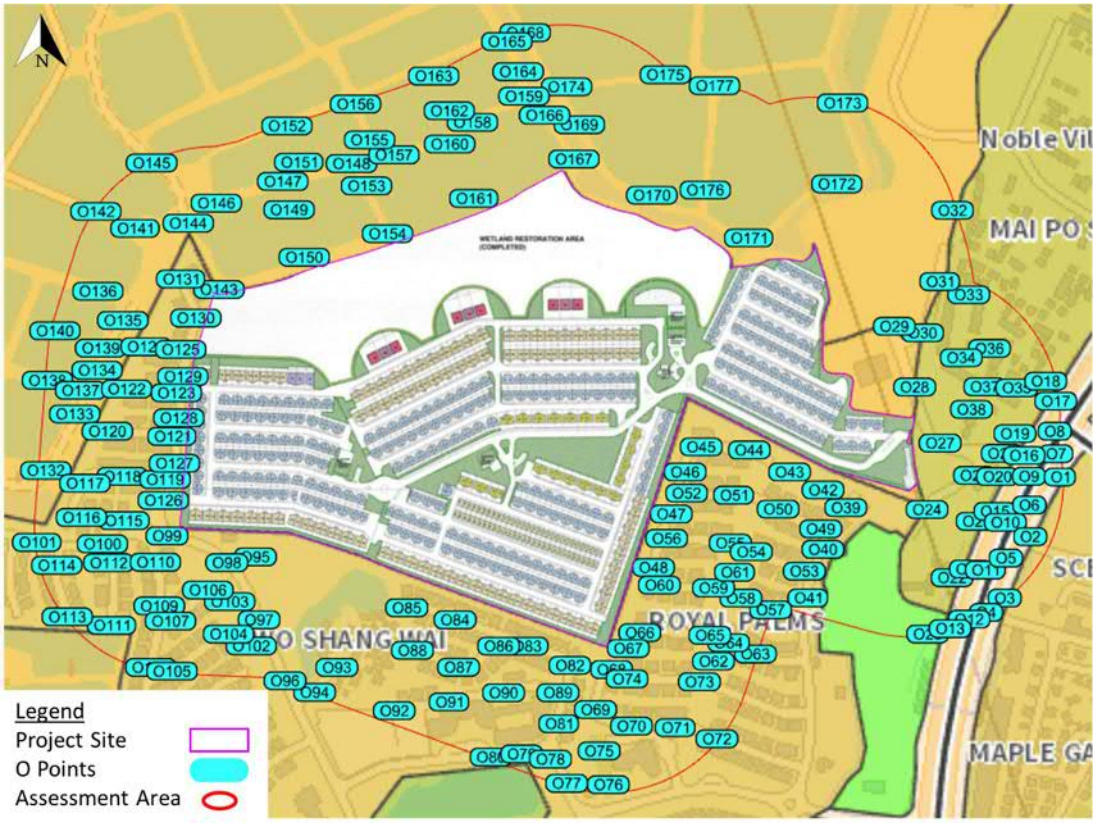
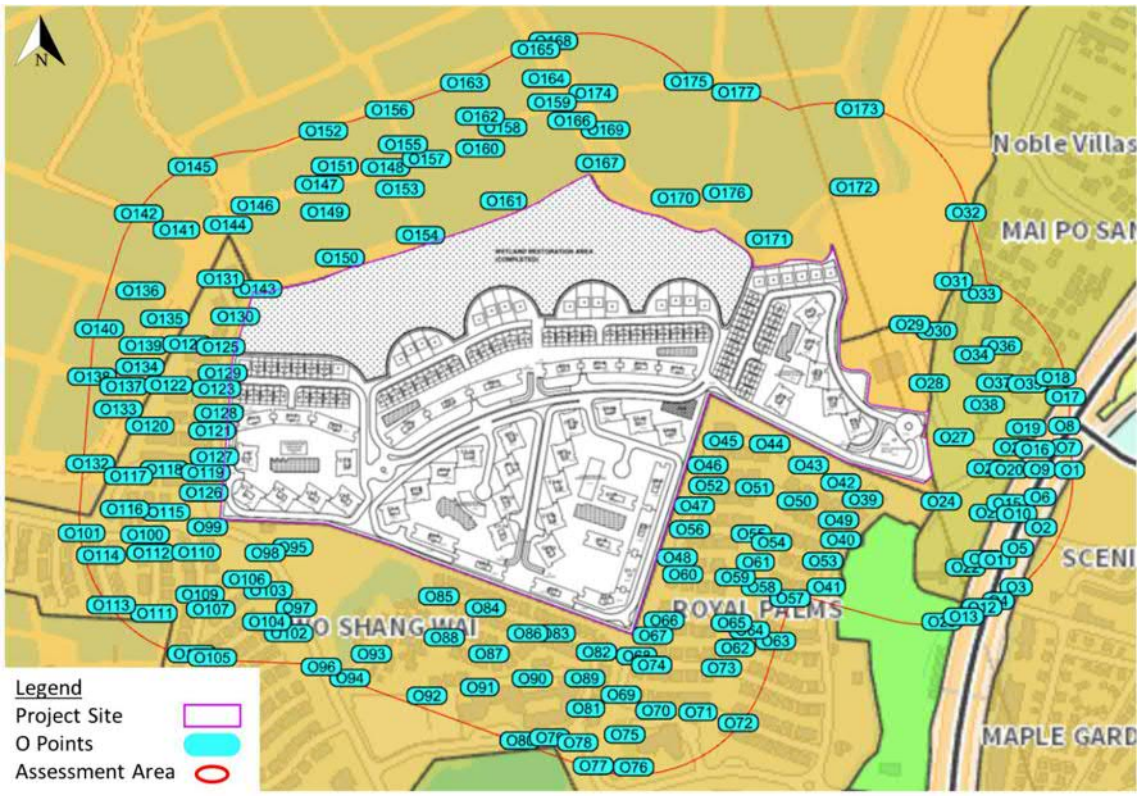


Figure 5.6: Demarcation of the Overall (O) Test Points in Proposed Scheme



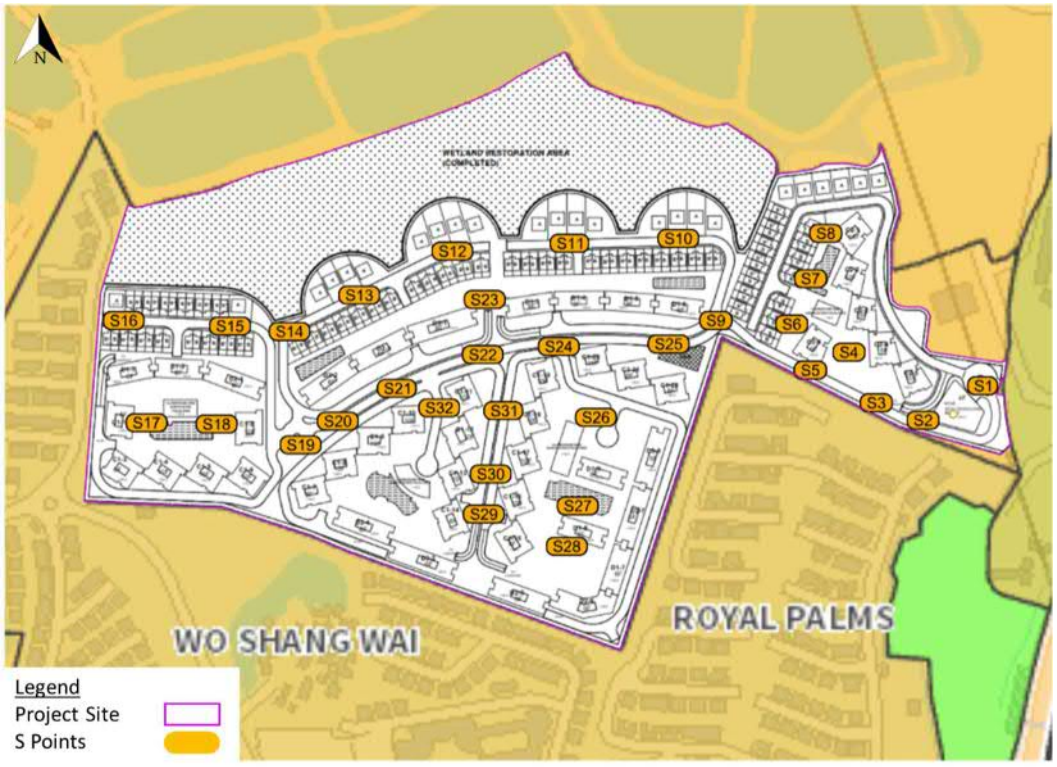
5.4.3 SPECIAL TEST POINTS

In addition to the overall test points, special test points are selected within the Project Site. 32 special test points are selected as shown in **Figure 5.7** to **Figure 5.8.**

Figure 5.7: Demarcation of the Special (S) Test Points in Baseline Scheme



Figure 5.8: Demarcation of the Special (S) Test Points in Proposed Scheme



5.5 Demarcation of Focus Areas

In addition to the SVR for the Project Site (i.e. P1-P50) and LVR (i.e. P1-50 and O1-O177), the spatial average wind velocity ratio (SAVR) of various focus areas will be presented for the in-depth quantitative analysis.

Table 5.3 shows the various focus areas and their representative test points and **Figure 5.9** to **Figure 5.15** show the location of the focus areas within the Assessment Area

Table 5.3: Demarcation of Focus Areas

	Focus Areas	Test Points
A	San Tam Road	O1-O3
B	San Tin Highway	O4-O12
C	Castle Peak Road - Mai Po	O13-O17
D	Road 1	O18-O19
E	Road 2	O20-O23
F	Road 3	O24-O25
G	Mai Po South Road	O26-O29
H	Road 4	O30-O32
I	Mai Po San Tsuen	O33-O38
J	Royal Palms	O39-O76
K	Palm Springs - Arcadia	O77-O92
L	Wo Shang Wai Village	O93-O94
M	Palm Springs - Westwood	O95-O131
N	Fishponds 1	O132-O142
O	Fishponds 2	O143-O177

Figure 5.9: Location of the Focus Areas within the Assessment Area (Overview)

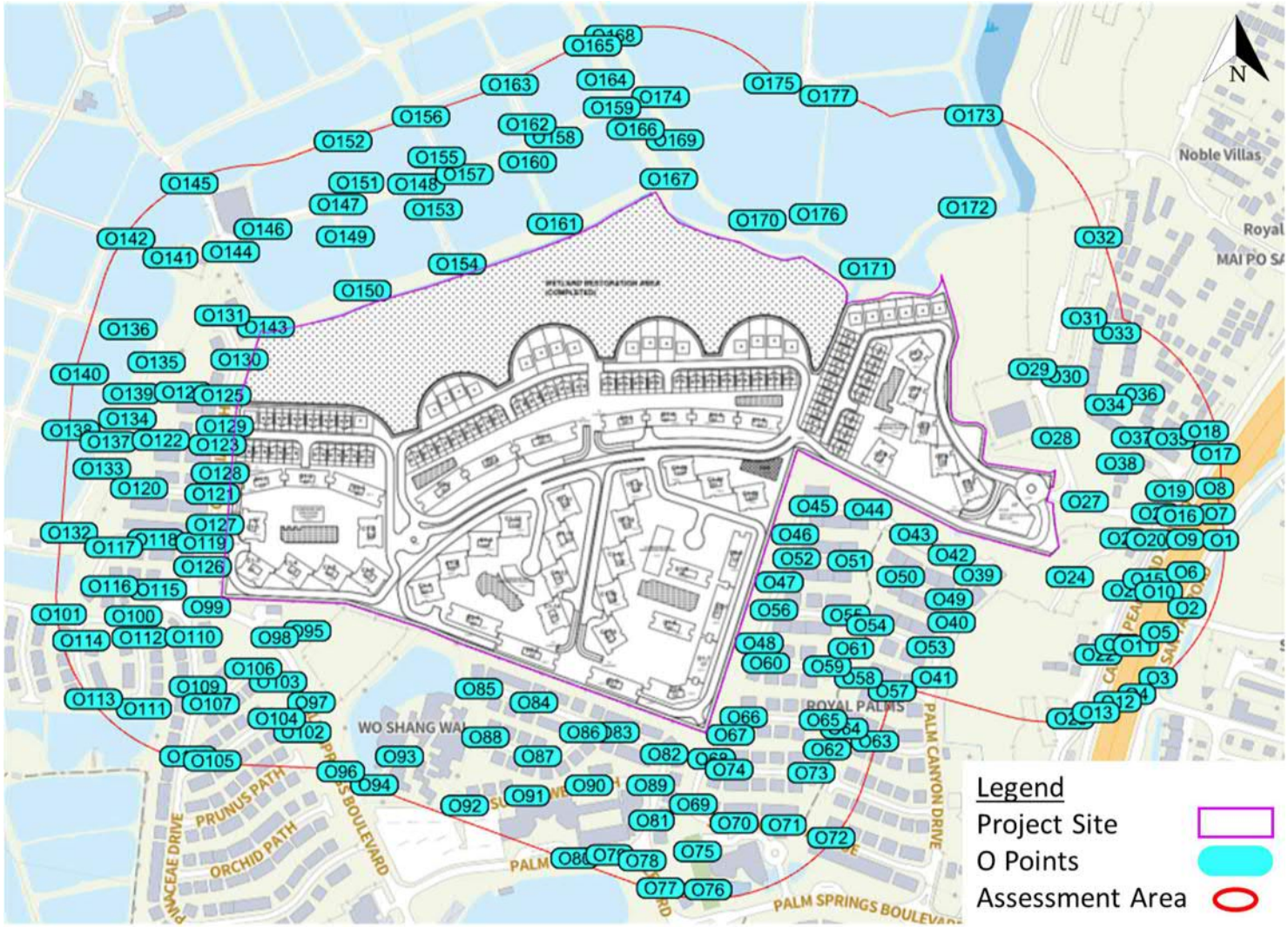


Figure 5.10: Location of the Focus Areas within the Assessment Area (East)

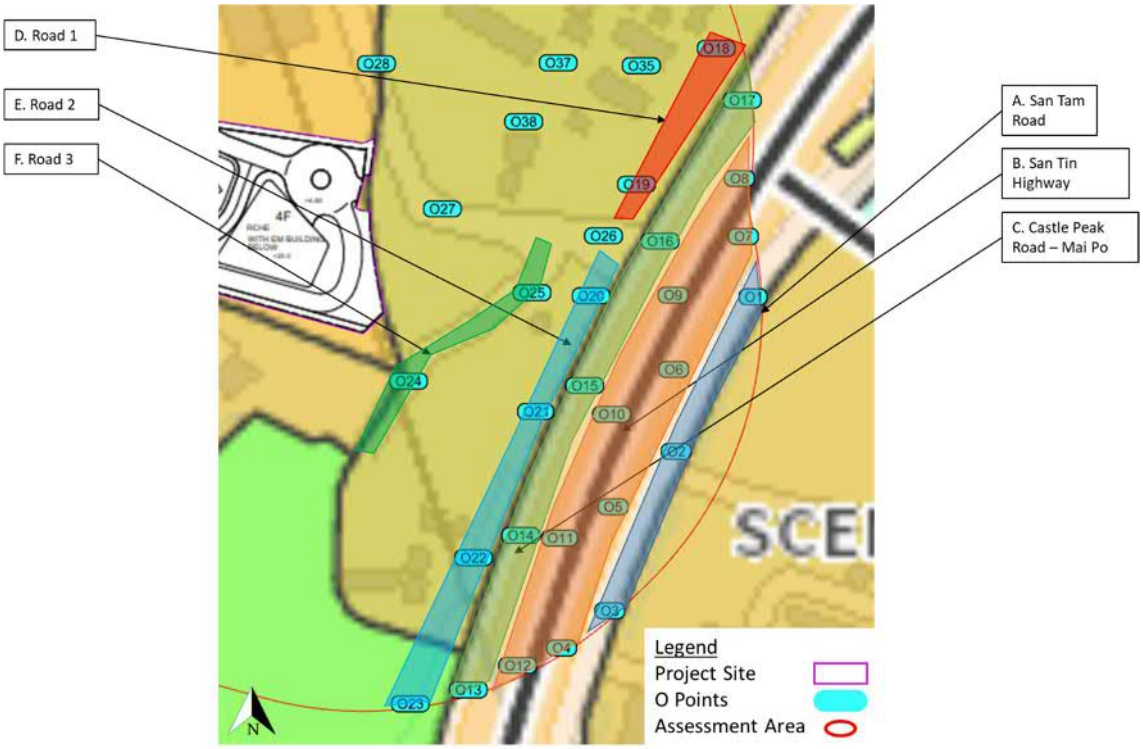


Figure 5.11: Location of the Focus Areas within the Assessment Area (Northeast)

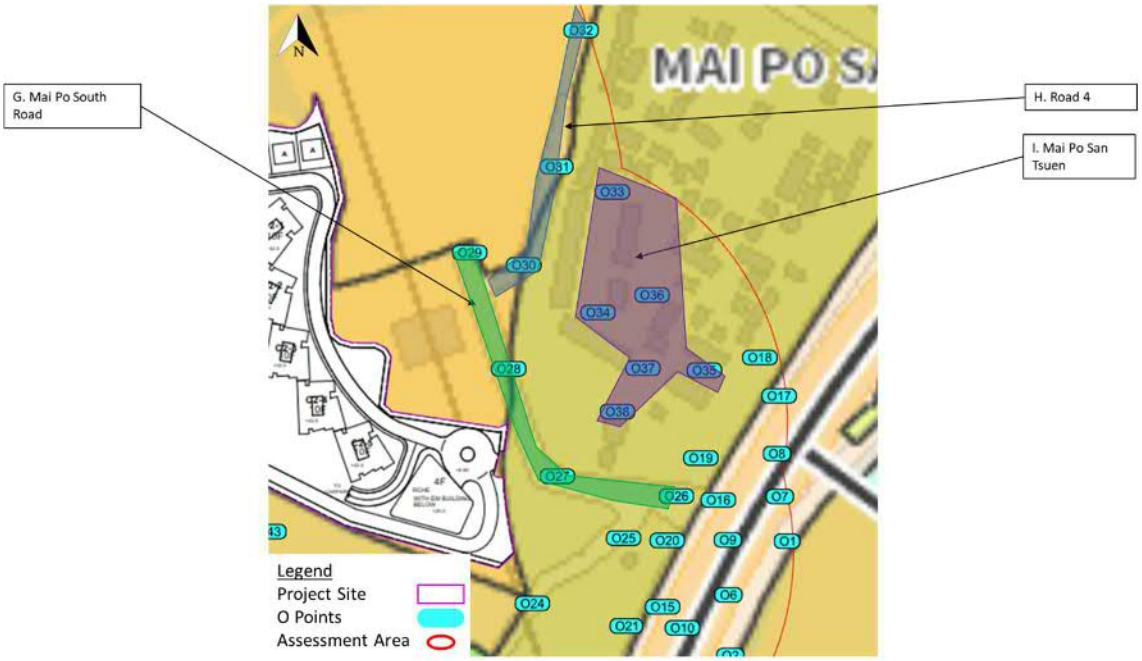


Figure 5.12: Location of the Focus Areas within the Assessment Area (South)

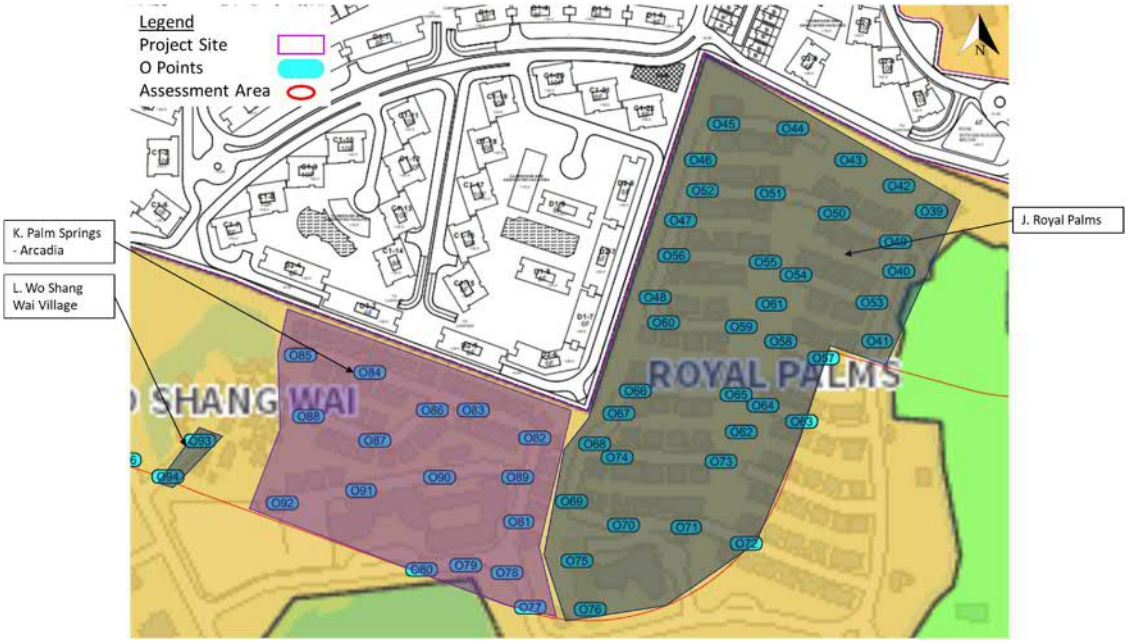


Figure 5.13: Location of the Focus Areas within the Assessment Area (West Part 1)

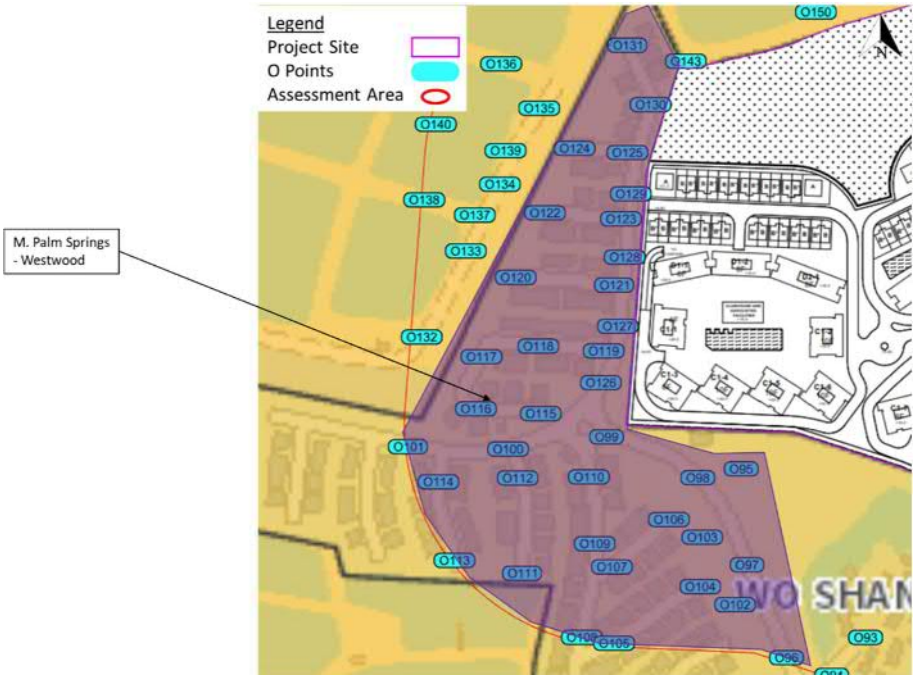


Figure 5.14: Location of the Focus Areas within the Assessment Area (West Part 2)

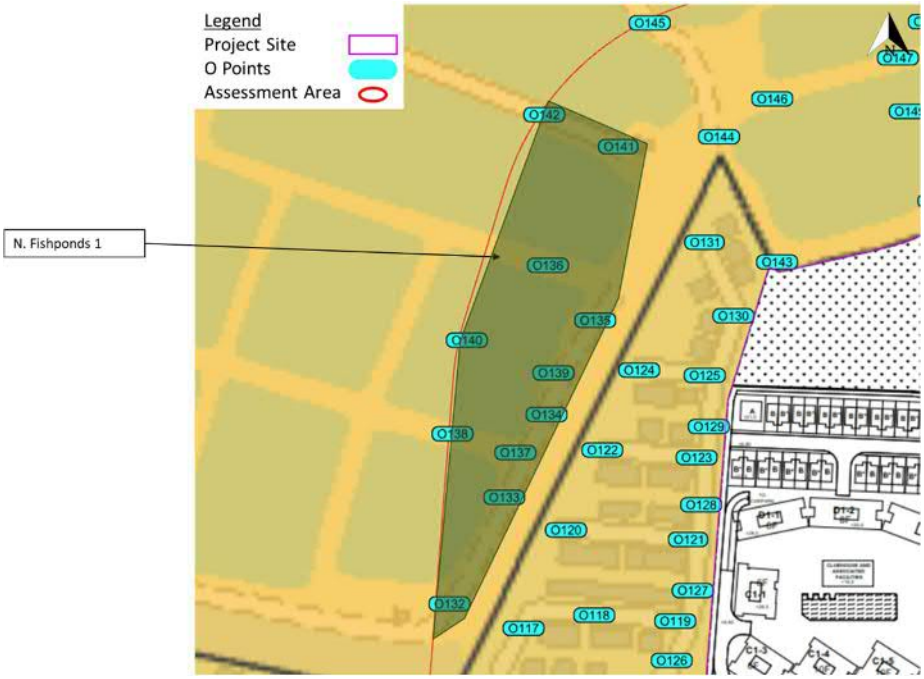
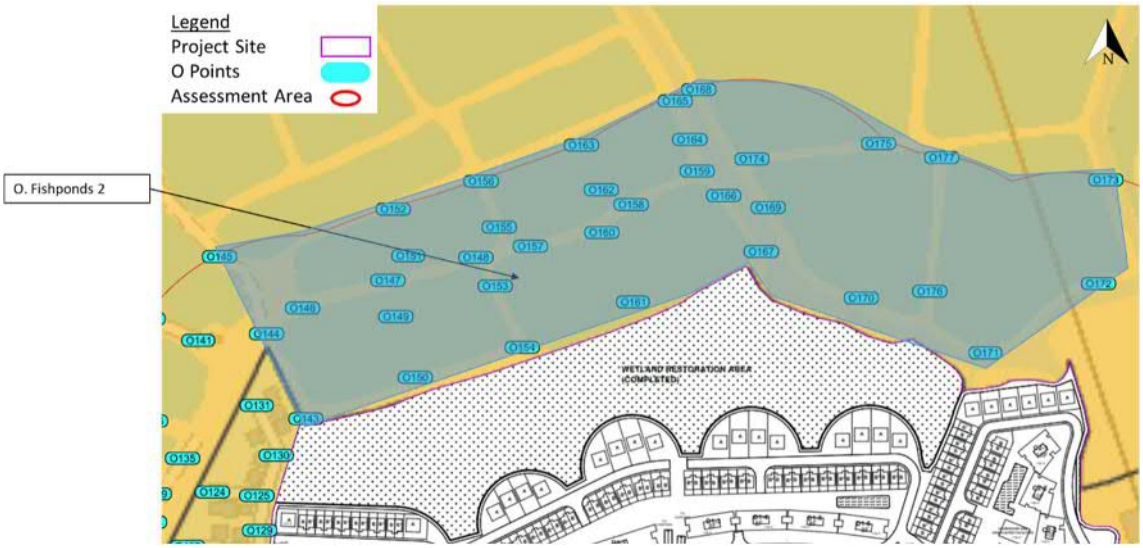


Figure 5.15: Location of the Focus Areas within the Assessment Area (North)



6 Results and Discussion

6.1 Directional Analysis

6.1.1 NNE Wind - Wind Frequency: 7.2% (Annual)

The incoming NNE wind mainly comes from Shenzhen River. For the Project Site, the incoming NNE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NNE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates wake zones at immediate downwind regions including Palm Springs – Arcadia, Wo Shang Wai Village and Palm Springs – Westwood. Nonetheless, two streams of NNE wind are able to penetrate through the Project Site to ventilate the aforementioned downwind regions. One stream of NNE wind flows along the open spaces within the Project Site to reach the downwind regions of Wo Shang Wai Village whereas the other stream of NNE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, NNE wind is shielded by the proposed low-rise residential houses and mid-rise residential towers within the Project Site resulting in a relatively larger wake zone in the downwind region of Palm Springs - Monterey when compared with the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of NNE wind to penetrate through the Project Site via the building separations at the eastern and western side of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.1 and **Figure 6.3** shows the VR contour plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.2** and **Figure 6.4** shows the VR vector plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.1: VR Contour Plot at Pedestrian Level under NNE Wind for Baseline Scheme

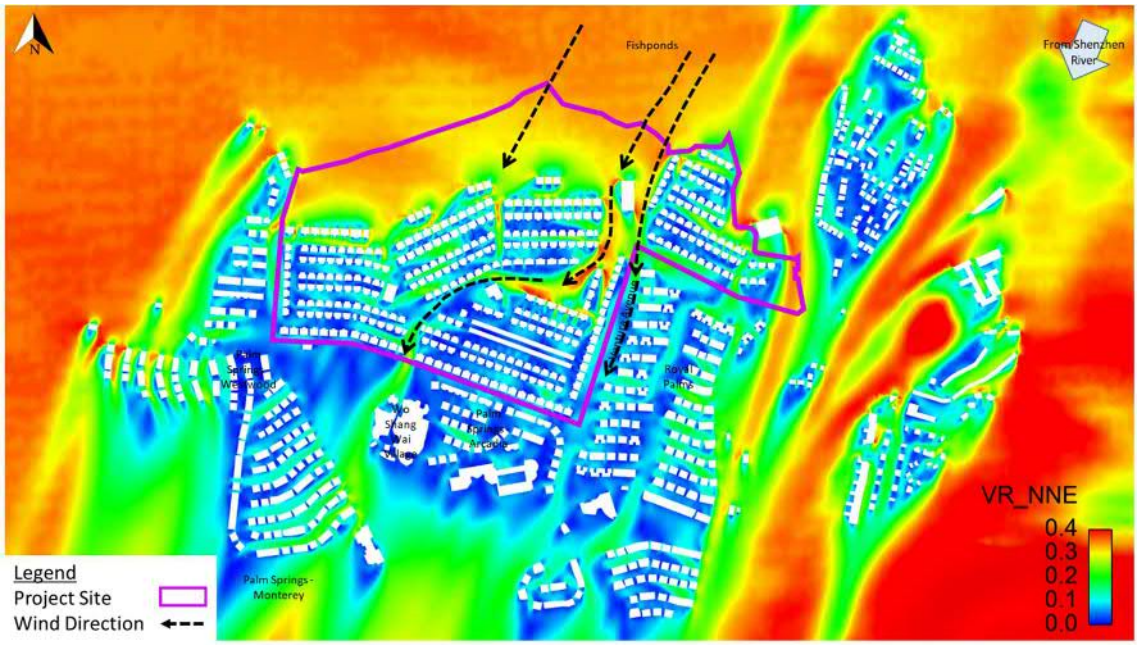


Figure 6.2: VR Vector Plot at Pedestrian Level under NNE Wind for Baseline Scheme

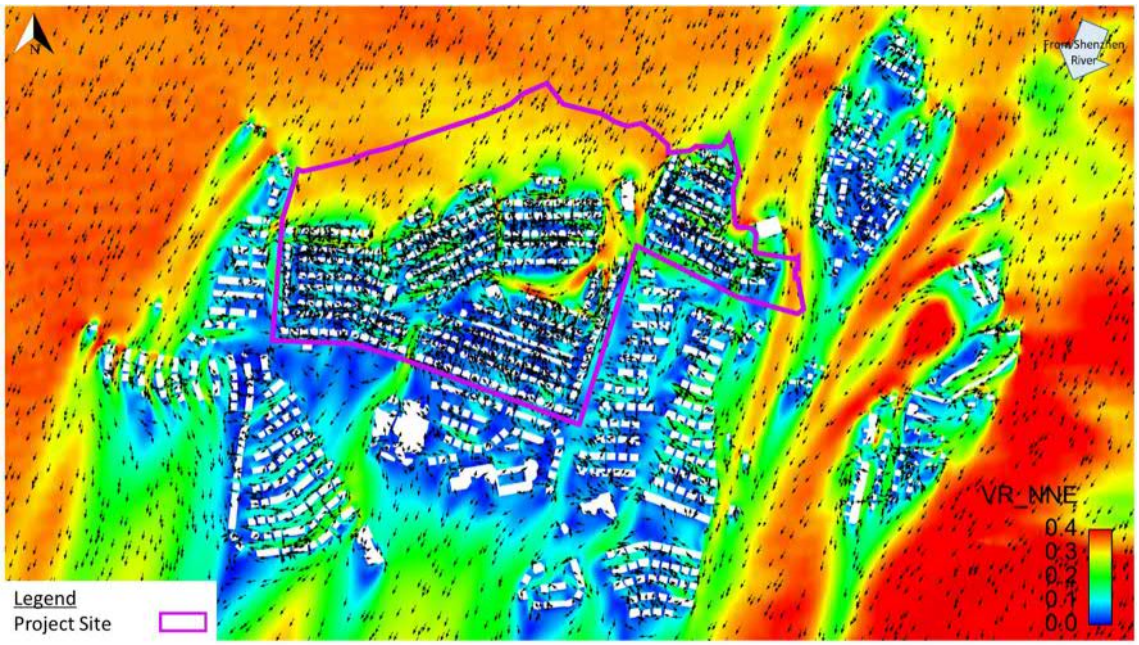


Figure 6.3: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme

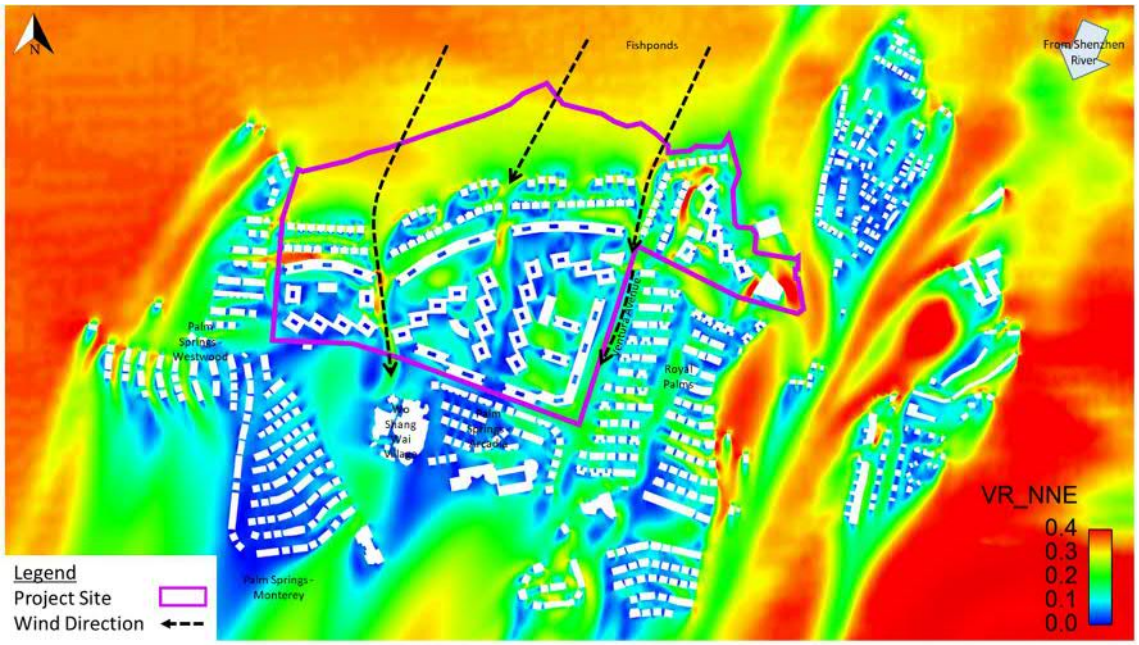
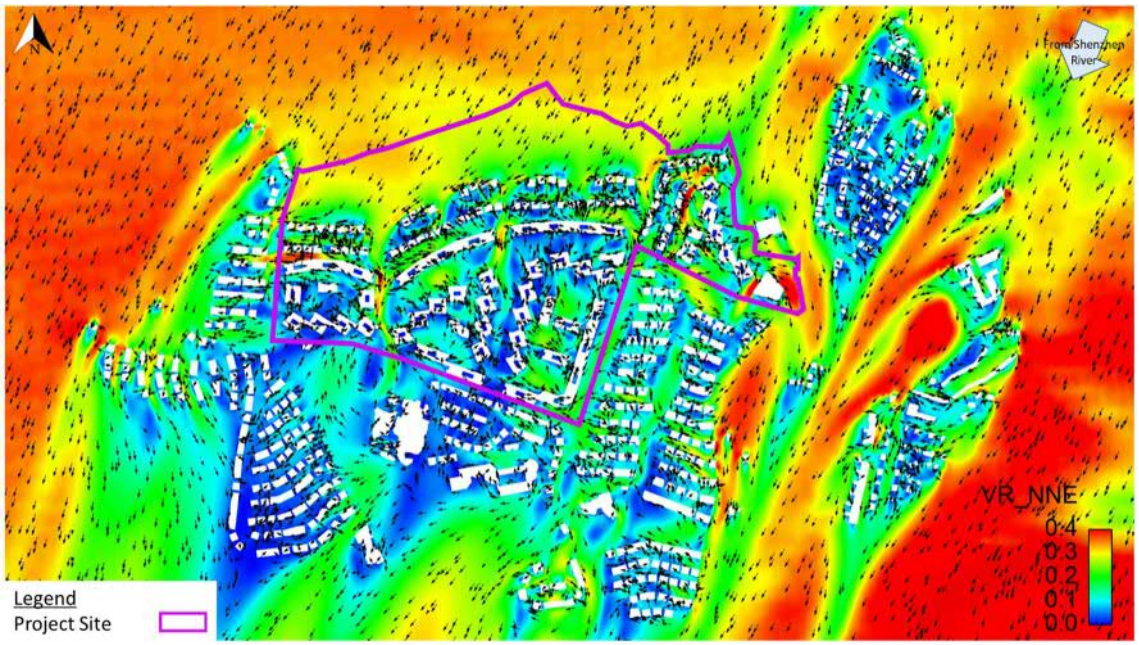


Figure 6.4: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme



6.1.2 NE Wind - Wind Frequency: 9.8% (Annual)

The incoming NE wind mainly comes from San Tin. For the Project Site, the incoming NE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates wake zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, a portion of incoming NE wind is deflected towards Camelia Path by the proposed houses at the north western portion of the Project Site to ventilate Palm Springs – Westwood. Another portion of NE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, a portion of incoming NE wind is also blocked by the proposed low-rise residential houses and mid-rise residential towers within the Project Site. In particular, the residential developments at the western portion of the Project Site deflected the incoming NE wind towards Camelia Path hence a relatively larger wake zone is observed at Palm Springs – Westwood when compared with the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of NE wind to penetrate through the Project Site via the building separations at the eastern and western of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue, Palm Springs - Arcadia and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.5 and **Figure 6.7** shows the VR contour plots of NE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.6** and **Figure 6.8** shows the VR vector plots of NE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.5: VR Contour Plot at Pedestrian Level under NE Wind for Baseline Scheme

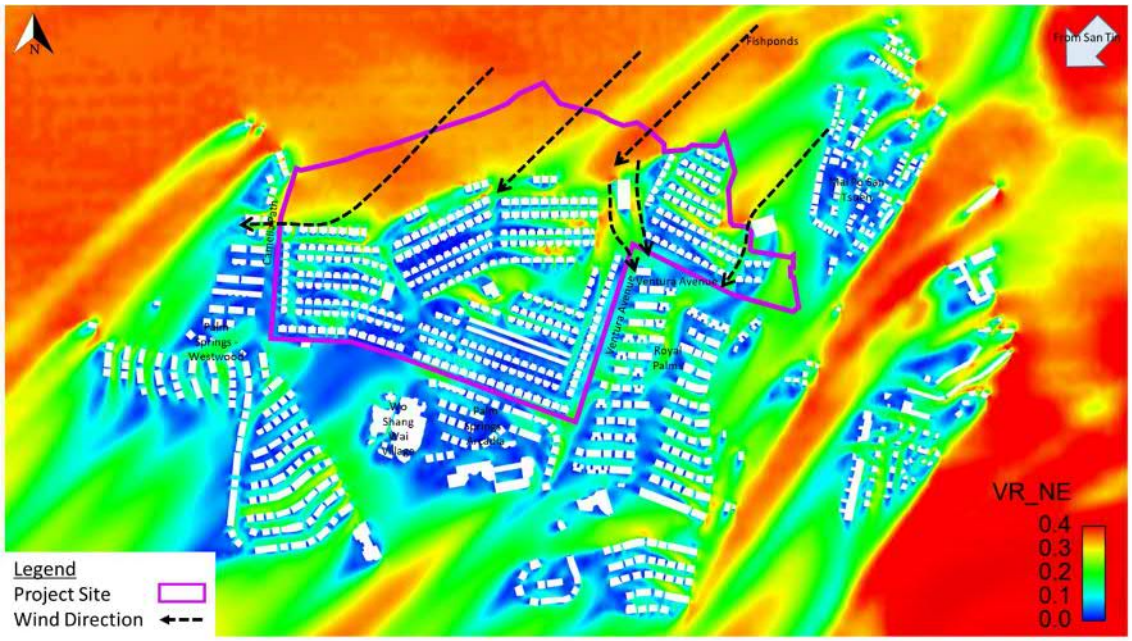


Figure 6.6: VR Vector Plot at Pedestrian Level under NE Wind for Baseline Scheme

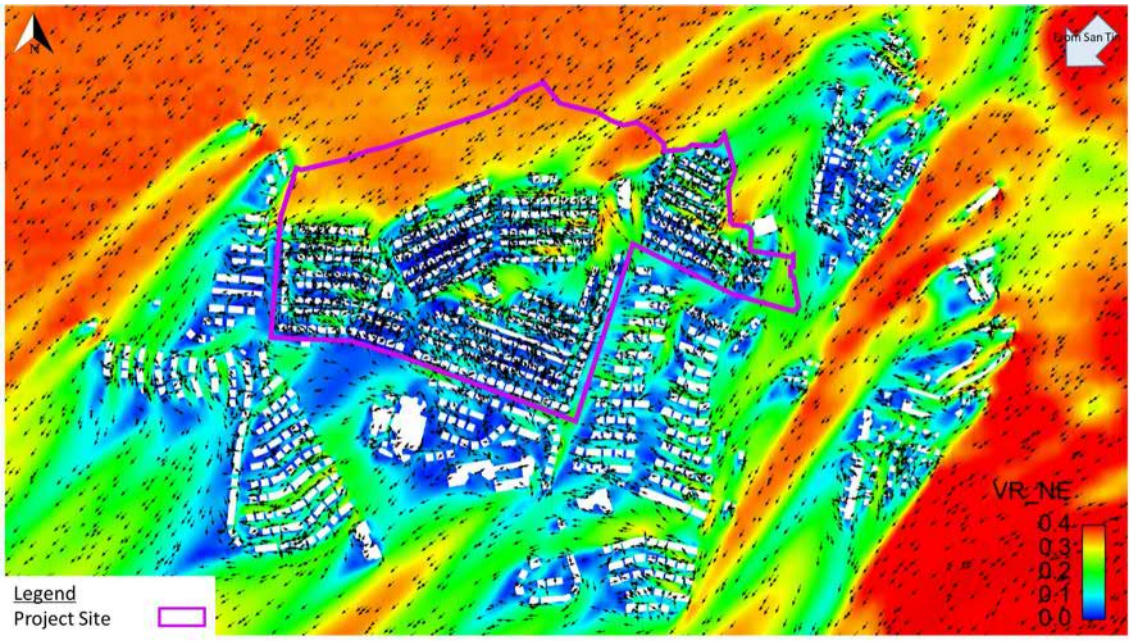


Figure 6.7: VR Contour Plot at Pedestrian Level under NE Wind for Proposed Scheme

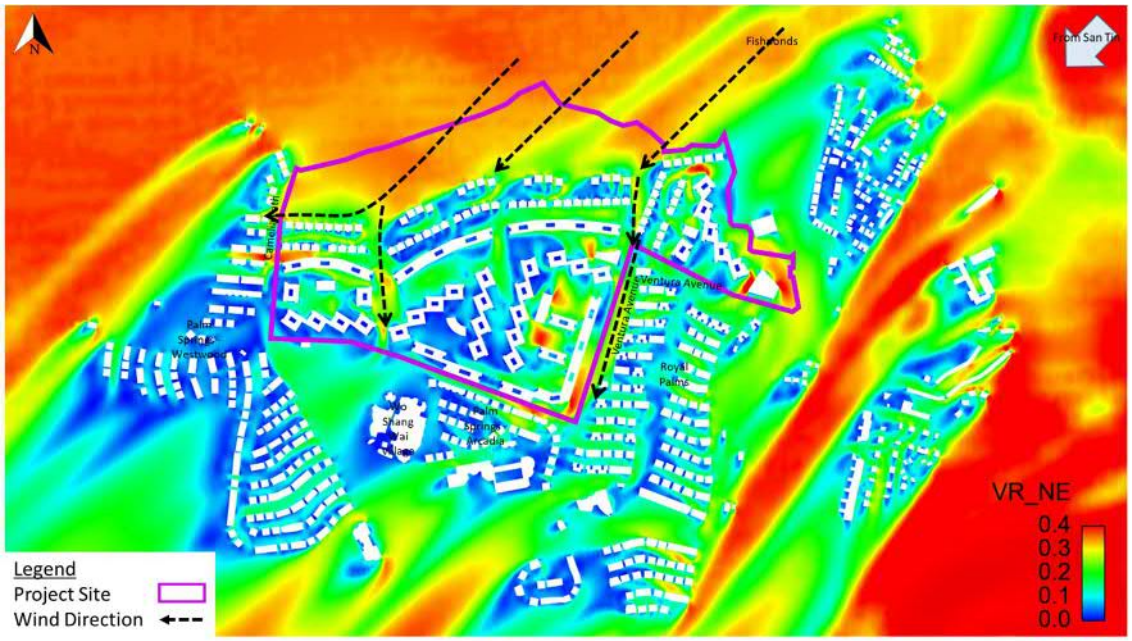
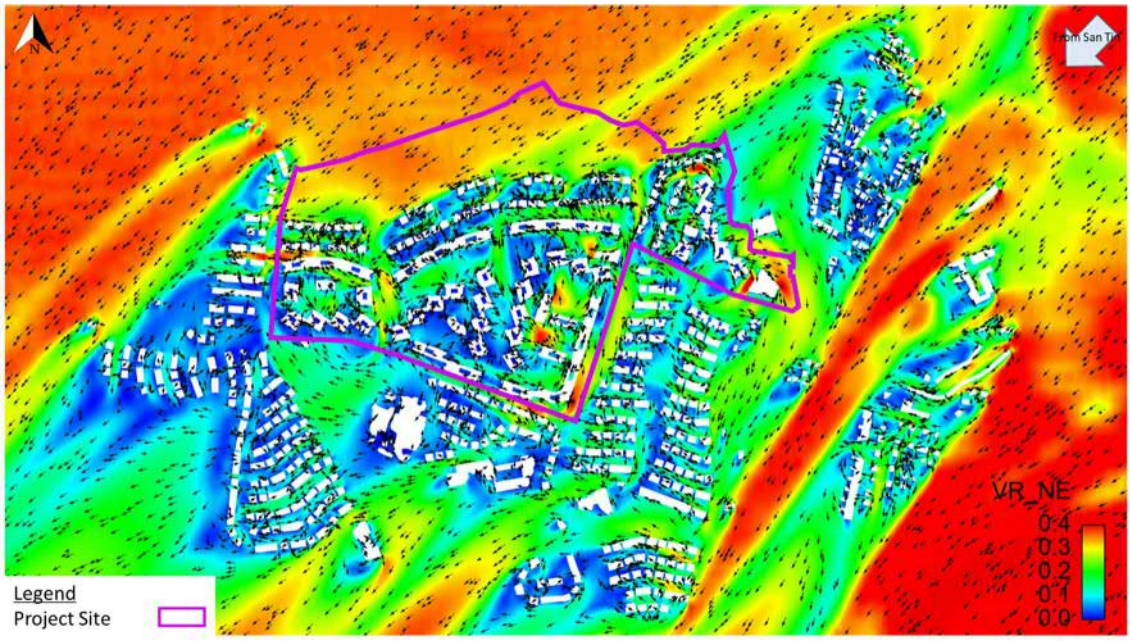


Figure 6.8: VR Vector Plot at Pedestrian Level under NE Wind for Proposed Scheme



6.1.3 ENE Wind - Wind Frequency: 10.2% (Annual)

The incoming ENE wind mainly comes from San Tin Highway. However, incoming ENE wind to the Project Site will be obstructed by the low-rise residential developments of Mai Po San Tsuen at the upwind regions.

In the Baseline Scheme, incoming ENE wind is obstructed by Mai Po San Tsuen and the proposed low-rise houses within the Project Site hence the combined shielding effect creates wake zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, two streams of ENE wind are able to penetrate through the Project Site freely. One stream of ENE wind will penetrate through the Project Site to reach Camelia Path via the Wetland Restoration Area whereas a second stream of ENE wind will reach Royal Palms and Ventura Avenue via the open space resulting from the building setback from the eastern site boundary.

In the Proposed Scheme, the presence of the mid-rise residential towers at the eastern portion of the Project Site disrupted the local wind flow pattern around this region thus a relatively larger wake zone is observed between Mai Po San Tsuen and the eastern part of the Project Site when compared with the Baseline Scheme. In addition, the mid-rise residential towers within the Project Site obstructed the ENE wind to the downwind regions thus a relatively larger wake zone is also observed at Palm Springs – Westwood when compared to the Baseline Scheme. Nonetheless, a portion of ENE wind is observed to pass through the opening at the eastern portion of the Project Site to mitigate the air ventilation impact towards the downwind regions of Ventura Avenue and Royal Palms.

Figure 6.9 and **Figure 6.11** shows the VR contour plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively**. Figure 6.10** and **Figure 6.12** shows the VR vector plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.9: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

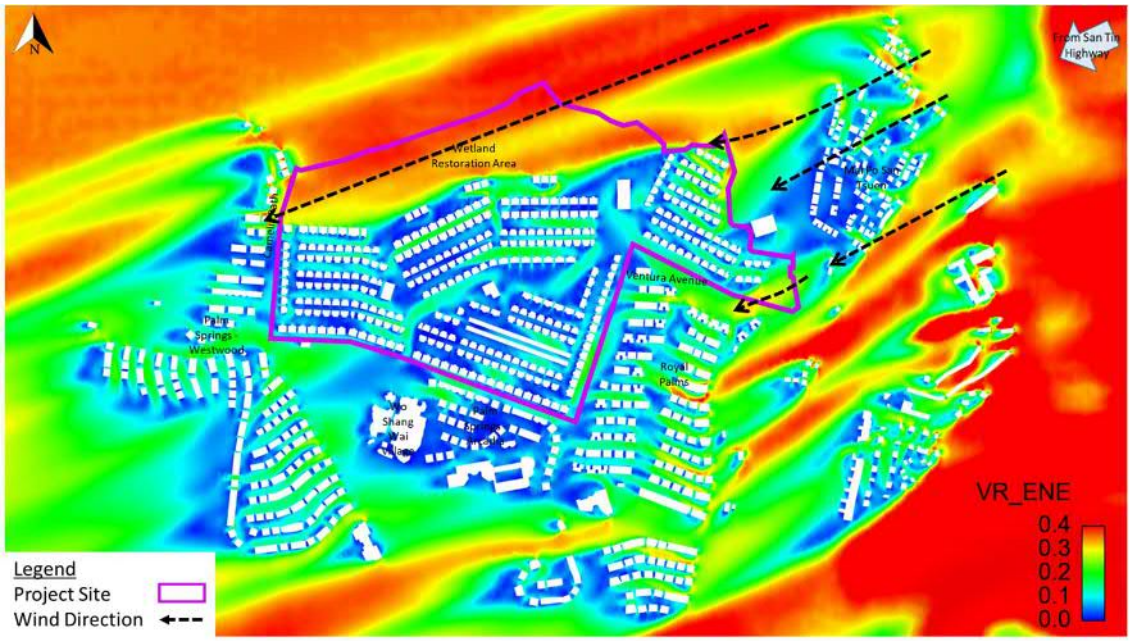


Figure 6.10: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

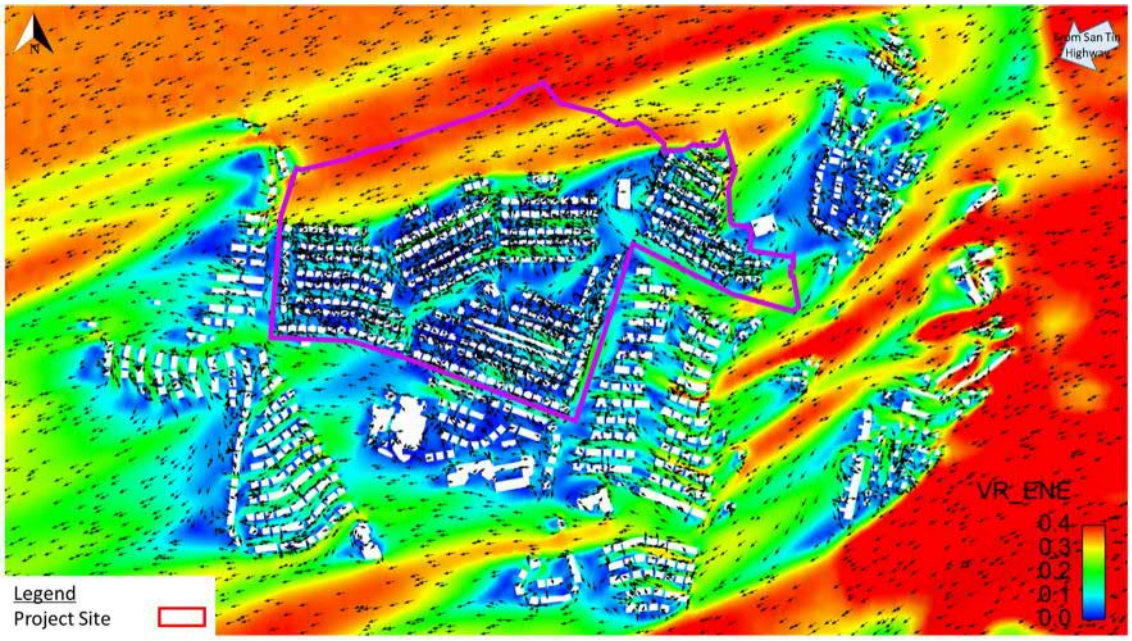


Figure 6.11: VR Contour Plot at Pedestrian Level under ENE Wind for Proposed Scheme

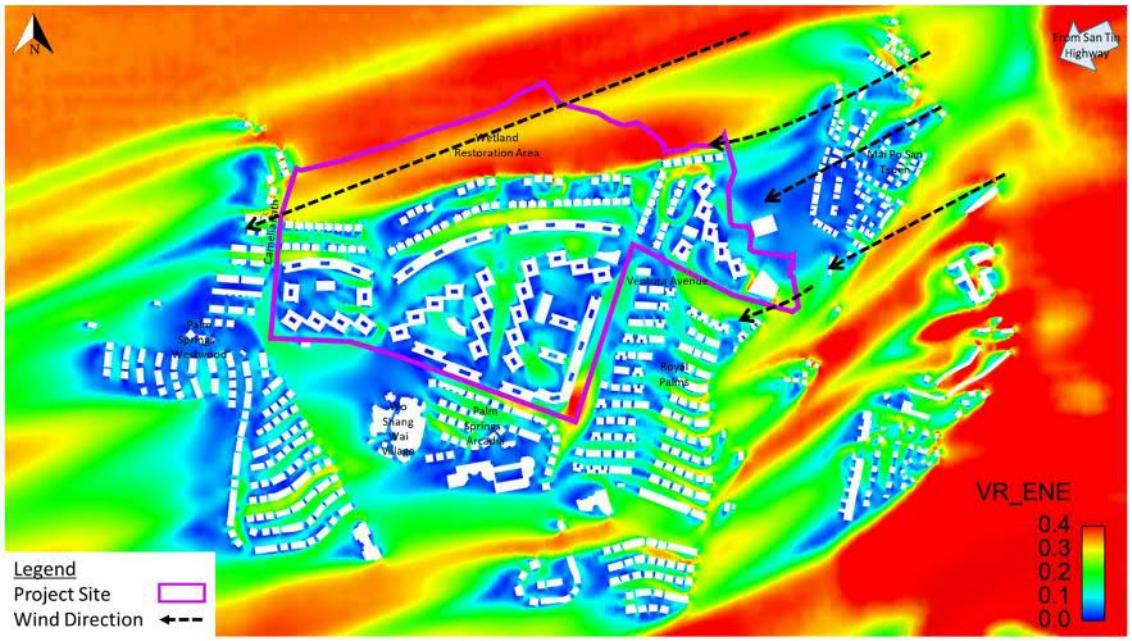
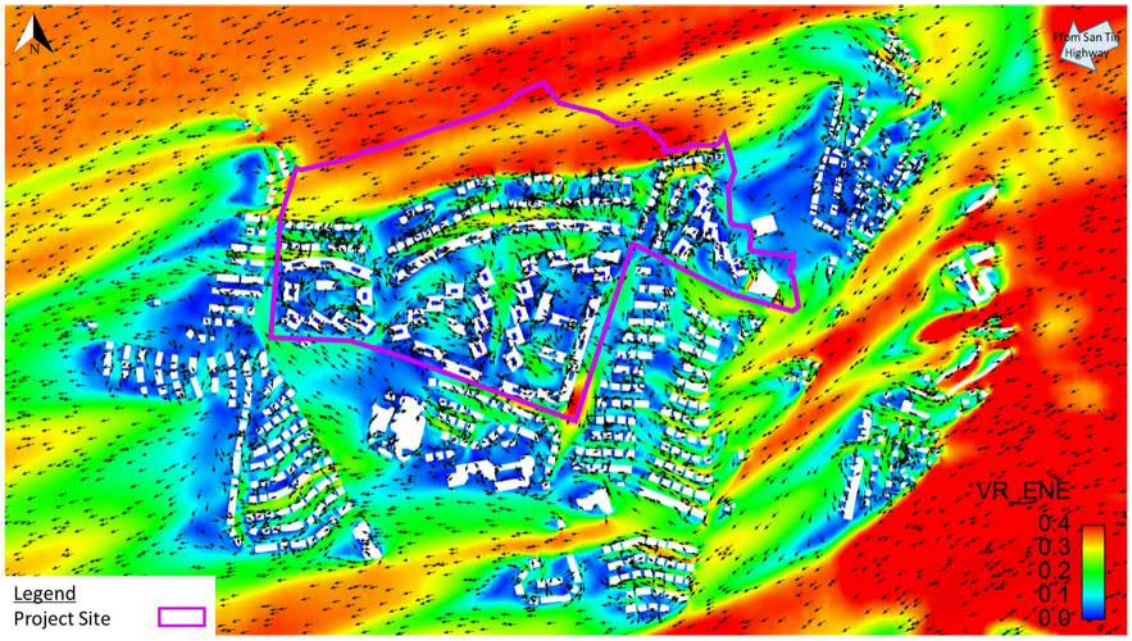


Figure 6.12: VR Vector Plot at Pedestrian Level under ENE Wind for Proposed Scheme



6.1.4 E Wind - Wind Frequency: 18.1% (Annual); 8.1% (Summer)

E wind mainly comes from the mountains to the east, namely Kam Kwai Leng.

In the Baseline Scheme, a portion of incoming E wind will be obstructed by Mai Po San Tsuen and the proposed low-rise houses at the eastern portion of the Project Site. Nonetheless, a portion of E wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site. This stream of E wind will ventilate the Wetland Restoration Area and then continue to flow towards Palm Springs – Westwood via Camelia Path.

In the Proposed Scheme, the mid-rise residential towers at the southeast side of the Project Site. disrupted the local wind flow pattern around this region thus a relatively larger wake zone is observed along the south eastern portion of the Project Site and west of Royal Palms when compared with the Baseline Scheme. On the other hand, the mid-rise residential towers at the eastern portion of the Project Site deflected a portion of incoming E wind towards the north hence higher VRs are observed at the Wetland Restoration Area when compared with the Baseline Scheme. Besides, the mid-rise residential towers at the eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern site boundary when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of E wind to penetrate through the open spaces within the Project Site to ventilate the downwind regions of Palm Springs - Westwood.

Figure 6.13 and **Figure 6.15** shows the VR contour plots of E wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.14** and **Figure 6.16** shows the VR vector plots of E wind for Baseline Scheme and Proposed Scheme respectively.

Figure 6.13: VR Contour Plot at Pedestrian Level under E Wind for Baseline Scheme

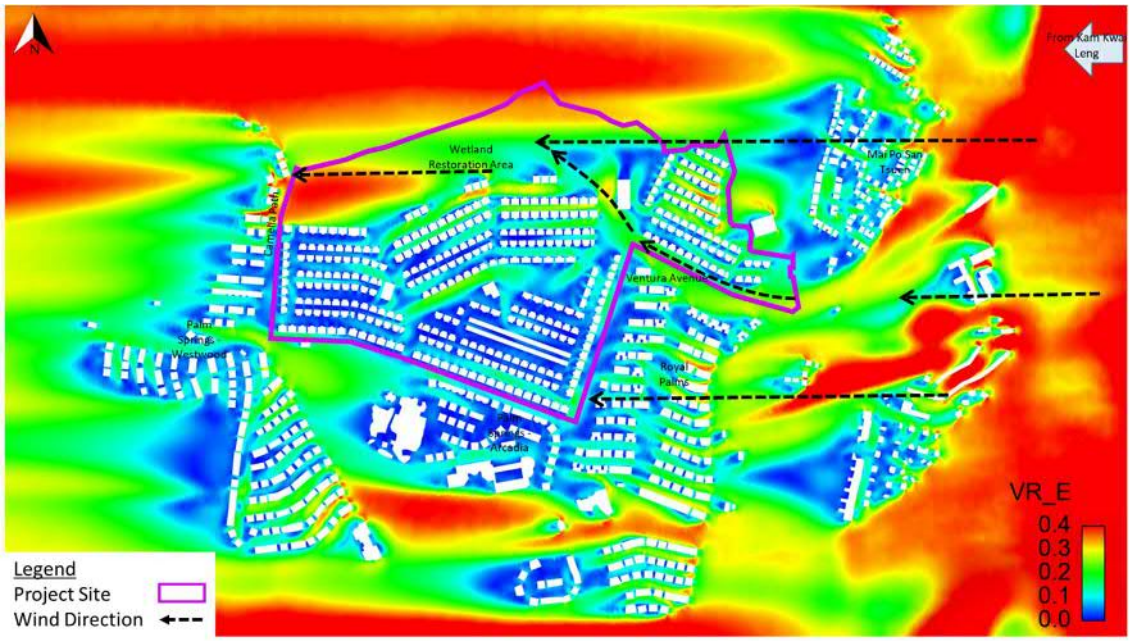


Figure 6.14: VR Vector Plot at Pedestrian Level under E Wind for Baseline Scheme

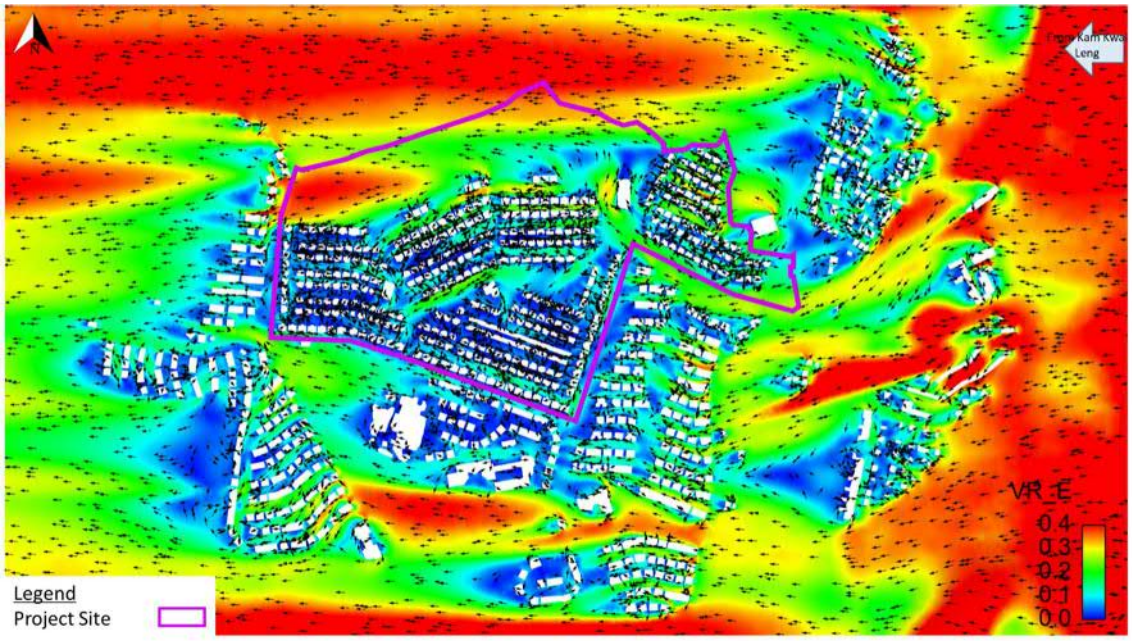


Figure 6.15: VR Contour Plot at Pedestrian Level under E Wind for Proposed Scheme

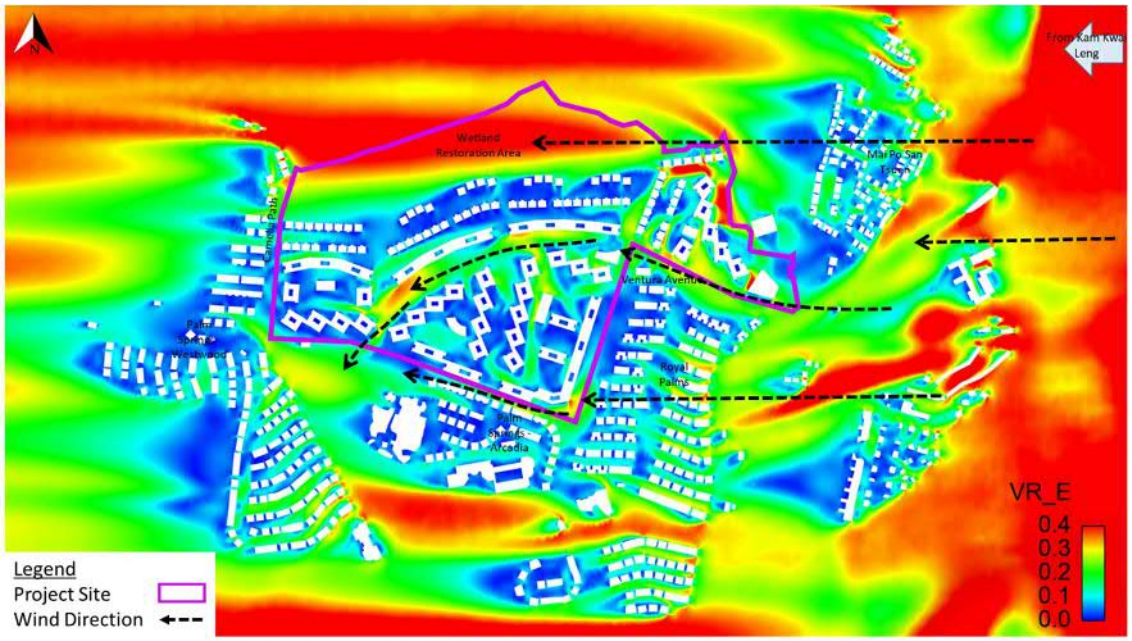
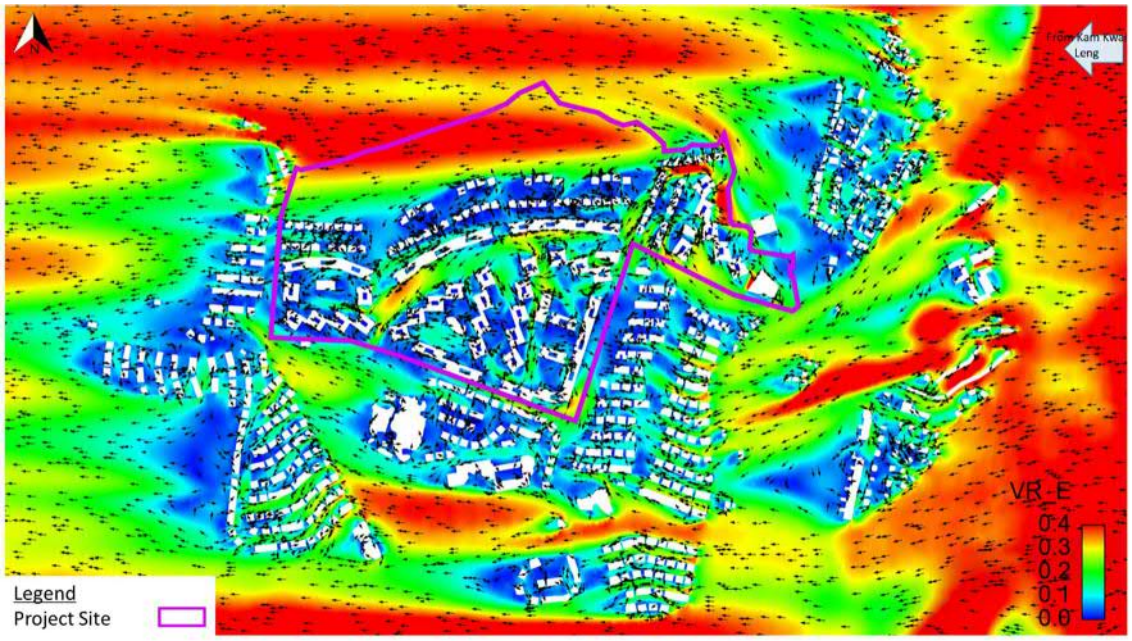


Figure 6.16: VR Vector Plot at Pedestrian Level under E Wind for Proposed Scheme



6.1.5 ESE Wind - Wind Frequency: 9.8% (Annual); 7.8% (Summer)
SE Wind - Wind Frequency: 6.7% (Annual); 6.6% (Summer)

ESE / SE wind to the Project Site comes from Tam Mei Hill. A portion of the ESE / SE wind to the Project Site will be obstructed by the upwind developments of Scenic Heights and Royal Palms.

In the Baseline Scheme, a significant portion of the ESE / SE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the eastern portion of the Project Site thus wake zones are observed within the Project Site and at Palm Springs – Westwood. Nonetheless, a portion of ESE / SE wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site.

In the Proposed Scheme, the mid-rise residential towers at the south eastern portion of the Project Site obstructs incoming ESE / SE wind from reaching the downwind regions hence a relatively larger wake zone is observed around Palm Springs – Westwood when compared to the Baseline Scheme. In contrast, the mid-rise residential towers at the eastern portion of the Project Site deflected the incoming ESE / SE wind towards the north hence higher VRs are observed at the Mai Po Ventilation Building and fishponds to the north of the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the south-eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern & southern site boundary as well as open spaces within the Project Site when compared to the Baseline Scheme.

Figure 6.17 and **Figure 6.19** shows the VR contour plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.18** and **Figure 6.20** shows the VR vector plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.21 and **Figure 6.23** shows the VR contour plots of SE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.22** and **Figure 6.24** shows the VR vector plots of SE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.17: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

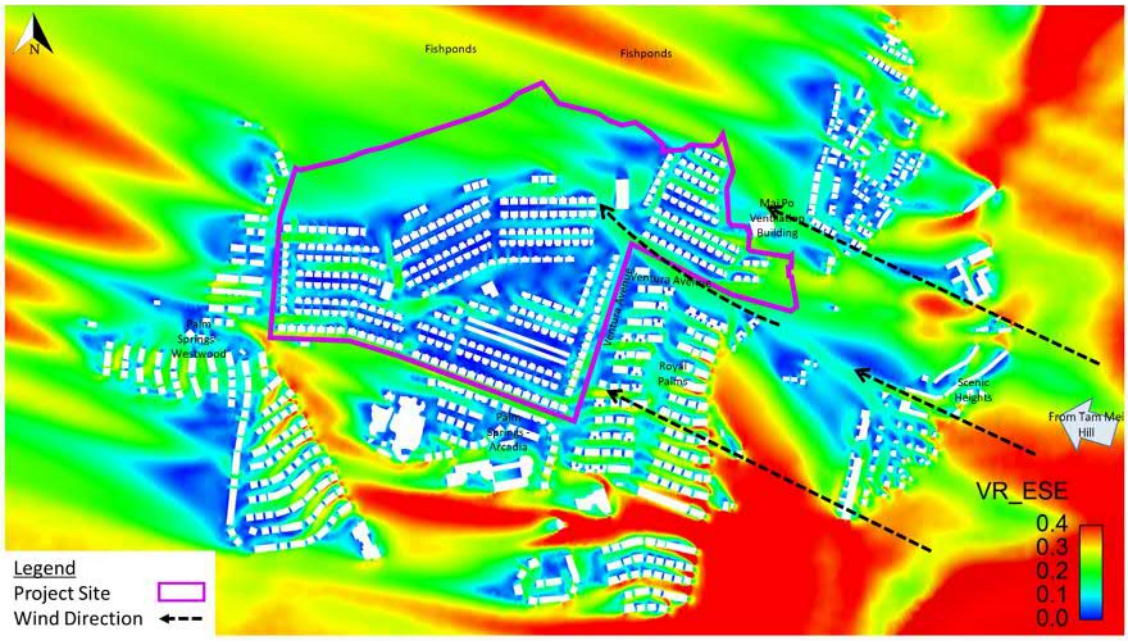


Figure 6.18: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

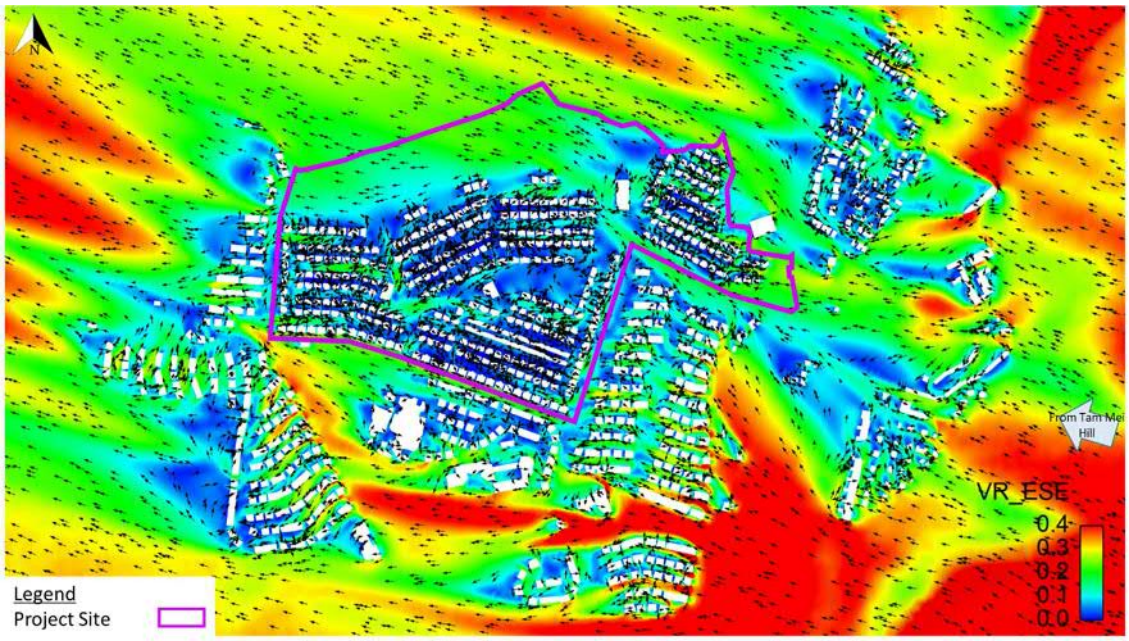


Figure 6.19: VR Contour Plot at Pedestrian Level under ESE Wind for Proposed Scheme

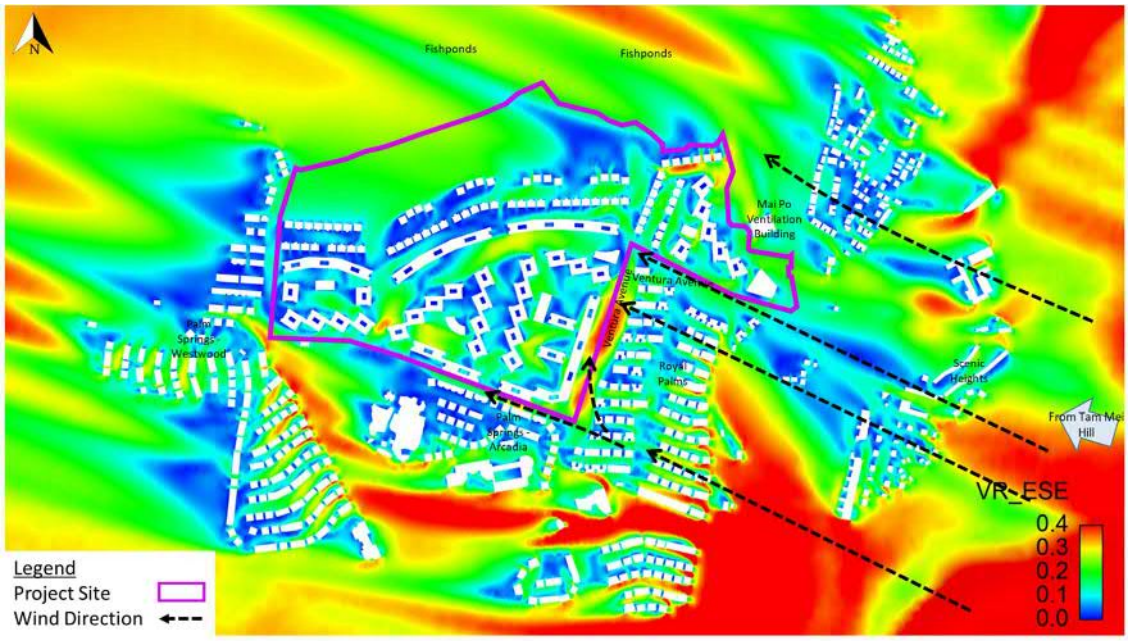


Figure 6.20: VR Vector Plot at Pedestrian Level under ESE Wind for Proposed Scheme

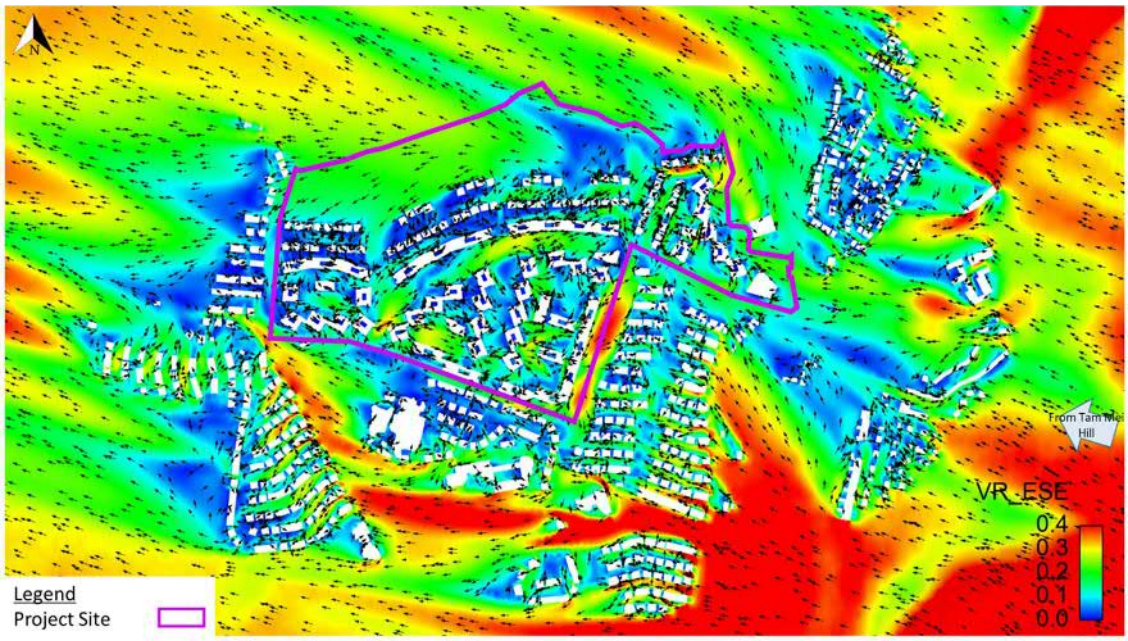


Figure 6.21: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

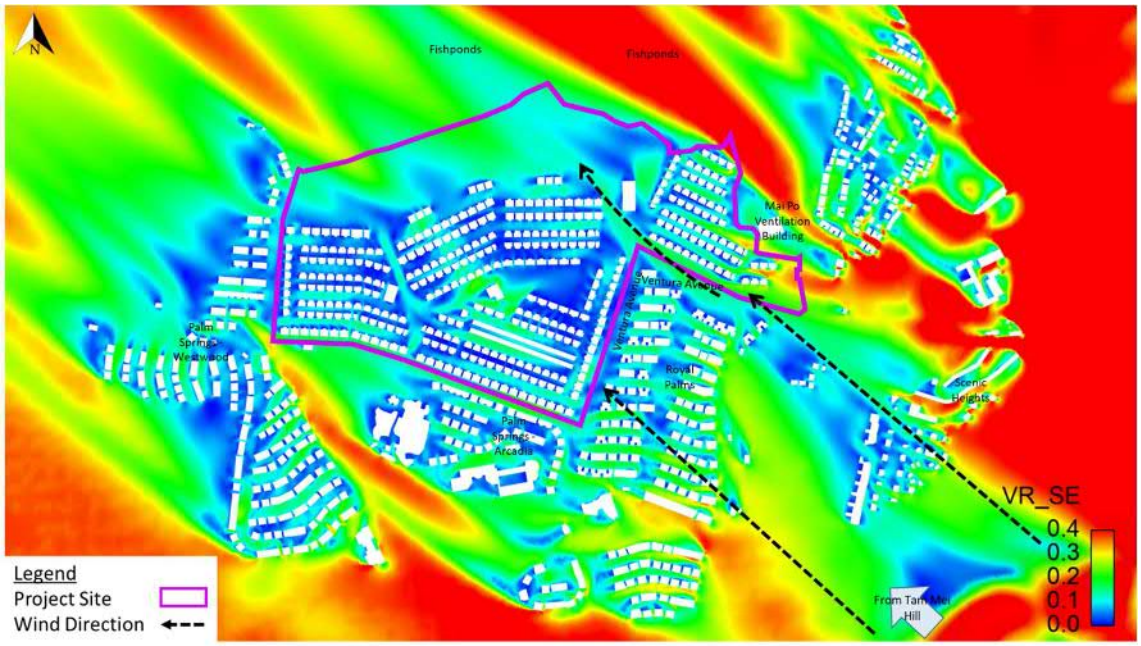


Figure 6.22: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

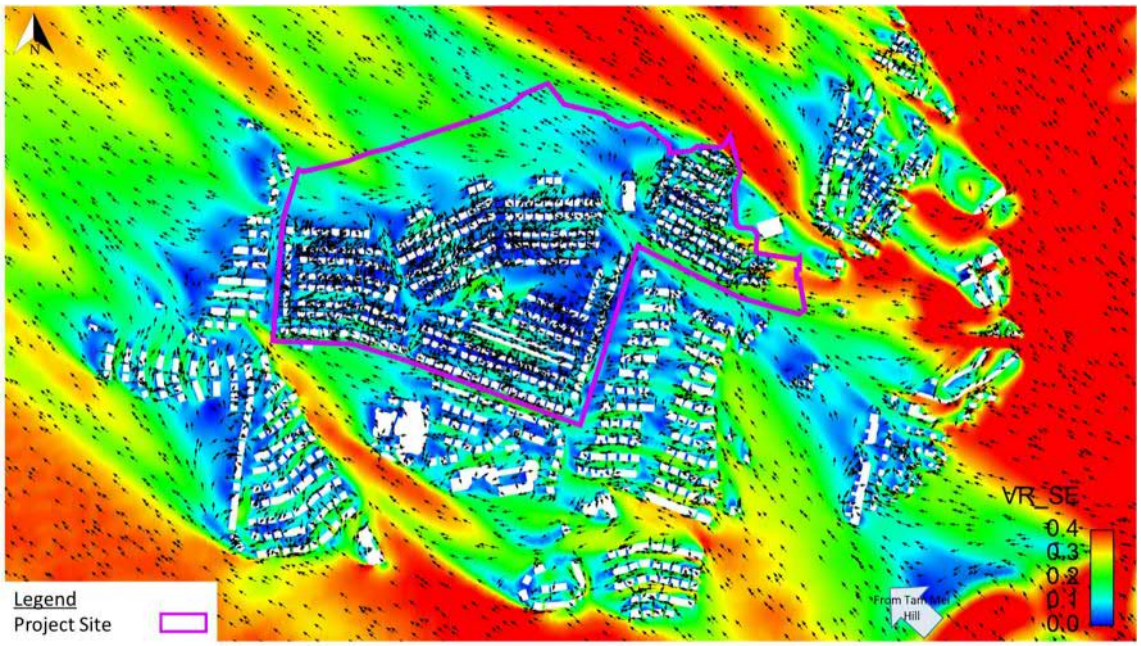


Figure 6.23: VR Contour Plot at Pedestrian Level under SE Wind for Proposed Scheme

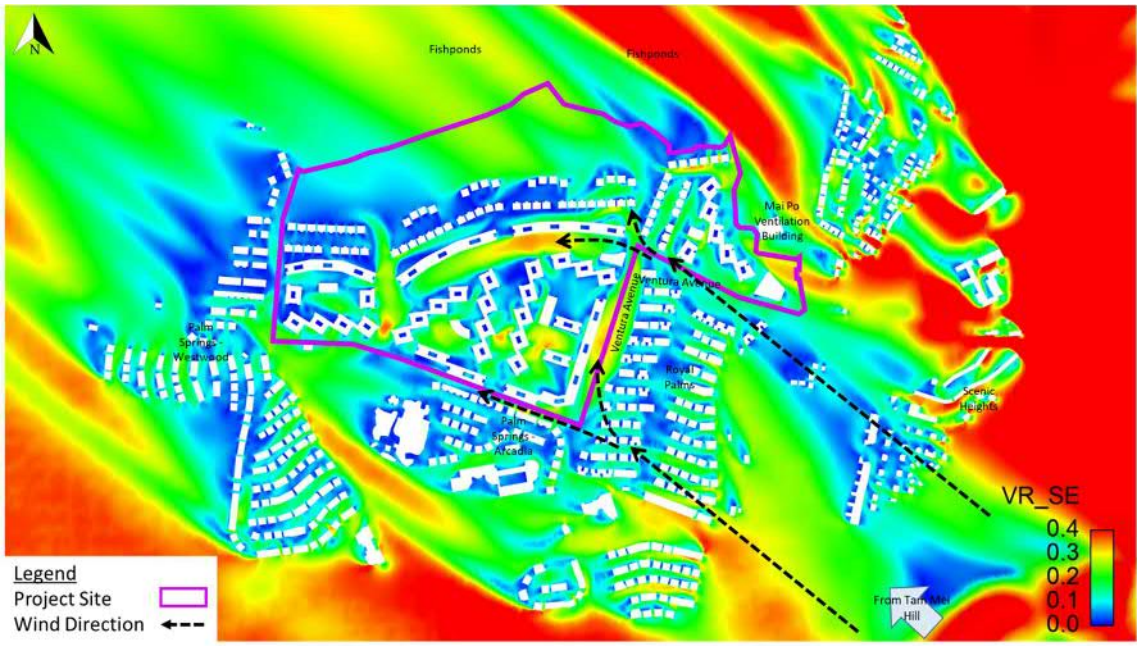
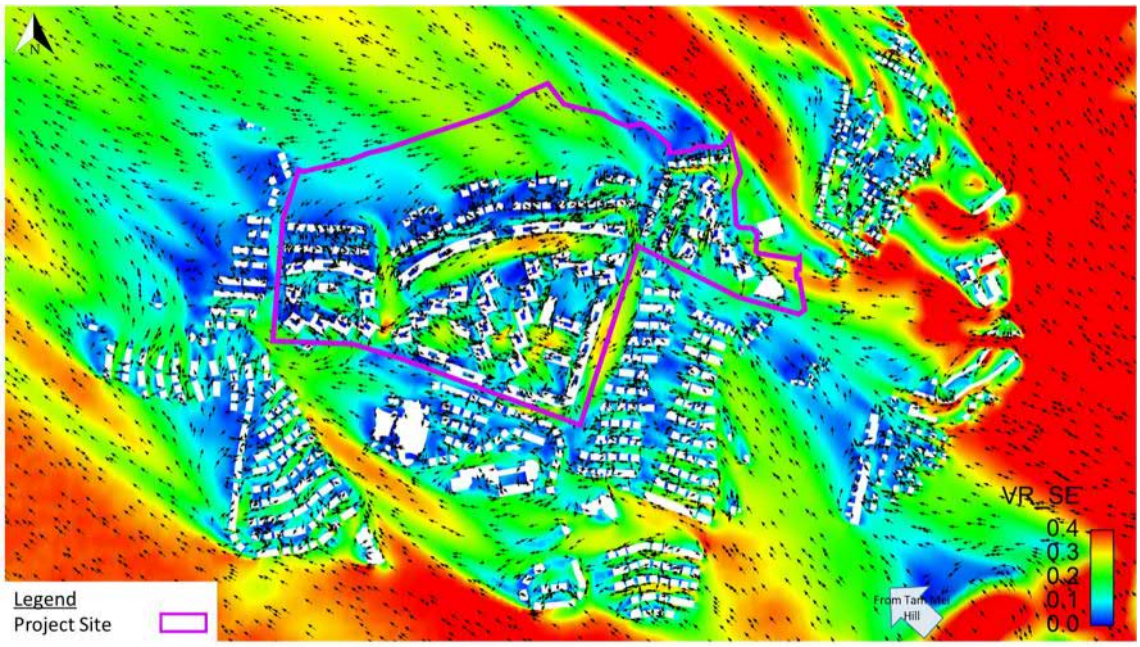


Figure 6.24: VR Vector Plot at Pedestrian Level under SE Wind for Proposed Scheme



6.1.6 SSE Wind – Wind Frequency: 8.2% (Summer)

SSE wind to the Project Site comes from Kai Kung Shan. Incoming SSE wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus wake zones are observed at the northern portion of the Project Site. Nonetheless, a portion of SSE wind travels along Palm Springs Boulevard to ventilate Palm Springs – Westwood via Camelia Path. In addition, another portion of SSE wind is able to penetrate though the Project Site via the open spaces within the Project Site and Ventura Avenue to ventilate the downwind regions of the fishponds to the north of the Project Site.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of SSE wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.25 and **Figure 6.27** shows the VR contour plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.26** and **Figure 6.28** shows the VR vector plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.25: VR Contour Plot at Pedestrian Level under SSE Wind for Baseline Scheme

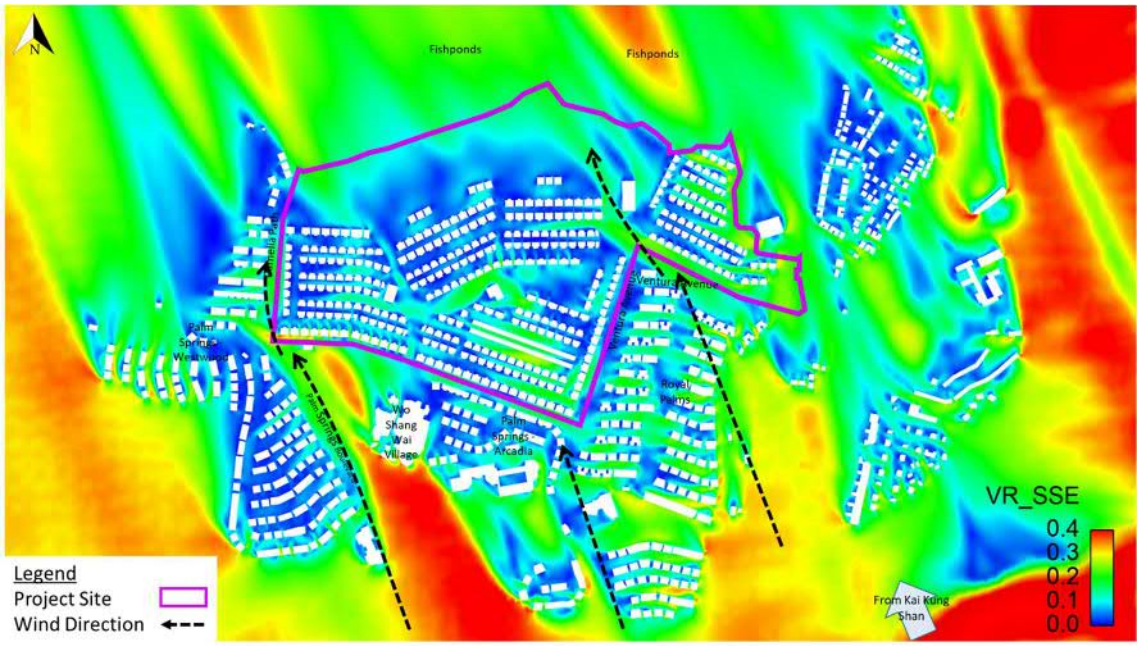


Figure 6.26: VR Vector Plot at Pedestrian Level under SSE Wind for Baseline Scheme

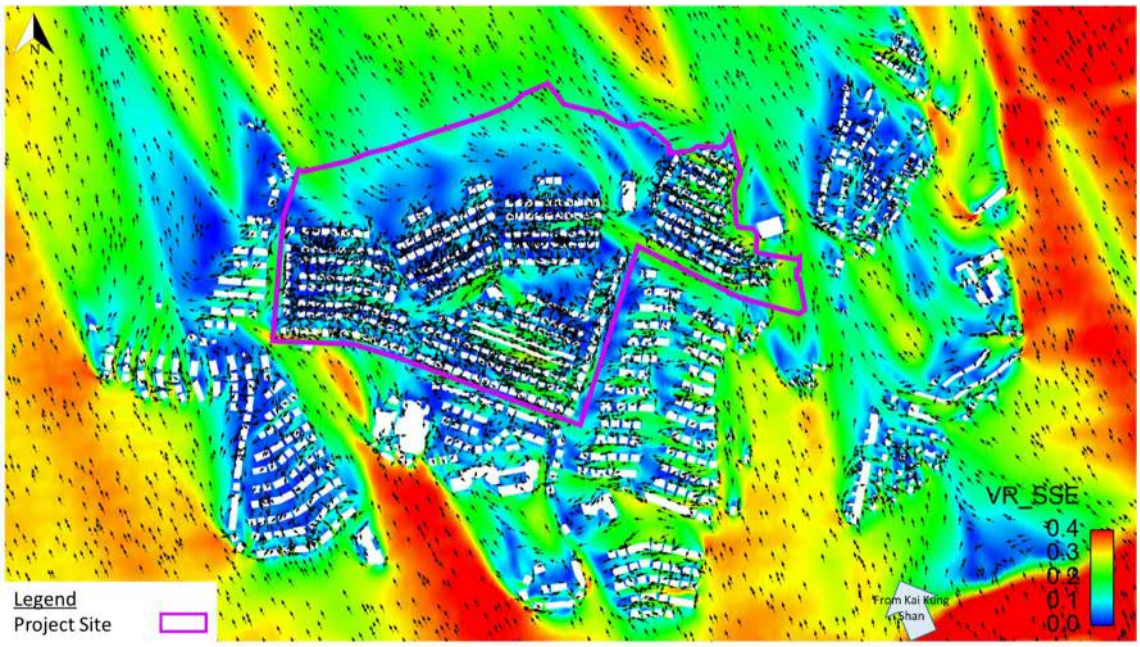


Figure 6.27: VR Contour Plot at Pedestrian Level under SSE Wind for Proposed Scheme

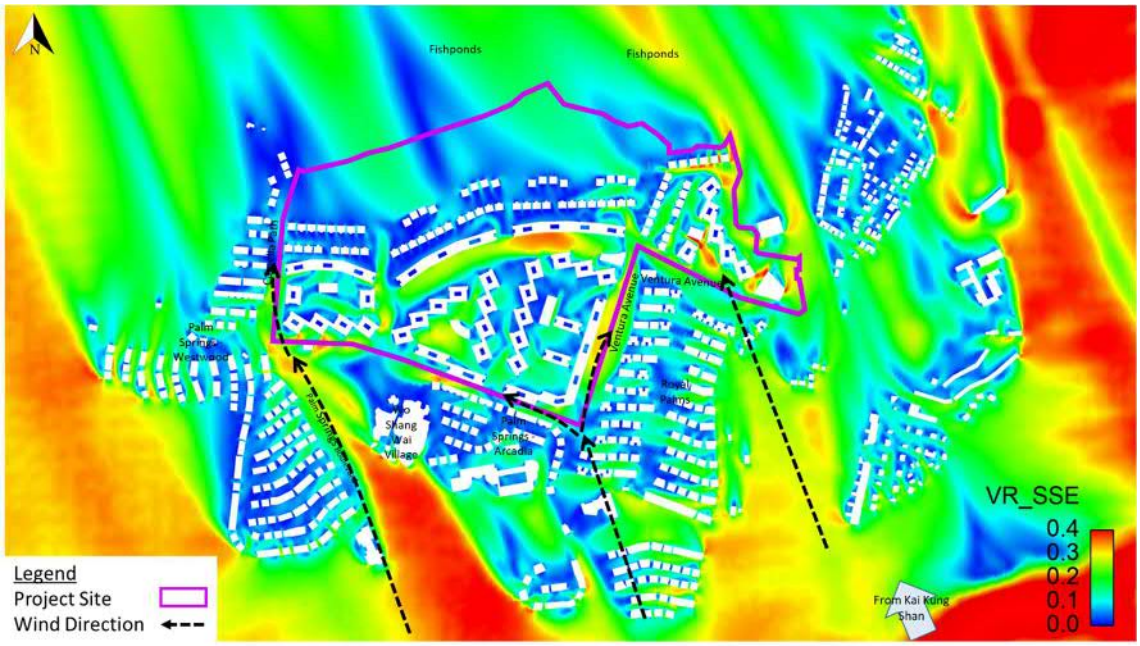
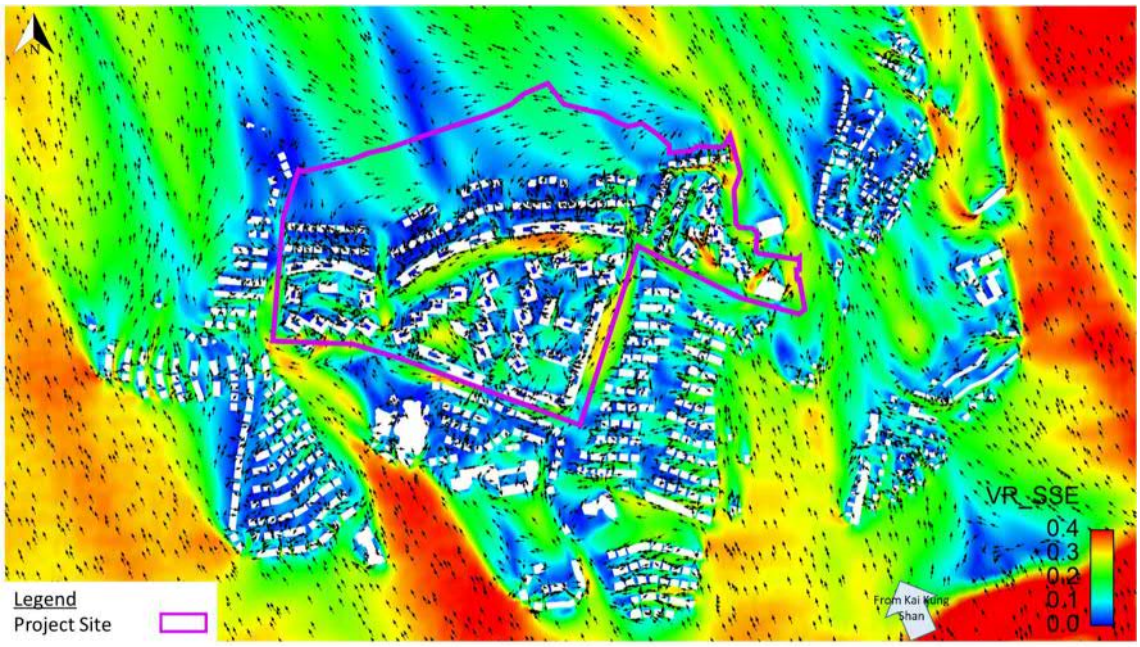


Figure 6.28: VR Vector Plot at Pedestrian Level under SSE Wind for Proposed Scheme



6.1.7 S Wind - Wind Frequency: 7.0% (Annual); 12.9% (Summer)

S wind to the Project Site comes from Kam Tin River. Incoming S wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the S wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus massive wake zones are observed at the northern portion of the Project Site. Nonetheless, a portion of S wind is able to skim over the low-rise houses in Wo Shang Wai Village to flow along the open spaces within the Project Site via the opening at the south. Besides, another portion of incoming S wind travels along Ventura Avenue to reach the fishponds to the north of the Project Site.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of S wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.29 and **Figure 6.31** shows the VR contour plots of S wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.30** and **Figure 6.32** shows the VR vector plots of S wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.29: VR Contour Plot at Pedestrian Level under S Wind for Baseline Scheme

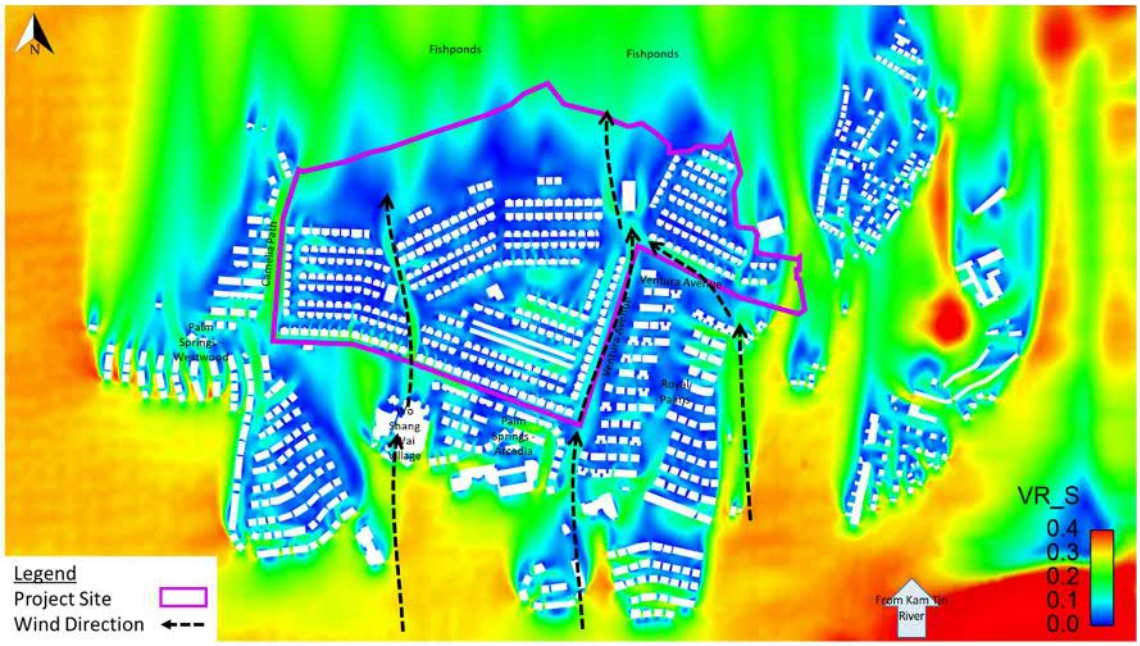


Figure 6.30: VR Vector Plot at Pedestrian Level under S Wind for Baseline Scheme

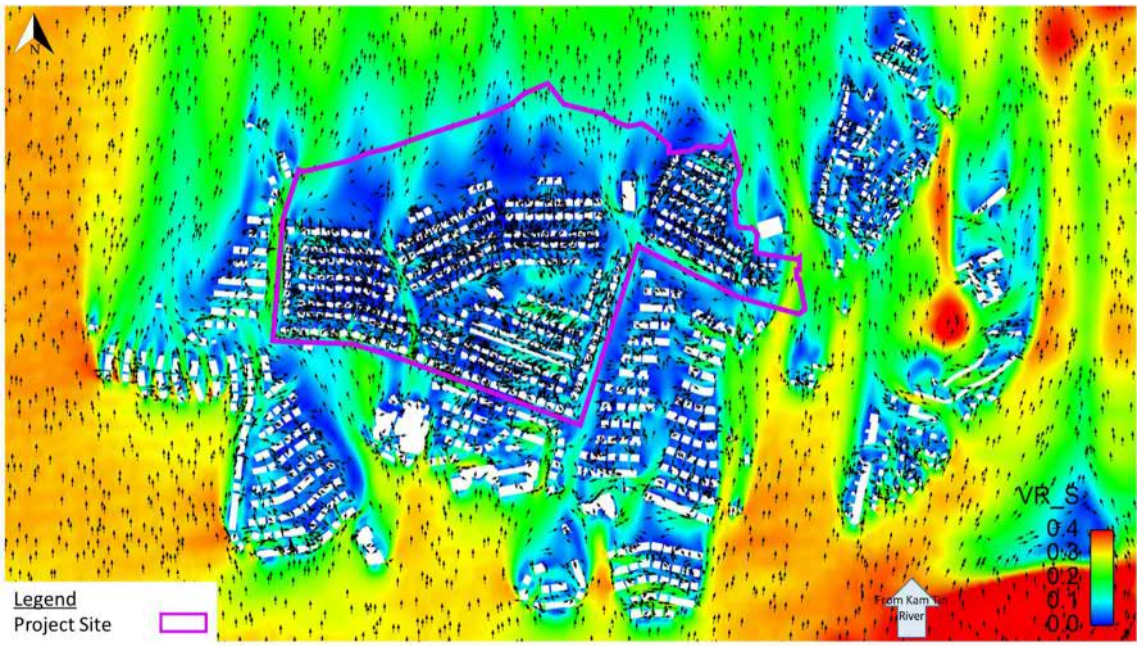


Figure 6.31: VR Contour Plot at Pedestrian Level under S Wind for Proposed Scheme

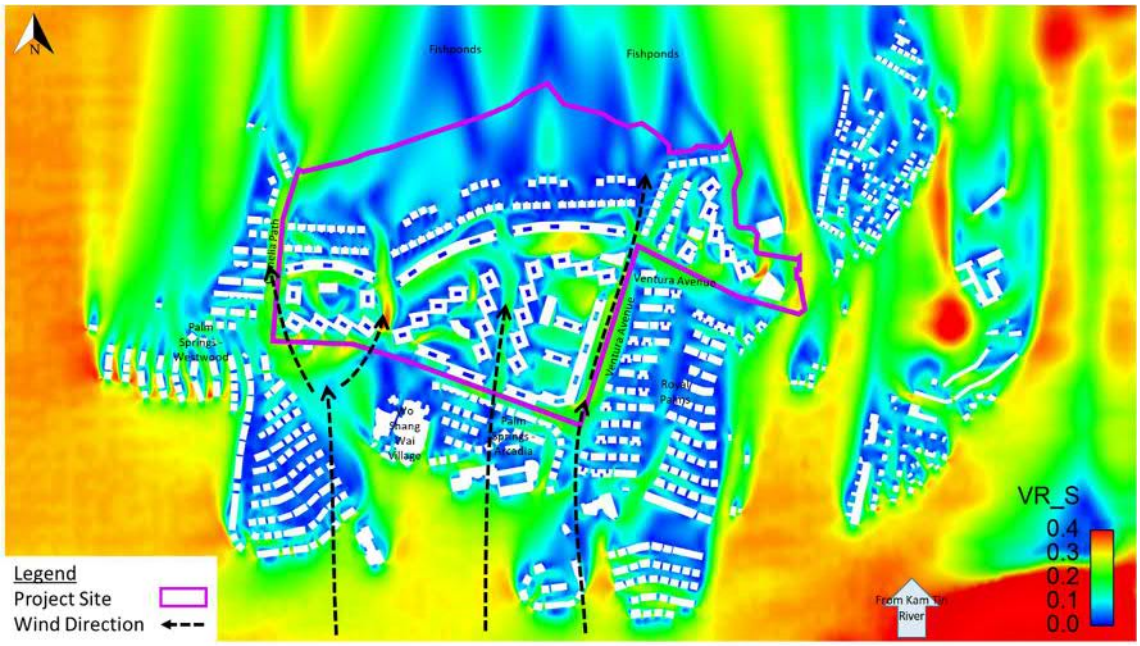
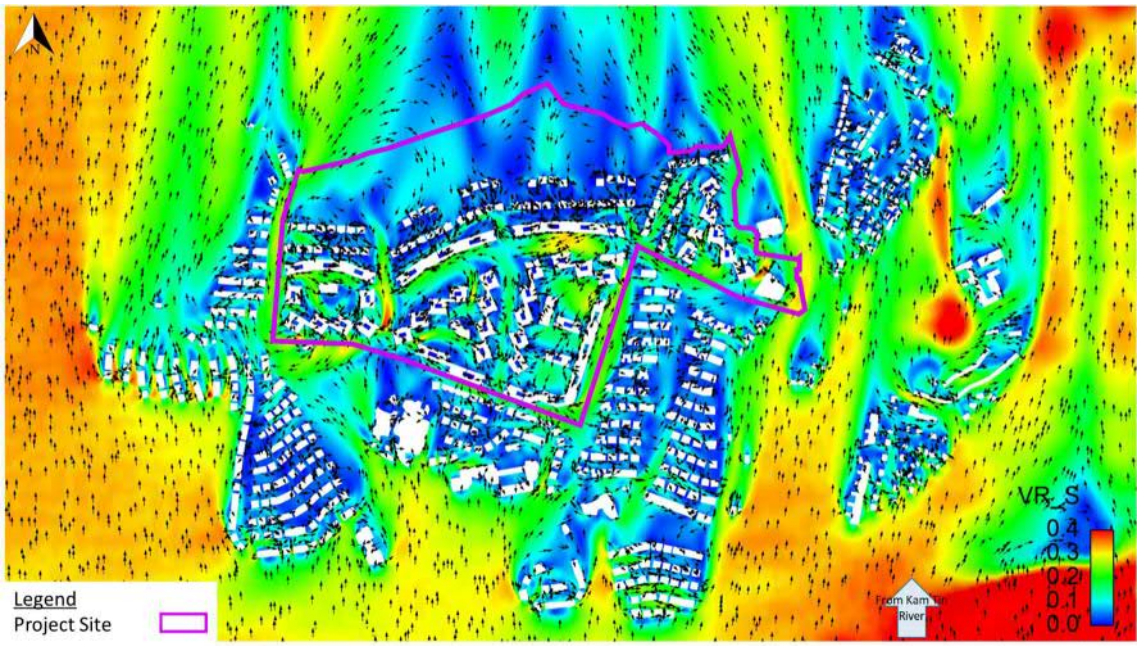


Figure 6.32: VR Vector Plot at Pedestrian Level under S Wind for Proposed Scheme



6.1.8 SSW Wind - Wind Frequency: 7.7% (Annual); 16.5% (Summer)

SSW wind to the Project Site comes from Fairview Park. Incoming SSW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus wake zones are observed at the northern portion of the Project Site. A portion of SSW wind is directed by the proposed low-rise houses along the western site boundary to flow along Camelia Path to reach the downwind regions of the fishponds to the north. Another portion of SSW travels freely along Ventura Avenue then penetrates through the Project Site to reach the downwind regions of the fishponds to the north.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of SSW wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.33 and **Figure 6.35** shows the VR contour plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.34** and **Figure 6.36** shows the VR vector plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.33: VR Contour Plot at Pedestrian Level under SSW Wind for Baseline Scheme

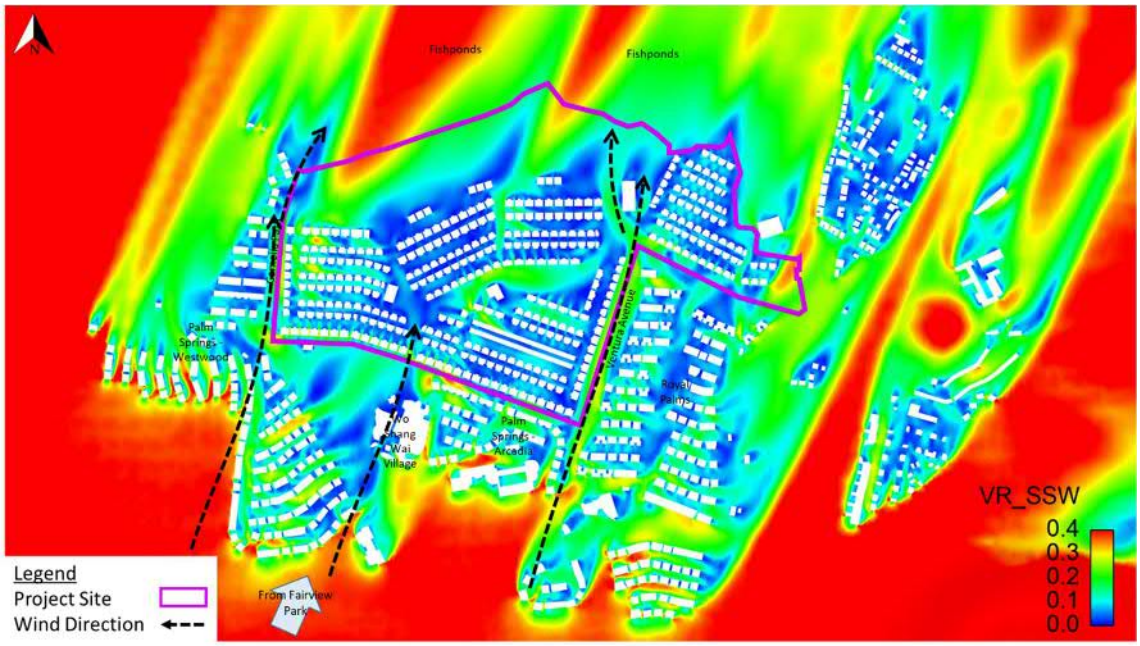


Figure 6.34: VR Vector Plot at Pedestrian Level under SSW Wind for Baseline Scheme

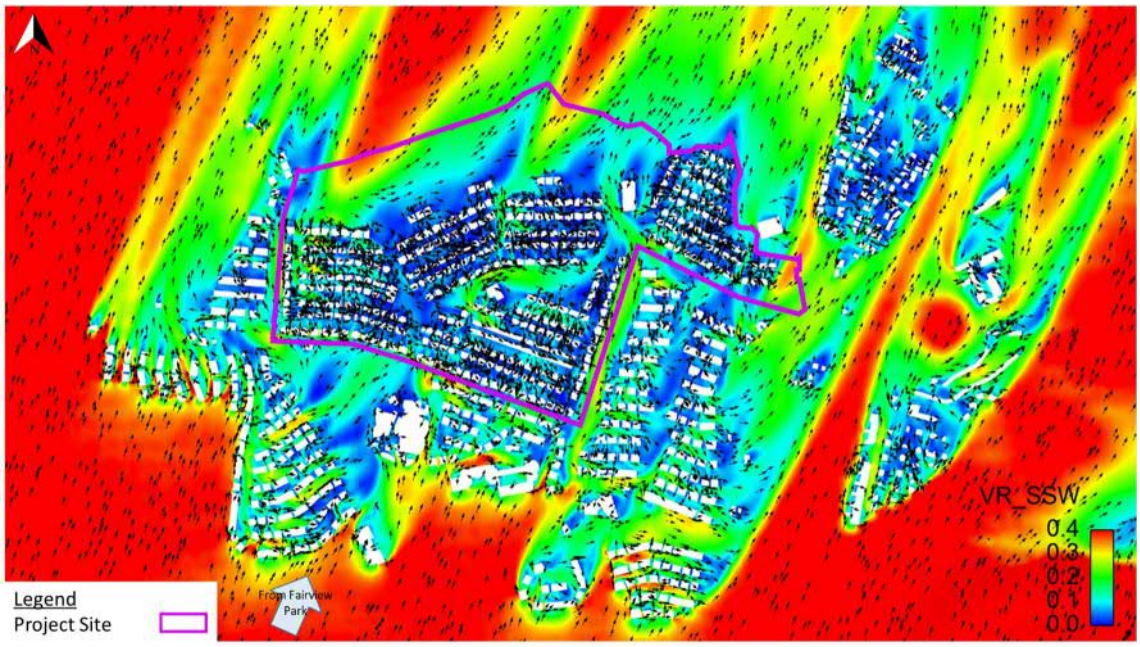


Figure 6.35: VR Vector Plot at Pedestrian Level under SSW Wind for Proposed Scheme

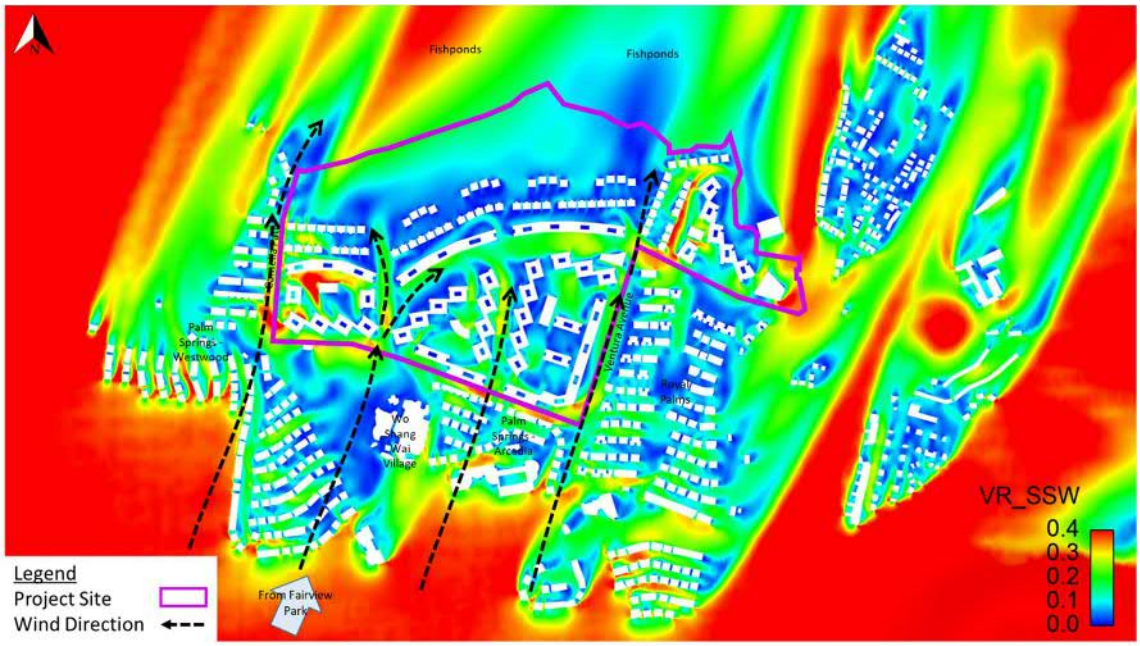
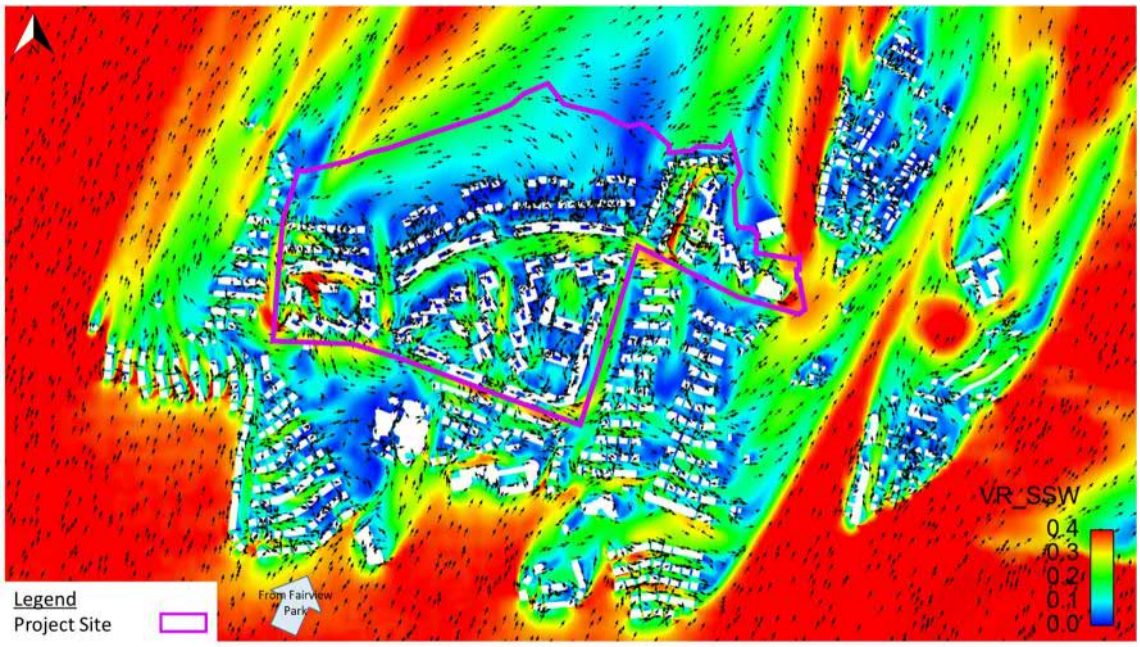


Figure 6.36: VR Contour Plot at Pedestrian Level under SSW Wind for Proposed Scheme



6.1.9 SW Wind - Wind Frequency: 6.7% (Annual); 16.3% (Summer)

SW wind to the Project Site comes from Fairview Park. Incoming SW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus wake zones are observed within the Project Site.

A portion of SW wind skims over Palm Springs – Westwood and is then diverted towards Camelia Path by the proposed low-rise houses at the western portion of the Project Site. The SW wind would travel along Camelia Path to ventilate the downwind regions of the fishponds to the north of the Project Site. Another portion of SW wind would enter the Project Site via the opening at the southern portion of the Project Site and ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the eastern portion of the Project Site.

In the Proposed Scheme, more open spaces and building separations are introduced at the west and center thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the western portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Camelia Path and Palm Springs - Westwood when compared to the Baseline Scheme. Another portion of SW wind would penetrate through the Project Site via building separations at the center and western portion of the Project Site to ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the central portion of the Project Site. However, the conversion from low-rise houses in the Baseline Scheme to mid-rise residential towers in the Proposed Scheme blocks SW wind from reaching Mai Po San Tsuen.

Figure 6.37 and **Figure 6.39** shows the VR contour plots of SW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.38** and **Figure 6.40** shows the VR vector plots of SW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.37: VR Contour Plot at Pedestrian Level under SW Wind for Baseline Scheme

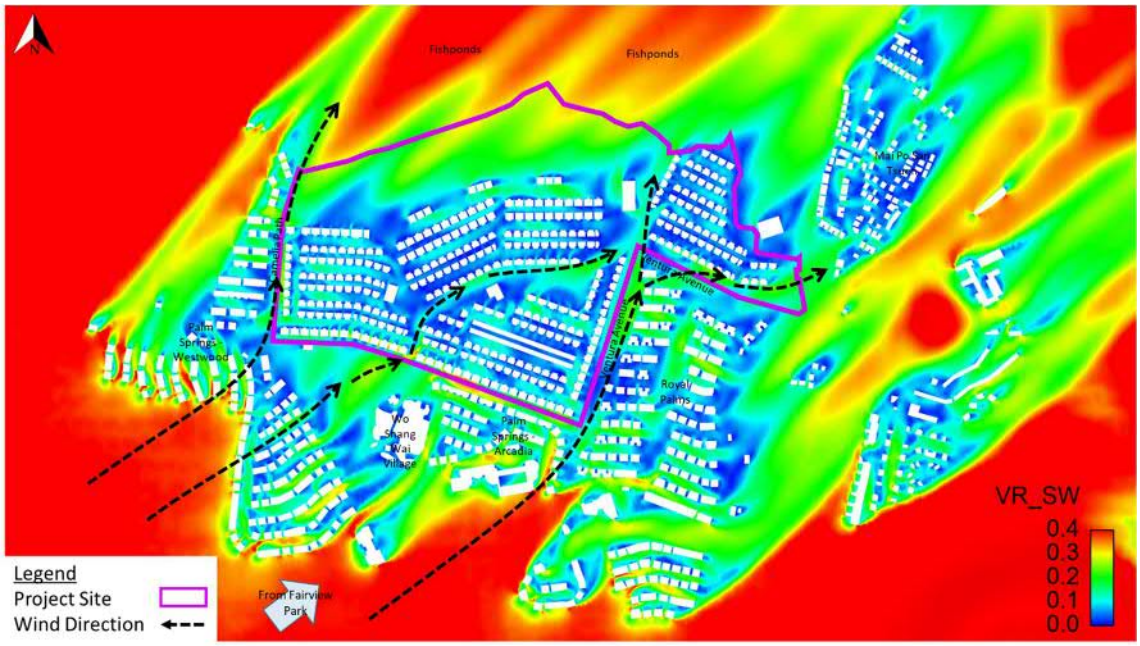


Figure 6.38: VR Vector Plot at Pedestrian Level under SW Wind for Baseline Scheme

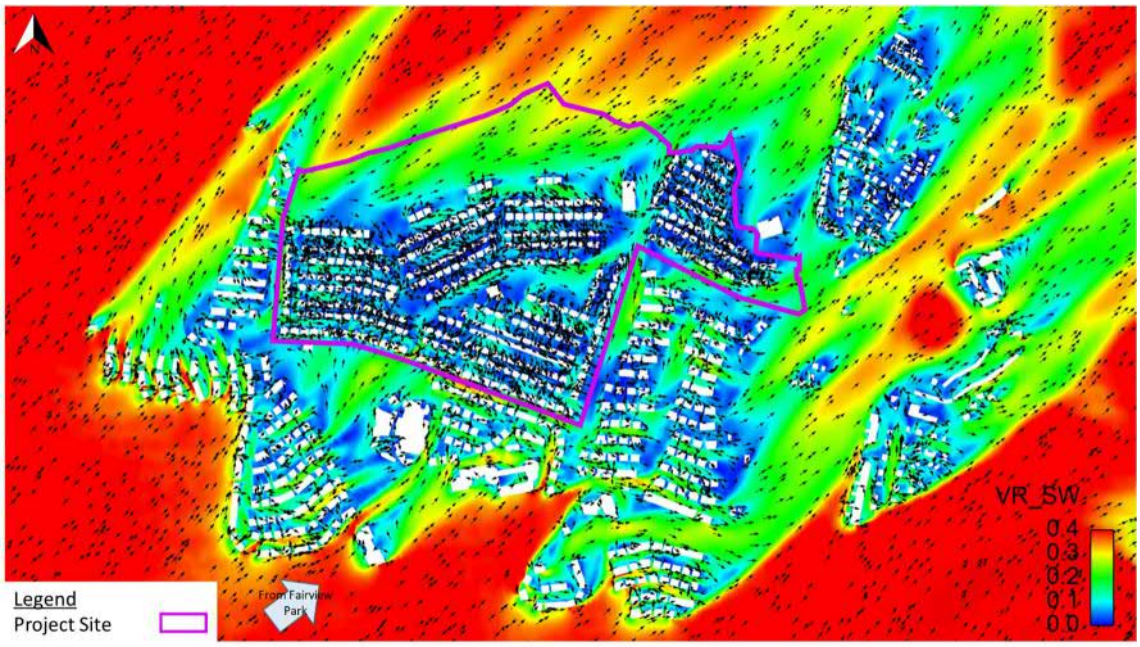


Figure 6.39: VR Contour Plot at Pedestrian Level under SW Wind for Proposed Scheme

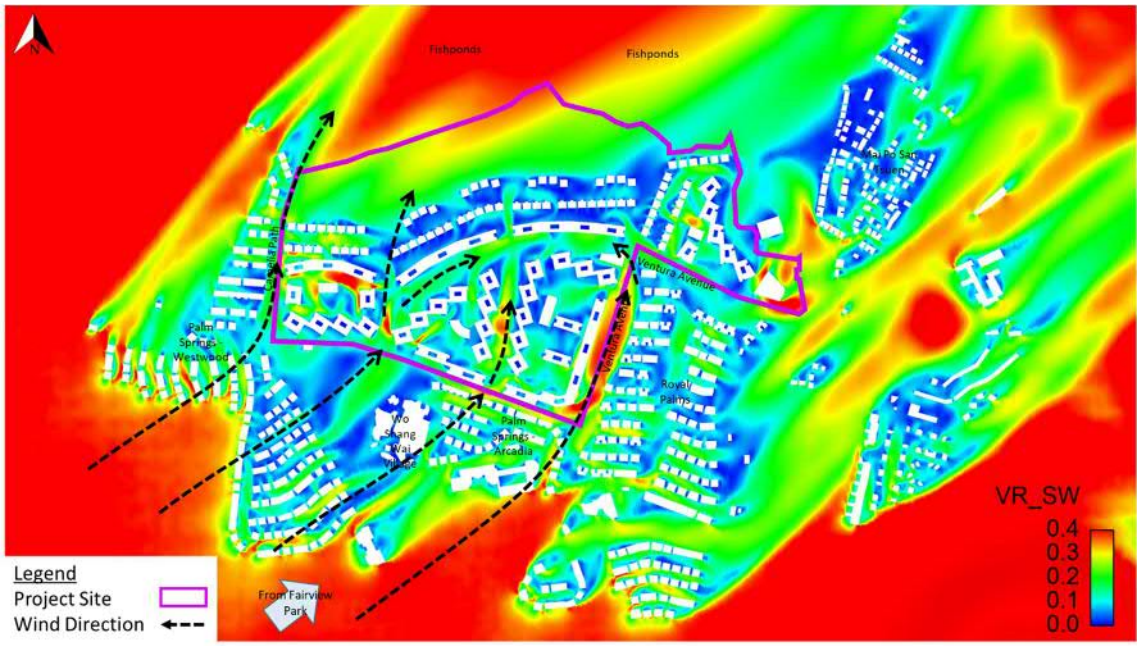
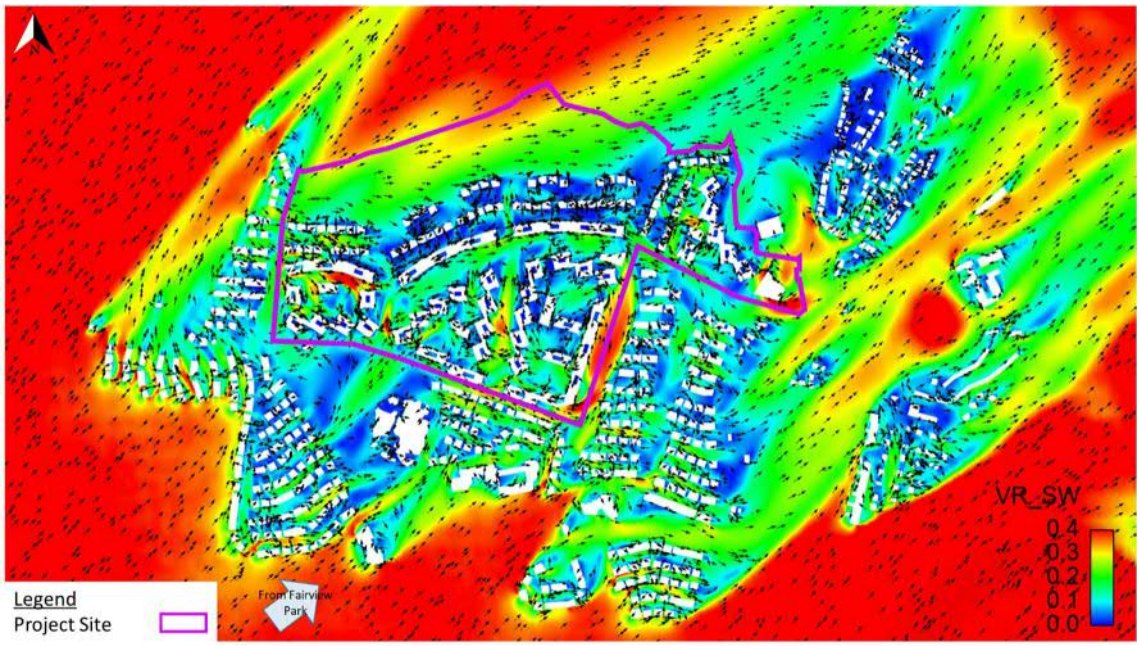


Figure 6.40: VR Vector Plot at Pedestrian Level under SW Wind for Proposed Scheme



6.2 Summary Of Velocity Ratio (VR) Results Under Annual Wind Condition

According to the average Velocity Ratio (VR) simulation results under annual wind condition in **Table 6.1**, the SVR of the Baseline Scheme is lower (i.e. 0.18) than the Proposed Scheme (i.e. 0.20). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.19.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.23), Road 4 (Baseline 0.14 vs Proposed 0.16), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Arcadia (Baseline 0.13 vs Proposed 0.14), Wo Shang Wai Village (Baseline 0.10 vs Proposed 0.11) and Palm Springs - Westwood (Baseline 0.13 vs Proposed 0.14)

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.23), Road 4 (Baseline 0.14 vs Proposed 0.16), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Arcadia (Baseline 0.13 vs Proposed 0.14), Wo Shang Wai Village (Baseline 0.10 vs Proposed 0.11) and Palm Springs - Westwood (Baseline 0.13 vs Proposed 0.14).

For the remaining focus areas (i.e. San Tin Highway and Mai Po San Tsuen), the wind performance is comparable for both Baseline Scheme and Proposed Scheme.

The annual weighted average VR contour plots for the Baseline Scheme and Proposed Scheme are shown in **Figure 6.41** to **Figure 6.42** respectively.

Table 6.1: Summary of SVR, LVR and SAVR Results under Annual Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.18	0.20
LVR		P1-P50, O1-O177	0.19	0.19
A	San Tam Road	O1-O3	0.27	0.28
B	San Tin Highway	O4-O12	0.28	0.28
C	Castle Peak Road - Mai Po	O13-O17	0.28	0.27
D	Road 1	O18-O19	0.27	0.26
E	Road 2	O20-O23	0.26	0.24
F	Road 3	O24-O25	0.22	0.23
G	Mai Po South Road	O26-O29	0.21	0.23
H	Road 4	O30-O32	0.14	0.16
I	Mai Po San Tsuen	O33-O38	0.10	0.10
J	Royal Palms	O39-O76	0.13	0.14
K	Palm Springs - Arcadia	O77-O92	0.13	0.14
L	Wo Shang Wai Village	O93-O94	0.10	0.11
M	Palm Springs - Westwood	O95-O131	0.13	0.14
N	Fishponds 1	O132-O142	0.20	0.19
O	Fishponds 2	O143-O177	0.31	0.30
			Special Test Points	
	VR within Project Site	S1-S32	0.11	0.14

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.41: Annual Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

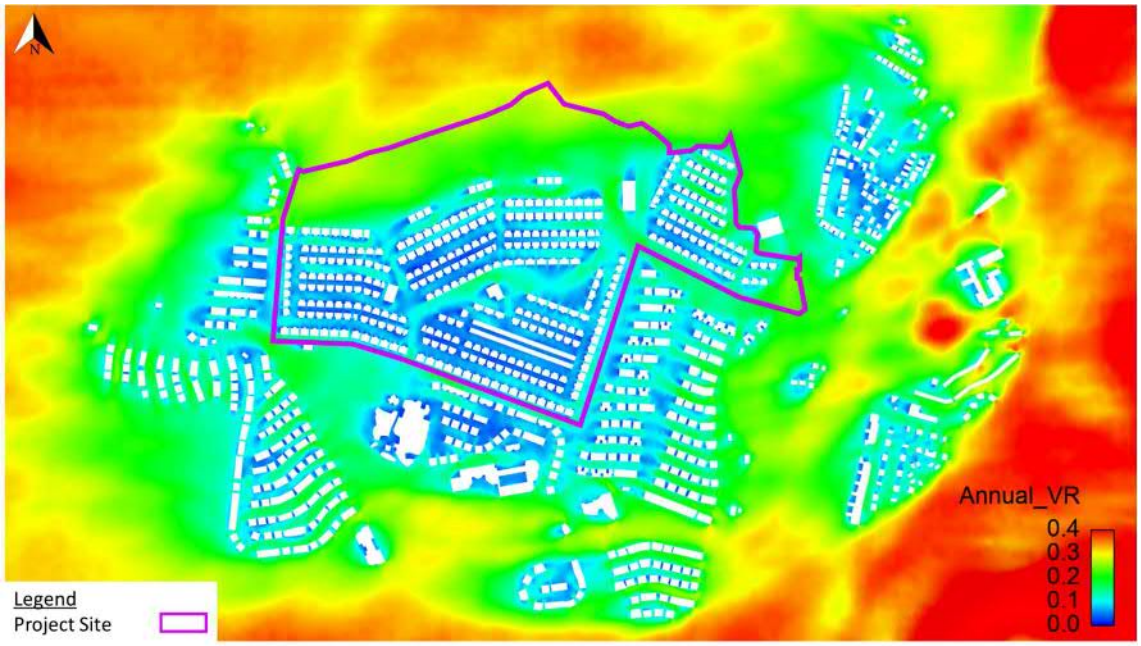
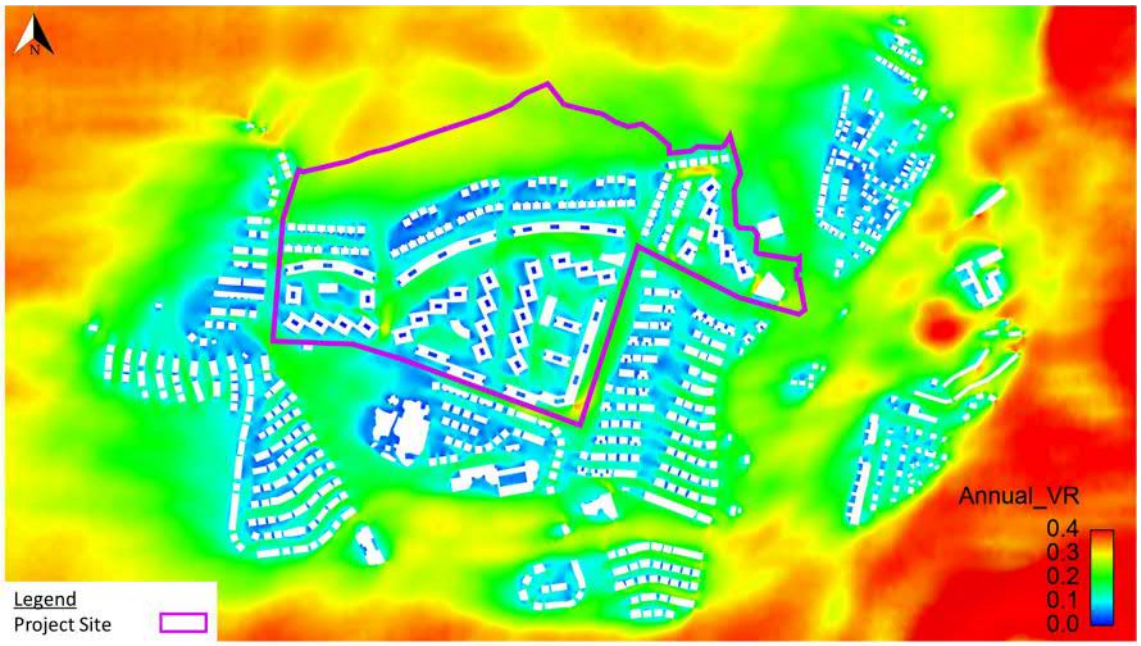


Figure 6.42: Annual Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



6.3 Summary of Velocity Ratio (VR) Results under summer wind condition

According to the average Velocity Ratio (VR) simulation results under summer wind condition in **Table 6.2**, the SVR of the Baseline Scheme is lower (i.e. 0.15) than the Proposed Scheme (i.e. 0.19). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.18.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as San Tam Road (Baseline 0.25 vs Proposed 0.26), Road 1 (Baseline 0.21 vs Proposed 0.22), Road 3 (Baseline 0.21 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.25), Road 4 (Baseline 0.15 vs Proposed 0.19), Mai Po San Tsuen (Baseline 0.11 vs Proposed 0.12), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Westwood (Baseline 0.14 vs Proposed 0.15) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21).

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such San Tam Road (Baseline 0.25 vs Proposed 0.26), Road 1 (Baseline 0.21 vs Proposed 0.22), Road 3 (Baseline 0.21 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.25), Road 4 (Baseline 0.15 vs Proposed 0.19), Mai Po San Tsuen (Baseline 0.11 vs Proposed 0.12), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Westwood (Baseline 0.14 vs Proposed 0.15) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21).

The summer weighted average VR contour plots for the Baseline Scheme and the Proposed Scheme are shown in **Figure 6.43** to **Figure 6.44** respectively.

Table 6.2: Summary of SVR, LVR and SAVR Results under Summer Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.15	0.19
LVR		P1-P50, O1-O177	0.18	0.18
A	San Tam Road	O1-O3	0.25	0.26
B	San Tin Highway	O4-O12	0.26	0.25
C	Castle Peak Road - Mai Po	O13-O17	0.24	0.22
D	Road 1	O18-O19	0.21	0.22
E	Road 2	O20-O23	0.21	0.20
F	Road 3	O24-O25	0.21	0.23
G	Mai Po South Road	O26-O29	0.21	0.25
H	Road 4	O30-O32	0.15	0.19
I	Mai Po San Tsuen	O33-O38	0.11	0.12
J	Royal Palms	O39-O76	0.13	0.14
K	Palm Springs - Arcadia	O77-O92	0.18	0.17
L	Wo Shang Wai Village	O93-O94	0.13	0.12
M	Palm Springs - Westwood	O95-O131	0.14	0.15
N	Fishponds 1	O132-O142	0.20	0.21
O	Fishponds 2	O143-O177	0.27	0.25
			Special Test Points	
	VR within Project Site	S1-S32	0.10	0.14

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.43: Summer Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

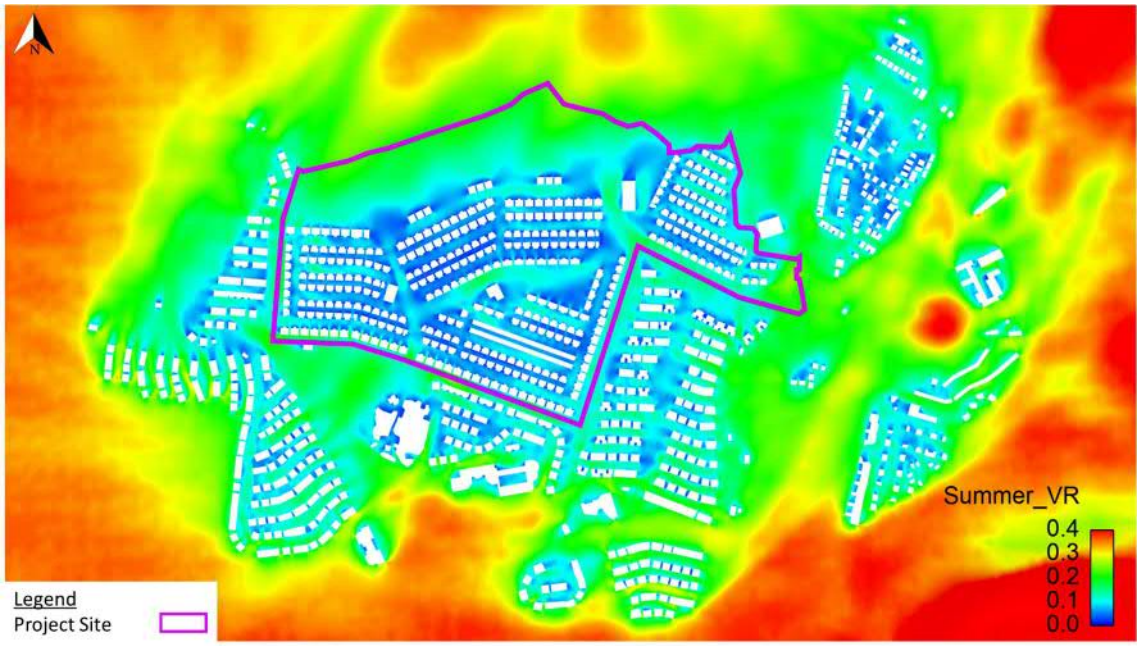
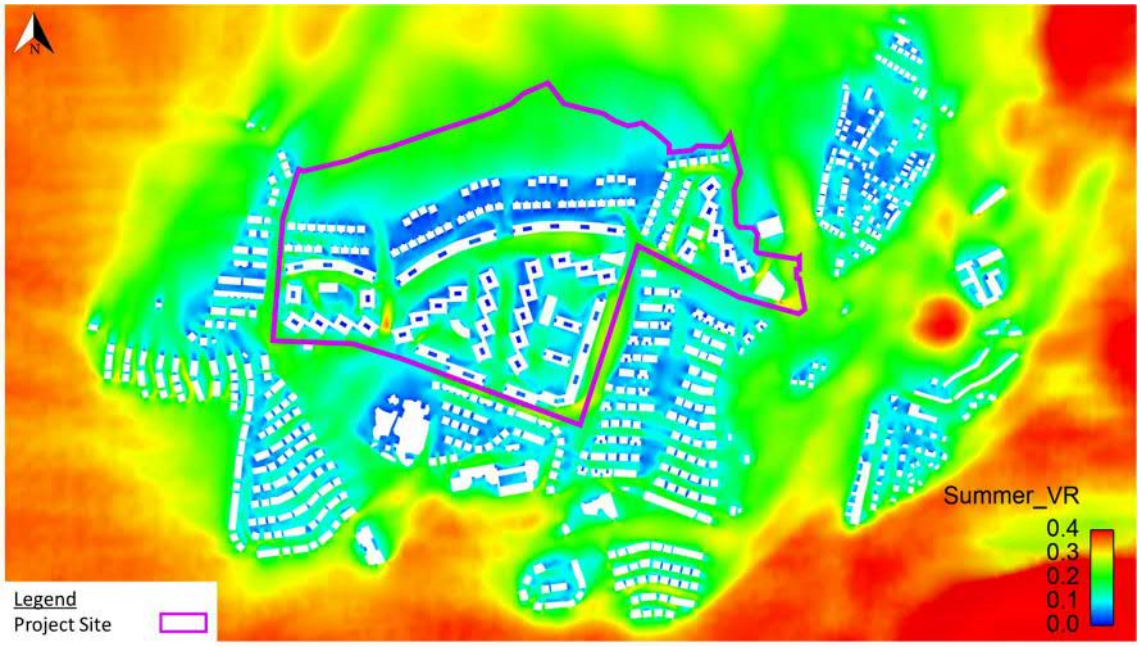


Figure 6.44: Summer Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



7 Conclusion

An Air Ventilation Assessment - Initial Study (AVA-IS) was conducted to assess the ventilation performance of the area within the Project Site and the local environment.

The major findings of this study could be summarized as follows:

AVA Study

A series of CFD simulations using realizable k- ε turbulence model was performed based on the Air Ventilation Assessment (AVA) methodology for the Initial Study as stipulated in the Technical Circular No. 1/06 on Air Ventilation Assessment (2006). Eleven (11) wind directions covering about 83.2% occurrence of annual wind and about 76.4% occurrence of summer wind were studied. The ventilation performance for the proposed development at the Project Site and all focus areas within the assessment area were assessed.

According to the Technical Circular No. 1/06 on Air Ventilation Assessment (2006), the Velocity Ratio of each test point was assessed in terms of SVR, LVR and SAVR of various focus areas within the Assessment Area. A total of 50 perimeter test points, 177 overall test points and 32 special test points were selected to assess the ventilation performance.

Changes in building design are introduced to enhance the wind permeability through the Project Site to ventilate the downwind regions as shown below:

- The annual weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are 0.18 and 0.20 respectively. The summer weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are both 0.19.
- The annual weighted Local Spatial Average Velocity Ratio (LVR) for the Baseline Scheme and Proposed Scheme are 0.15 and 0.19 respectively. The summer weighted LVR for the Baseline Scheme and Proposed Scheme are both 0.18.

From the directional analysis in Section 6, the mid-rise residential towers in the Proposed Scheme will indeed obstruct a portion of the annual and summer prevailing winds thus larger wakes at some downwind regions are observed when compared with the Baseline. However, as shown in the summary above, the annual weighted SVR and LVR show that the Proposed Scheme on average has a similar performance when compared with the Baseline Scheme. Hence, it is concluded that with the mitigation measures implemented, the Proposed Scheme would not result in a significant adverse air ventilation impact on the pedestrian wind environment in the area surrounding the Project Site when compared with the Baseline Scheme.

All improvements and mitigation measures should consider the following design principles at the detailed design stage:

- Adopt building permeability equivalent to 20% to 25% with reference to PNAP APP-152;
- Adopt building setback with reference to PNAP APP-152;
- Avoid long continuous façades; and
- Make reference to the recommendations of design measures in the Hong Kong Planning Standards and Guidelines.

Appendices

Appendix A - Architectural Layout of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

- APPLICATION SITE BOUNDARY
- WETLAND RESTORATION AREA
- CLUBHOUSE AMENITY AREA / WATER BODY
- POOL AREA
- E & M BUILDINGS
- PROPOSED NOISE BARRIER

- A1 A2 — 2 STOREY DETACHED HOUSE
- B — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- C1 — 3 STOREY DETACHED HOUSE
- C2 — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- D — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- E — 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

1:2000 in A3
DWG. No. : 3809-003

申請編號 Application No. : A / YL-MP / 344
此頁摘自申請人提交的文件。
This page is extracted from applicant's submitted documents.

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Good Design Feature of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

>7.5m setback

22.77 m

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

WO SHANG WAI

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

APPLICATION SITE BOUNDARY	A1 A2 2 STOREY DETACHED HOUSE
WETLAND RESTORATION AREA	B 2 STOREY DETACHED / SEMI-DETACHED HOUSE
CLUBHOUSE AMENITY AREA / WATER BODY	C1 3 STOREY DETACHED HOUSE
POOL AREA	C2 2 STOREY DETACHED / SEMI-DETACHED HOUSE
E & M BUILDINGS	D 2 STOREY DETACHED / SEMI-DETACHED HOUSE
PROPOSED NOISE BARRIER	E 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

申請編號 Application No. : A / YL-MP / 344

此頁摘自申請人提交的文件。

This page is extracted from applicant's submitted documents.

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DWG. No. : 3809-003

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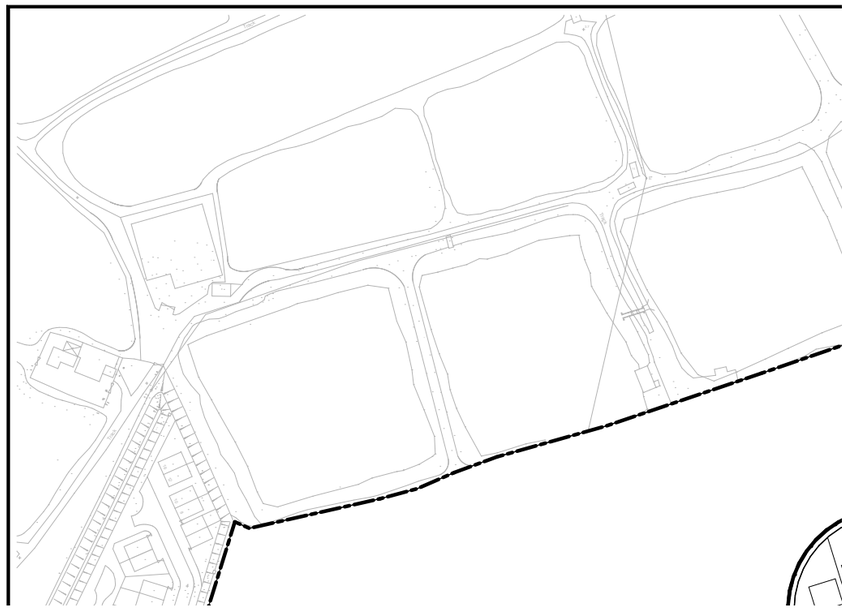
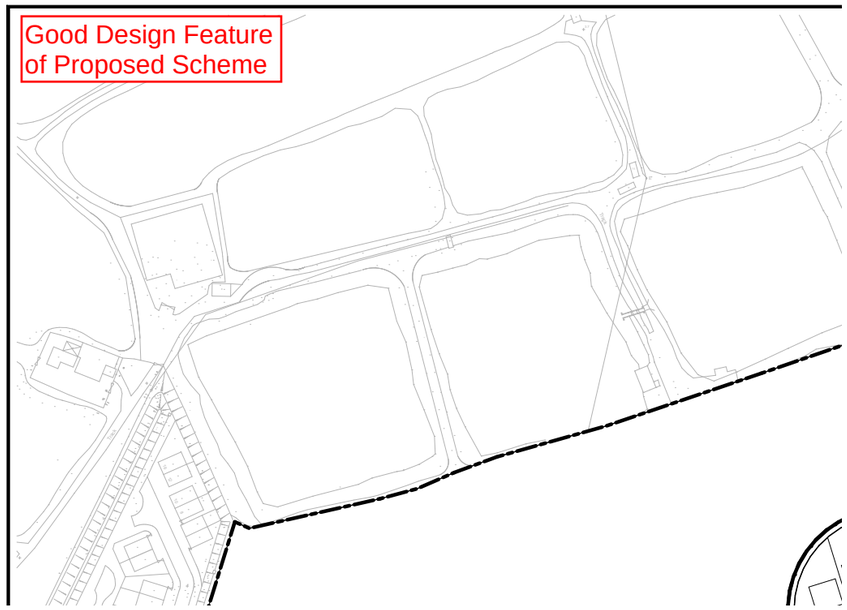
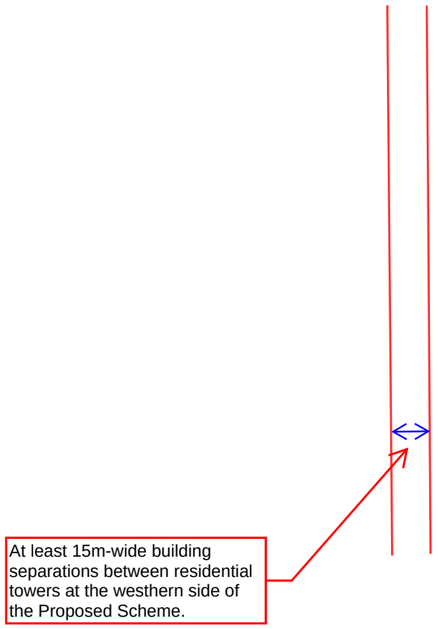
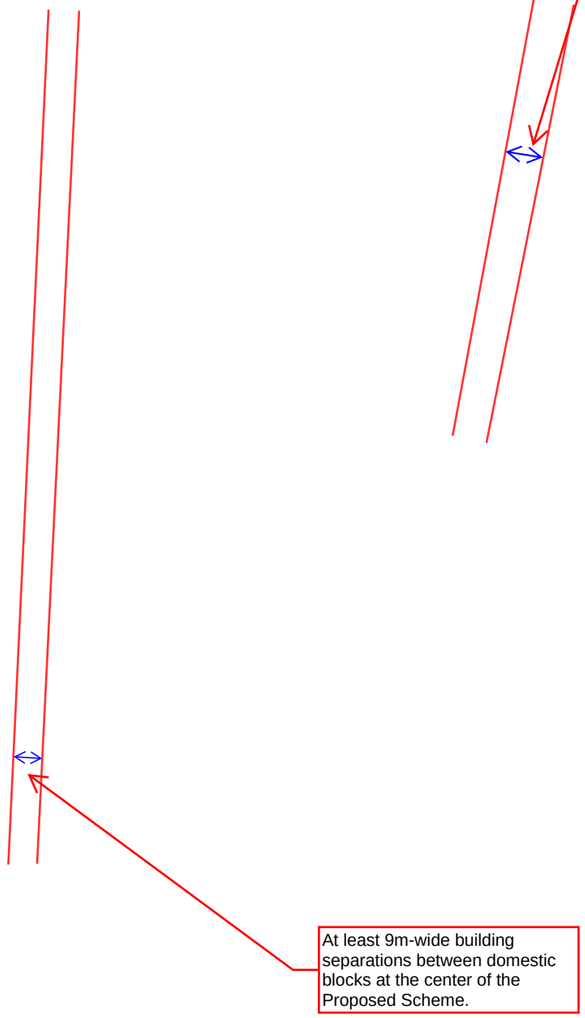
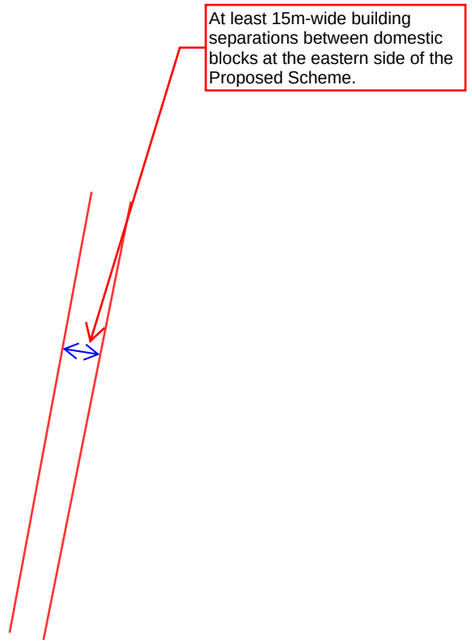
Appendix B – Architectural Layout of Proposed Scheme




Good Design Feature
of Proposed Scheme


At least 15m-wide building
separations between residential
towers at the westhern side of
the Proposed Scheme.


At least 9m-wide building
separations between domestic
blocks at the center of the
Proposed Scheme.


At least 15m-wide building
separations between domestic
blocks at the eastern side of the
Proposed Scheme.

Appendix C – Detailed Velocity Ratio for Each Test Point for Baseline Scheme

Baseline Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.34	0.40	0.37	0.21	0.24	0.30	0.22	0.22	0.34	0.29	0.29	0.27
O2	0.24	0.26	0.26	0.20	0.10	0.14	0.13	0.18	0.34	0.31	0.22	0.23
O3	0.35	0.30	0.32	0.44	0.13	0.16	0.09	0.14	0.37	0.31	0.30	0.25
O4	0.36	0.33	0.33	0.24	0.08	0.08	0.14	0.25	0.40	0.30	0.26	0.25
O5	0.25	0.30	0.26	0.32	0.02	0.12	0.15	0.17	0.39	0.32	0.25	0.24
O6	0.30	0.36	0.36	0.14	0.18	0.27	0.20	0.18	0.38	0.25	0.26	0.24
O7	0.37	0.39	0.36	0.30	0.18	0.36	0.17	0.20	0.36	0.29	0.31	0.27
O8	0.37	0.35	0.29	0.28	0.10	0.41	0.18	0.20	0.35	0.31	0.29	0.27
O9	0.37	0.37	0.38	0.23	0.22	0.29	0.25	0.17	0.37	0.26	0.29	0.26
O10	0.35	0.37	0.40	0.24	0.15	0.20	0.14	0.23	0.33	0.19	0.27	0.22
O11	0.28	0.33	0.27	0.41	0.12	0.16	0.16	0.27	0.37	0.31	0.29	0.28
O12	0.32	0.35	0.37	0.25	0.08	0.10	0.17	0.30	0.41	0.31	0.28	0.27
O13	0.32	0.37	0.38	0.24	0.07	0.08	0.26	0.31	0.37	0.31	0.27	0.27
O14	0.33	0.35	0.33	0.37	0.11	0.12	0.18	0.29	0.23	0.15	0.27	0.21
O15	0.35	0.34	0.41	0.20	0.17	0.22	0.15	0.27	0.22	0.20	0.26	0.21
O16	0.36	0.36	0.30	0.29	0.27	0.36	0.26	0.15	0.25	0.29	0.29	0.26
O17	0.34	0.39	0.37	0.30	0.21	0.38	0.12	0.21	0.28	0.34	0.31	0.27
O18	0.15	0.28	0.33	0.38	0.26	0.17	0.11	0.17	0.10	0.10	0.25	0.16
O19	0.22	0.34	0.36	0.31	0.22	0.41	0.26	0.17	0.19	0.31	0.29	0.25
O20	0.32	0.35	0.32	0.25	0.21	0.32	0.15	0.27	0.17	0.26	0.27	0.23
O21	0.31	0.34	0.42	0.24	0.14	0.18	0.15	0.30	0.13	0.21	0.26	0.20
O22	0.30	0.34	0.35	0.37	0.09	0.10	0.23	0.27	0.11	0.05	0.25	0.16
O23	0.28	0.35	0.35	0.32	0.15	0.11	0.32	0.30	0.14	0.27	0.27	0.23
O24	0.24	0.20	0.29	0.18	0.12	0.16	0.15	0.12	0.26	0.26	0.20	0.19
O25	0.13	0.22	0.30	0.28	0.21	0.31	0.03	0.20	0.23	0.30	0.25	0.23
O26	0.25	0.36	0.33	0.30	0.27	0.36	0.22	0.25	0.17	0.30	0.29	0.26
O27	0.25	0.13	0.22	0.06	0.28	0.37	0.20	0.21	0.23	0.17	0.19	0.21
O28	0.34	0.20	0.08	0.06	0.12	0.17	0.21	0.26	0.30	0.13	0.16	0.19
O29	0.30	0.24	0.06	0.19	0.20	0.40	0.25	0.19	0.08	0.10	0.19	0.17
O30	0.30	0.18	0.05	0.13	0.14	0.25	0.13	0.24	0.24	0.06	0.16	0.17
O31	0.29	0.19	0.07	0.06	0.07	0.14	0.04	0.07	0.25	0.18	0.13	0.13
O32	0.24	0.13	0.13	0.07	0.08	0.08	0.06	0.12	0.25	0.25	0.14	0.16
O33	0.04	0.02	0.05	0.13	0.09	0.18	0.07	0.04	0.02	0.09	0.08	0.08
O34	0.13	0.10	0.01	0.16	0.12	0.19	0.09	0.15	0.15	0.08	0.12	0.13
O35	0.06	0.11	0.15	0.13	0.06	0.44	0.19	0.13	0.11	0.11	0.14	0.15
O36	0.05	0.12	0.03	0.03	0.07	0.21	0.04	0.04	0.09	0.05	0.07	0.07
O37	0.07	0.05	0.03	0.11	0.06	0.08	0.13	0.15	0.19	0.18	0.10	0.14
O38	0.02	0.07	0.15	0.10	0.02	0.02	0.08	0.07	0.11	0.11	0.08	0.08
O39	0.15	0.21	0.18	0.04	0.10	0.12	0.13	0.13	0.17	0.01	0.12	0.10
O40	0.17	0.06	0.10	0.02	0.32	0.24	0.29	0.23	0.17	0.08	0.14	0.18
O41	0.17	0.16	0.30	0.20	0.33	0.22	0.19	0.14	0.12	0.06	0.20	0.16
O42	0.16	0.05	0.27	0.27	0.14	0.13	0.14	0.09	0.08	0.09	0.16	0.12
O43	0.01	0.14	0.22	0.24	0.14	0.13	0.16	0.07	0.06	0.08	0.14	0.11
O44	0.11	0.09	0.24	0.27	0.18	0.15	0.21	0.07	0.12	0.16	0.17	0.15
O45	0.11	0.08	0.16	0.25	0.08	0.10	0.10	0.08	0.18	0.12	0.14	0.13
O46	0.09	0.07	0.17	0.11	0.03	0.07	0.01	0.03	0.23	0.24	0.11	0.13

O47	0.06	0.15	0.09	0.05	0.05	0.06	0.04	0.03	0.20	0.21	0.09	0.11
O48	0.06	0.07	0.07	0.04	0.04	0.04	0.06	0.04	0.02	0.04	0.05	0.04
O49	0.06	0.03	0.12	0.06	0.33	0.25	0.26	0.22	0.16	0.11	0.14	0.18
O50	0.06	0.04	0.20	0.09	0.18	0.18	0.23	0.19	0.06	0.11	0.12	0.14
O51	0.08	0.13	0.13	0.08	0.15	0.16	0.16	0.08	0.07	0.21	0.12	0.13
O52	0.06	0.15	0.15	0.02	0.13	0.14	0.15	0.05	0.11	0.22	0.11	0.12
O53	0.11	0.12	0.19	0.35	0.37	0.28	0.22	0.13	0.07	0.24	0.22	0.21
O54	0.06	0.08	0.18	0.26	0.14	0.14	0.16	0.10	0.04	0.17	0.15	0.13
O55	0.05	0.06	0.09	0.19	0.08	0.11	0.14	0.04	0.10	0.07	0.10	0.10
O56	0.07	0.15	0.09	0.08	0.18	0.11	0.04	0.06	0.13	0.14	0.11	0.11
O57	0.24	0.18	0.27	0.21	0.25	0.19	0.24	0.05	0.10	0.10	0.19	0.14
O58	0.13	0.15	0.32	0.26	0.24	0.19	0.14	0.04	0.05	0.06	0.18	0.11
O59	0.10	0.12	0.15	0.12	0.13	0.15	0.11	0.01	0.08	0.06	0.11	0.08
O60	0.11	0.19	0.08	0.14	0.05	0.12	0.18	0.05	0.12	0.06	0.11	0.10
O61	0.08	0.15	0.10	0.08	0.14	0.07	0.10	0.05	0.06	0.16	0.10	0.09
O62	0.07	0.07	0.08	0.12	0.09	0.09	0.18	0.08	0.06	0.12	0.09	0.10
O63	0.20	0.18	0.23	0.17	0.24	0.07	0.05	0.06	0.09	0.05	0.15	0.09
O64	0.11	0.09	0.15	0.16	0.23	0.02	0.19	0.05	0.09	0.09	0.12	0.11
O65	0.07	0.12	0.11	0.09	0.20	0.04	0.17	0.06	0.09	0.17	0.11	0.12
O66	0.12	0.08	0.09	0.06	0.22	0.20	0.11	0.04	0.18	0.16	0.12	0.14
O67	0.05	0.02	0.02	0.01	0.01	0.04	0.06	0.07	0.21	0.12	0.05	0.09
O68	0.07	0.05	0.07	0.04	0.05	0.07	0.10	0.13	0.29	0.18	0.09	0.15
O69	0.07	0.03	0.05	0.04	0.05	0.08	0.01	0.15	0.26	0.06	0.08	0.11
O70	0.03	0.11	0.14	0.18	0.33	0.22	0.21	0.13	0.19	0.24	0.18	0.21
O71	0.05	0.11	0.10	0.16	0.17	0.15	0.09	0.08	0.29	0.28	0.15	0.19
O72	0.08	0.07	0.17	0.25	0.32	0.26	0.15	0.04	0.20	0.25	0.19	0.20
O73	0.05	0.08	0.18	0.09	0.14	0.17	0.06	0.04	0.06	0.03	0.10	0.07
O74	0.09	0.09	0.14	0.13	0.19	0.17	0.19	0.05	0.12	0.14	0.13	0.13
O75	0.05	0.13	0.01	0.01	0.14	0.10	0.11	0.12	0.31	0.37	0.12	0.20
O76	0.03	0.11	0.20	0.27	0.44	0.22	0.06	0.12	0.11	0.12	0.20	0.17
O77	0.12	0.13	0.15	0.25	0.32	0.21	0.22	0.13	0.26	0.38	0.22	0.26
O78	0.03	0.08	0.06	0.28	0.26	0.17	0.24	0.21	0.35	0.38	0.20	0.29
O79	0.07	0.15	0.06	0.29	0.29	0.19	0.18	0.16	0.27	0.35	0.21	0.26
O80	0.05	0.16	0.11	0.34	0.38	0.20	0.18	0.21	0.27	0.29	0.24	0.27
O81	0.02	0.09	0.06	0.05	0.11	0.18	0.19	0.28	0.41	0.41	0.15	0.27
O82	0.05	0.15	0.07	0.07	0.07	0.06	0.05	0.14	0.09	0.25	0.10	0.12
O83	0.07	0.12	0.04	0.02	0.07	0.08	0.07	0.16	0.21	0.12	0.09	0.12
O84	0.07	0.09	0.08	0.10	0.15	0.16	0.15	0.05	0.13	0.21	0.11	0.14
O85	0.04	0.07	0.16	0.09	0.13	0.04	0.02	0.06	0.10	0.15	0.10	0.09
O86	0.03	0.03	0.02	0.03	0.10	0.09	0.09	0.13	0.19	0.09	0.07	0.11
O87	0.13	0.04	0.03	0.01	0.05	0.10	0.08	0.05	0.18	0.16	0.07	0.11
O88	0.04	0.03	0.04	0.04	0.06	0.15	0.08	0.02	0.02	0.17	0.06	0.08
O89	0.01	0.02	0.08	0.08	0.14	0.11	0.19	0.16	0.02	0.22	0.09	0.13
O90	0.07	0.06	0.05	0.13	0.17	0.17	0.13	0.06	0.26	0.28	0.13	0.18
O91	0.02	0.07	0.08	0.12	0.22	0.18	0.03	0.29	0.38	0.29	0.17	0.25
O92	0.04	0.04	0.04	0.13	0.36	0.13	0.30	0.25	0.21	0.15	0.15	0.21
O93	0.03	0.10	0.06	0.01	0.06	0.03	0.13	0.09	0.07	0.09	0.06	0.07
O94	0.09	0.12	0.06	0.12	0.32	0.36	0.34	0.25	0.06	0.07	0.15	0.18
O95	0.08	0.05	0.18	0.21	0.23	0.18	0.33	0.10	0.08	0.16	0.15	0.16
O96	0.17	0.16	0.16	0.14	0.34	0.37	0.22	0.07	0.08	0.07	0.17	0.15

O97	0.09	0.04	0.10	0.17	0.33	0.30	0.26	0.07	0.19	0.11	0.16	0.18
O98	0.04	0.12	0.21	0.24	0.32	0.24	0.23	0.09	0.13	0.14	0.18	0.18
O99	0.05	0.11	0.21	0.29	0.34	0.27	0.20	0.07	0.23	0.06	0.20	0.18
O100	0.05	0.17	0.19	0.10	0.11	0.06	0.02	0.04	0.11	0.22	0.12	0.11
O101	0.24	0.10	0.15	0.15	0.13	0.15	0.21	0.13	0.16	0.13	0.15	0.15
O102	0.11	0.08	0.15	0.12	0.33	0.36	0.20	0.02	0.02	0.04	0.14	0.11
O103	0.04	0.06	0.10	0.23	0.34	0.33	0.22	0.03	0.09	0.12	0.16	0.16
O104	0.05	0.07	0.15	0.14	0.36	0.36	0.18	0.04	0.29	0.18	0.18	0.21
O105	0.08	0.08	0.14	0.14	0.20	0.03	0.04	0.12	0.25	0.11	0.13	0.14
O106	0.06	0.11	0.16	0.25	0.39	0.34	0.11	0.11	0.08	0.07	0.19	0.16
O107	0.13	0.14	0.18	0.22	0.22	0.04	0.02	0.15	0.09	0.11	0.16	0.12
O108	0.03	0.07	0.03	0.06	0.11	0.08	0.05	0.07	0.17	0.15	0.08	0.11
O109	0.03	0.07	0.07	0.14	0.15	0.08	0.03	0.15	0.17	0.10	0.11	0.12
O110	0.02	0.06	0.08	0.13	0.14	0.16	0.08	0.20	0.09	0.06	0.11	0.12
O111	0.07	0.09	0.10	0.07	0.07	0.03	0.09	0.28	0.32	0.28	0.13	0.20
O112	0.14	0.17	0.16	0.10	0.18	0.09	0.04	0.05	0.11	0.21	0.13	0.12
O113	0.22	0.11	0.05	0.15	0.14	0.09	0.21	0.25	0.30	0.34	0.17	0.24
O114	0.12	0.05	0.12	0.06	0.26	0.13	0.16	0.15	0.30	0.23	0.14	0.20
O115	0.18	0.14	0.18	0.25	0.19	0.06	0.08	0.07	0.06	0.05	0.15	0.09
O116	0.13	0.02	0.12	0.16	0.05	0.11	0.06	0.10	0.11	0.03	0.10	0.08
O117	0.16	0.07	0.07	0.07	0.04	0.06	0.06	0.06	0.06	0.05	0.07	0.06
O118	0.06	0.07	0.13	0.11	0.24	0.10	0.16	0.12	0.08	0.16	0.12	0.13
O119	0.02	0.04	0.10	0.06	0.06	0.07	0.13	0.13	0.10	0.05	0.07	0.09
O120	0.04	0.07	0.15	0.11	0.19	0.08	0.03	0.02	0.12	0.16	0.11	0.10
O121	0.05	0.03	0.05	0.07	0.04	0.05	0.14	0.14	0.09	0.01	0.06	0.07
O122	0.11	0.11	0.06	0.16	0.06	0.08	0.07	0.04	0.14	0.20	0.11	0.12
O123	0.18	0.12	0.09	0.13	0.14	0.10	0.13	0.20	0.12	0.12	0.13	0.14
O124	0.09	0.14	0.04	0.06	0.24	0.15	0.04	0.06	0.14	0.23	0.12	0.14
O125	0.04	0.29	0.33	0.38	0.16	0.12	0.04	0.18	0.10	0.25	0.23	0.18
O126	0.06	0.05	0.06	0.05	0.13	0.09	0.14	0.13	0.15	0.18	0.09	0.13
O127	0.09	0.06	0.09	0.09	0.12	0.09	0.18	0.21	0.13	0.05	0.10	0.12
O128	0.16	0.07	0.03	0.08	0.06	0.08	0.18	0.22	0.19	0.08	0.10	0.14
O129	0.20	0.04	0.04	0.03	0.10	0.09	0.10	0.22	0.17	0.06	0.09	0.12
O130	0.08	0.26	0.29	0.31	0.15	0.11	0.06	0.19	0.01	0.07	0.19	0.11
O131	0.12	0.07	0.25	0.07	0.11	0.09	0.02	0.08	0.09	0.27	0.12	0.12
O132	0.31	0.19	0.13	0.13	0.13	0.11	0.07	0.08	0.15	0.22	0.16	0.14
O133	0.31	0.13	0.04	0.10	0.16	0.09	0.03	0.12	0.16	0.26	0.14	0.15
O134	0.29	0.16	0.06	0.12	0.06	0.06	0.00	0.13	0.20	0.31	0.14	0.16
O135	0.35	0.30	0.22	0.14	0.17	0.17	0.18	0.14	0.26	0.35	0.22	0.22
O136	0.29	0.34	0.17	0.23	0.15	0.20	0.22	0.20	0.24	0.39	0.24	0.25
O137	0.32	0.15	0.02	0.15	0.07	0.07	0.01	0.14	0.18	0.30	0.15	0.16
O138	0.32	0.33	0.18	0.18	0.19	0.13	0.07	0.12	0.21	0.27	0.21	0.18
O139	0.32	0.27	0.18	0.13	0.16	0.09	0.02	0.16	0.22	0.33	0.20	0.18
O140	0.35	0.34	0.27	0.21	0.22	0.14	0.06	0.13	0.28	0.40	0.26	0.23
O141	0.26	0.09	0.07	0.16	0.15	0.14	0.11	0.18	0.25	0.37	0.17	0.22
O142	0.35	0.36	0.33	0.29	0.16	0.17	0.21	0.22	0.34	0.41	0.29	0.28
O143	0.29	0.28	0.27	0.29	0.18	0.14	0.20	0.19	0.09	0.22	0.23	0.18
O144	0.32	0.34	0.32	0.35	0.22	0.29	0.26	0.11	0.27	0.24	0.29	0.24
O145	0.34	0.35	0.34	0.42	0.23	0.36	0.28	0.16	0.27	0.41	0.33	0.30
O146	0.32	0.34	0.29	0.37	0.21	0.32	0.24	0.16	0.15	0.30	0.29	0.24

O147	0.33	0.34	0.30	0.39	0.25	0.19	0.17	0.14	0.17	0.30	0.29	0.23
O148	0.33	0.33	0.30	0.40	0.26	0.25	0.19	0.17	0.41	0.40	0.33	0.31
O149	0.32	0.34	0.35	0.35	0.22	0.18	0.16	0.11	0.27	0.34	0.29	0.24
O150	0.34	0.35	0.38	0.26	0.17	0.22	0.14	0.07	0.38	0.30	0.28	0.24
O151	0.35	0.35	0.30	0.42	0.26	0.22	0.16	0.14	0.22	0.31	0.31	0.25
O152	0.35	0.36	0.35	0.41	0.29	0.27	0.18	0.18	0.24	0.23	0.32	0.25
O153	0.31	0.33	0.35	0.37	0.24	0.23	0.18	0.18	0.38	0.38	0.32	0.30
O154	0.31	0.33	0.36	0.28	0.22	0.17	0.13	0.13	0.25	0.20	0.26	0.20
O155	0.33	0.34	0.28	0.40	0.26	0.24	0.21	0.21	0.42	0.41	0.33	0.32
O156	0.35	0.35	0.33	0.37	0.28	0.21	0.23	0.22	0.43	0.37	0.33	0.32
O157	0.32	0.33	0.31	0.40	0.25	0.21	0.19	0.19	0.40	0.41	0.33	0.31
O158	0.36	0.38	0.33	0.41	0.29	0.15	0.22	0.19	0.32	0.38	0.33	0.29
O159	0.34	0.36	0.29	0.36	0.31	0.35	0.23	0.19	0.28	0.34	0.32	0.29
O160	0.33	0.35	0.35	0.41	0.25	0.12	0.21	0.19	0.32	0.36	0.32	0.28
O161	0.31	0.34	0.37	0.34	0.24	0.14	0.16	0.11	0.20	0.32	0.28	0.22
O162	0.36	0.37	0.31	0.40	0.30	0.15	0.24	0.22	0.39	0.45	0.34	0.33
O163	0.36	0.37	0.35	0.33	0.30	0.25	0.25	0.23	0.45	0.47	0.34	0.35
O164	0.34	0.36	0.31	0.31	0.38	0.41	0.23	0.19	0.30	0.39	0.33	0.31
O165	0.36	0.37	0.35	0.40	0.39	0.45	0.25	0.18	0.36	0.47	0.37	0.36
O166	0.34	0.36	0.36	0.38	0.28	0.33	0.21	0.20	0.23	0.35	0.33	0.28
O167	0.34	0.36	0.39	0.42	0.28	0.21	0.18	0.16	0.25	0.29	0.32	0.25
O168	0.35	0.37	0.35	0.42	0.37	0.47	0.25	0.22	0.34	0.46	0.38	0.36
O169	0.34	0.35	0.38	0.39	0.28	0.37	0.20	0.18	0.22	0.34	0.33	0.27
O170	0.34	0.34	0.33	0.33	0.26	0.19	0.10	0.14	0.19	0.30	0.28	0.22
O171	0.32	0.33	0.37	0.25	0.19	0.16	0.16	0.02	0.11	0.19	0.23	0.15
O172	0.31	0.32	0.26	0.29	0.29	0.32	0.16	0.17	0.18	0.22	0.27	0.22
O173	0.34	0.33	0.40	0.29	0.21	0.35	0.19	0.21	0.30	0.32	0.31	0.27
O174	0.35	0.37	0.31	0.34	0.38	0.44	0.22	0.21	0.23	0.35	0.33	0.30
O175	0.34	0.35	0.34	0.29	0.30	0.44	0.35	0.20	0.40	0.32	0.33	0.33
O176	0.33	0.29	0.28	0.31	0.25	0.37	0.22	0.11	0.16	0.31	0.27	0.23
O177	0.35	0.36	0.38	0.31	0.28	0.39	0.33	0.17	0.25	0.37	0.32	0.29
P1	0.25	0.24	0.31	0.21	0.23	0.43	0.15	0.08	0.04	0.12	0.22	0.15
P2	0.06	0.23	0.37	0.11	0.11	0.19	0.22	0.09	0.05	0.03	0.15	0.10
P3	0.11	0.26	0.23	0.23	0.11	0.07	0.21	0.07	0.03	0.06	0.15	0.10
P4	0.36	0.34	0.14	0.18	0.08	0.06	0.23	0.08	0.10	0.02	0.16	0.10
P5	0.22	0.23	0.08	0.21	0.25	0.31	0.25	0.07	0.05	0.07	0.17	0.14
P6	0.13	0.04	0.07	0.11	0.25	0.30	0.29	0.05	0.06	0.05	0.12	0.13
P7	0.35	0.25	0.21	0.14	0.26	0.35	0.21	0.28	0.33	0.20	0.24	0.25
P8	0.33	0.19	0.25	0.22	0.21	0.28	0.19	0.20	0.22	0.16	0.23	0.21
P9	0.33	0.21	0.22	0.26	0.16	0.18	0.25	0.30	0.23	0.12	0.23	0.21
P10	0.03	0.13	0.32	0.27	0.18	0.15	0.06	0.09	0.09	0.15	0.18	0.13
P11	0.03	0.13	0.15	0.20	0.21	0.15	0.12	0.06	0.05	0.09	0.13	0.11
P12	0.14	0.06	0.16	0.18	0.16	0.16	0.19	0.12	0.04	0.17	0.14	0.13
P13	0.22	0.11	0.16	0.21	0.18	0.17	0.21	0.08	0.07	0.03	0.15	0.11
P14	0.22	0.20	0.11	0.21	0.16	0.11	0.22	0.11	0.16	0.14	0.17	0.16
P15	0.06	0.04	0.07	0.09	0.10	0.04	0.05	0.11	0.23	0.12	0.09	0.12
P16	0.10	0.08	0.08	0.12	0.10	0.02	0.04	0.08	0.25	0.14	0.11	0.13
P17	0.13	0.11	0.11	0.09	0.07	0.03	0.03	0.09	0.26	0.12	0.11	0.12
P18	0.08	0.12	0.19	0.07	0.18	0.13	0.14	0.10	0.27	0.04	0.13	0.13
P19	0.07	0.07	0.13	0.11	0.12	0.05	0.10	0.10	0.20	0.05	0.10	0.11

P20	0.09	0.20	0.09	0.12	0.14	0.15	0.12	0.07	0.13	0.16	0.13	0.13
P21	0.08	0.19	0.13	0.09	0.20	0.21	0.19	0.10	0.14	0.24	0.14	0.17
P22	0.08	0.04	0.10	0.10	0.23	0.22	0.15	0.06	0.19	0.21	0.13	0.16
P23	0.11	0.07	0.11	0.09	0.24	0.19	0.08	0.02	0.03	0.26	0.12	0.12
P24	0.06	0.13	0.16	0.08	0.26	0.16	0.16	0.15	0.19	0.35	0.16	0.21
P25	0.05	0.19	0.07	0.13	0.26	0.15	0.13	0.15	0.21	0.19	0.15	0.18
P26	0.05	0.05	0.03	0.07	0.23	0.13	0.07	0.04	0.12	0.20	0.10	0.13
P27	0.04	0.04	0.10	0.07	0.24	0.15	0.12	0.09	0.10	0.11	0.10	0.12
P28	0.07	0.07	0.13	0.12	0.23	0.15	0.14	0.13	0.16	0.09	0.13	0.14
P29	0.08	0.04	0.05	0.14	0.22	0.13	0.17	0.07	0.09	0.08	0.10	0.11
P30	0.06	0.07	0.16	0.21	0.29	0.27	0.29	0.13	0.29	0.09	0.18	0.21
P31	0.09	0.07	0.11	0.06	0.04	0.03	0.12	0.17	0.11	0.17	0.09	0.11
P32	0.17	0.04	0.06	0.04	0.05	0.02	0.18	0.21	0.26	0.21	0.10	0.17
P33	0.06	0.03	0.07	0.03	0.06	0.05	0.16	0.22	0.26	0.08	0.08	0.14
P34	0.30	0.32	0.31	0.35	0.10	0.08	0.07	0.18	0.23	0.20	0.25	0.19
P35	0.24	0.37	0.37	0.37	0.17	0.13	0.10	0.14	0.08	0.15	0.25	0.15
P36	0.31	0.31	0.33	0.33	0.19	0.14	0.21	0.16	0.04	0.25	0.25	0.18
P37	0.33	0.34	0.36	0.28	0.17	0.26	0.13	0.07	0.33	0.27	0.27	0.22
P38	0.33	0.35	0.37	0.25	0.17	0.18	0.12	0.08	0.36	0.23	0.26	0.21
P39	0.34	0.36	0.39	0.24	0.17	0.13	0.10	0.15	0.28	0.18	0.25	0.19
P40	0.31	0.33	0.36	0.25	0.22	0.17	0.14	0.09	0.19	0.25	0.25	0.19
P41	0.31	0.33	0.37	0.30	0.22	0.21	0.12	0.13	0.18	0.30	0.27	0.21
P42	0.31	0.34	0.38	0.33	0.23	0.13	0.15	0.06	0.18	0.30	0.27	0.20
P43	0.33	0.35	0.39	0.36	0.20	0.11	0.16	0.12	0.15	0.29	0.28	0.20
P44	0.34	0.36	0.39	0.40	0.25	0.15	0.19	0.14	0.19	0.28	0.30	0.23
P45	0.33	0.35	0.35	0.33	0.18	0.12	0.16	0.13	0.33	0.31	0.28	0.24
P46	0.33	0.33	0.30	0.32	0.16	0.10	0.14	0.12	0.17	0.27	0.25	0.19
P47	0.33	0.34	0.35	0.25	0.12	0.06	0.07	0.10	0.13	0.25	0.23	0.15
P48	0.34	0.36	0.38	0.21	0.10	0.07	0.09	0.07	0.12	0.14	0.21	0.12
P49	0.28	0.28	0.10	0.11	0.03	0.05	0.01	0.04	0.07	0.14	0.12	0.07
P50	0.11	0.10	0.26	0.18	0.12	0.04	0.13	0.03	0.04	0.03	0.12	0.07
S1	0.27	0.25	0.21	0.15	0.24	0.33	0.23	0.22	0.35	0.17	0.23	0.24
S2	0.05	0.06	0.07	0.20	0.21	0.20	0.16	0.04	0.05	0.13	0.12	0.12
S3	0.03	0.10	0.12	0.17	0.22	0.22	0.18	0.05	0.08	0.14	0.13	0.13
S4	0.04	0.12	0.15	0.10	0.04	0.14	0.10	0.04	0.04	0.05	0.09	0.06
S5	0.18	0.08	0.15	0.18	0.14	0.17	0.20	0.15	0.15	0.10	0.15	0.14
S6	0.02	0.06	0.08	0.08	0.08	0.11	0.04	0.03	0.14	0.01	0.07	0.07
S7	0.19	0.27	0.15	0.24	0.05	0.12	0.06	0.05	0.07	0.08	0.15	0.09
S8	0.12	0.26	0.23	0.28	0.17	0.16	0.21	0.06	0.12	0.08	0.19	0.14
S9	0.22	0.22	0.11	0.19	0.17	0.15	0.24	0.14	0.20	0.10	0.17	0.17
S10	0.32	0.21	0.09	0.32	0.16	0.12	0.13	0.13	0.15	0.13	0.20	0.16
S11	0.26	0.29	0.23	0.25	0.17	0.11	0.10	0.08	0.04	0.12	0.19	0.11
S12	0.29	0.34	0.04	0.25	0.07	0.09	0.11	0.06	0.04	0.11	0.16	0.10
S13	0.33	0.26	0.07	0.20	0.06	0.13	0.07	0.03	0.05	0.10	0.14	0.08
S14	0.16	0.08	0.05	0.16	0.08	0.11	0.06	0.14	0.01	0.07	0.10	0.08
S15	0.02	0.06	0.04	0.03	0.05	0.07	0.09	0.05	0.13	0.11	0.06	0.09
S16	0.27	0.23	0.09	0.10	0.18	0.11	0.09	0.08	0.09	0.07	0.13	0.09
S17	0.07	0.03	0.10	0.05	0.10	0.13	0.01	0.09	0.19	0.12	0.09	0.11
S18	0.08	0.16	0.09	0.03	0.08	0.10	0.15	0.01	0.09	0.06	0.07	0.07
S19	0.09	0.06	0.09	0.11	0.14	0.03	0.13	0.04	0.03	0.07	0.08	0.07

S20	0.21	0.05	0.02	0.11	0.03	0.01	0.03	0.03	0.02	0.04	0.06	0.04
S21	0.10	0.07	0.06	0.09	0.04	0.09	0.04	0.03	0.06	0.05	0.06	0.05
S22	0.14	0.02	0.18	0.04	0.08	0.05	0.15	0.05	0.11	0.05	0.08	0.08
S23	0.28	0.06	0.16	0.07	0.07	0.07	0.05	0.03	0.16	0.05	0.10	0.08
S24	0.06	0.28	0.18	0.13	0.04	0.05	0.01	0.04	0.04	0.05	0.11	0.05
S25	0.34	0.30	0.08	0.09	0.07	0.04	0.01	0.04	0.09	0.10	0.13	0.07
S26	0.26	0.11	0.09	0.06	0.09	0.03	0.02	0.05	0.08	0.03	0.09	0.05
S27	0.07	0.06	0.17	0.05	0.01	0.08	0.16	0.09	0.11	0.06	0.08	0.08
S28	0.02	0.04	0.14	0.02	0.01	0.07	0.22	0.12	0.10	0.07	0.06	0.09
S29	0.06	0.07	0.04	0.03	0.05	0.16	0.15	0.07	0.07	0.12	0.07	0.09
S30	0.04	0.05	0.04	0.05	0.03	0.15	0.15	0.03	0.06	0.09	0.06	0.07
S31	0.26	0.26	0.09	0.10	0.07	0.12	0.19	0.05	0.09	0.04	0.12	0.09
S32	0.06	0.13	0.11	0.21	0.08	0.23	0.21	0.09	0.19	0.13	0.14	0.16

Appendix D – Detailed Velocity Ratio for Each Test Point for Proposed Scheme

Proposed Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.31	0.41	0.36	0.19	0.22	0.28	0.22	0.23	0.34	0.30	0.29	0.27
O2	0.24	0.31	0.32	0.20	0.10	0.15	0.11	0.17	0.37	0.30	0.23	0.23
O3	0.32	0.33	0.31	0.45	0.11	0.12	0.14	0.22	0.39	0.32	0.31	0.27
O4	0.32	0.35	0.34	0.38	0.06	0.06	0.15	0.27	0.39	0.31	0.29	0.26
O5	0.29	0.36	0.33	0.30	0.03	0.11	0.12	0.25	0.36	0.31	0.26	0.24
O6	0.34	0.39	0.37	0.11	0.17	0.26	0.14	0.17	0.36	0.24	0.25	0.22
O7	0.36	0.37	0.31	0.28	0.21	0.35	0.22	0.20	0.33	0.29	0.30	0.27
O8	0.36	0.34	0.28	0.25	0.09	0.41	0.19	0.21	0.28	0.32	0.27	0.26
O9	0.38	0.37	0.35	0.21	0.18	0.28	0.19	0.18	0.28	0.26	0.27	0.23
O10	0.35	0.37	0.39	0.18	0.13	0.18	0.16	0.26	0.22	0.20	0.25	0.20
O11	0.33	0.38	0.33	0.37	0.11	0.14	0.18	0.28	0.30	0.30	0.29	0.26
O12	0.33	0.38	0.37	0.24	0.07	0.09	0.20	0.31	0.37	0.31	0.27	0.26
O13	0.34	0.42	0.36	0.29	0.07	0.06	0.30	0.31	0.19	0.30	0.27	0.23
O14	0.29	0.37	0.39	0.32	0.11	0.11	0.20	0.30	0.14	0.13	0.26	0.18
O15	0.30	0.34	0.38	0.16	0.14	0.18	0.15	0.29	0.15	0.21	0.23	0.19
O16	0.35	0.35	0.28	0.27	0.25	0.35	0.22	0.18	0.21	0.31	0.28	0.25
O17	0.29	0.38	0.36	0.29	0.17	0.43	0.19	0.20	0.24	0.27	0.29	0.25
O18	0.14	0.26	0.32	0.35	0.25	0.31	0.16	0.16	0.11	0.10	0.24	0.18
O19	0.14	0.26	0.34	0.27	0.23	0.40	0.23	0.24	0.25	0.28	0.27	0.27
O20	0.23	0.34	0.29	0.25	0.19	0.30	0.16	0.30	0.20	0.28	0.26	0.24
O21	0.16	0.30	0.37	0.19	0.10	0.13	0.21	0.29	0.18	0.24	0.22	0.21
O22	0.17	0.33	0.39	0.32	0.08	0.10	0.25	0.27	0.03	0.04	0.22	0.14
O23	0.23	0.40	0.34	0.28	0.16	0.11	0.31	0.31	0.14	0.26	0.26	0.23
O24	0.31	0.29	0.23	0.25	0.09	0.12	0.19	0.14	0.32	0.25	0.23	0.21
O25	0.12	0.15	0.25	0.26	0.19	0.29	0.10	0.20	0.30	0.30	0.23	0.24
O26	0.15	0.27	0.33	0.27	0.26	0.35	0.16	0.29	0.25	0.30	0.27	0.27
O27	0.35	0.27	0.16	0.08	0.25	0.35	0.23	0.24	0.30	0.25	0.22	0.25
O28	0.30	0.22	0.06	0.13	0.14	0.14	0.26	0.29	0.42	0.30	0.20	0.27
O29	0.25	0.19	0.04	0.20	0.19	0.34	0.25	0.25	0.28	0.13	0.20	0.23
O30	0.29	0.15	0.03	0.14	0.12	0.25	0.15	0.21	0.46	0.28	0.19	0.26
O31	0.27	0.15	0.05	0.06	0.15	0.19	0.02	0.04	0.42	0.04	0.14	0.15
O32	0.25	0.11	0.03	0.11	0.15	0.08	0.07	0.10	0.40	0.09	0.14	0.16
O33	0.06	0.04	0.03	0.12	0.12	0.26	0.10	0.05	0.03	0.11	0.09	0.10
O34	0.12	0.11	0.06	0.12	0.07	0.19	0.08	0.18	0.03	0.14	0.11	0.11
O35	0.06	0.06	0.12	0.10	0.05	0.45	0.20	0.14	0.14	0.16	0.13	0.16
O36	0.09	0.11	0.03	0.06	0.08	0.21	0.07	0.03	0.08	0.08	0.08	0.08
O37	0.07	0.03	0.05	0.07	0.05	0.09	0.13	0.17	0.21	0.26	0.10	0.16
O38	0.11	0.10	0.09	0.05	0.08	0.05	0.06	0.06	0.09	0.16	0.08	0.09
O39	0.11	0.17	0.14	0.14	0.13	0.11	0.15	0.13	0.08	0.12	0.13	0.12
O40	0.09	0.03	0.06	0.06	0.30	0.24	0.26	0.16	0.09	0.10	0.12	0.16
O41	0.27	0.23	0.23	0.19	0.32	0.21	0.19	0.03	0.02	0.06	0.19	0.11
O42	0.22	0.22	0.27	0.22	0.15	0.12	0.18	0.08	0.04	0.16	0.18	0.12
O43	0.28	0.16	0.26	0.21	0.14	0.14	0.17	0.10	0.04	0.11	0.17	0.11
O44	0.13	0.09	0.08	0.22	0.06	0.13	0.20	0.17	0.19	0.09	0.14	0.15
O45	0.20	0.16	0.09	0.15	0.18	0.06	0.05	0.15	0.16	0.07	0.14	0.12
O46	0.11	0.24	0.14	0.06	0.26	0.24	0.16	0.08	0.06	0.26	0.15	0.15

O47	0.19	0.29	0.07	0.06	0.35	0.26	0.23	0.19	0.10	0.37	0.19	0.22
O48	0.07	0.27	0.13	0.05	0.20	0.24	0.22	0.19	0.14	0.34	0.17	0.21
O49	0.06	0.22	0.09	0.12	0.21	0.16	0.16	0.09	0.08	0.10	0.13	0.12
O50	0.06	0.17	0.22	0.06	0.16	0.17	0.20	0.10	0.05	0.17	0.12	0.12
O51	0.19	0.19	0.10	0.05	0.12	0.13	0.15	0.08	0.19	0.05	0.12	0.11
O52	0.04	0.23	0.08	0.04	0.29	0.19	0.08	0.03	0.02	0.23	0.12	0.12
O53	0.08	0.13	0.17	0.30	0.37	0.27	0.22	0.05	0.07	0.21	0.20	0.18
O54	0.13	0.13	0.17	0.24	0.13	0.14	0.15	0.02	0.04	0.09	0.14	0.10
O55	0.07	0.04	0.08	0.17	0.08	0.08	0.12	0.05	0.01	0.10	0.09	0.08
O56	0.13	0.28	0.01	0.02	0.29	0.25	0.22	0.19	0.10	0.36	0.16	0.21
O57	0.07	0.24	0.22	0.25	0.25	0.18	0.22	0.05	0.09	0.08	0.18	0.14
O58	0.15	0.16	0.24	0.28	0.24	0.17	0.10	0.03	0.04	0.07	0.17	0.11
O59	0.07	0.11	0.14	0.16	0.10	0.10	0.07	0.03	0.05	0.08	0.10	0.08
O60	0.10	0.16	0.08	0.10	0.02	0.07	0.09	0.04	0.07	0.06	0.08	0.06
O61	0.14	0.11	0.03	0.03	0.09	0.04	0.08	0.08	0.08	0.10	0.07	0.08
O62	0.10	0.05	0.09	0.16	0.10	0.09	0.14	0.04	0.13	0.16	0.11	0.12
O63	0.22	0.13	0.28	0.18	0.24	0.04	0.03	0.09	0.11	0.05	0.16	0.10
O64	0.14	0.05	0.22	0.18	0.22	0.02	0.17	0.06	0.13	0.14	0.14	0.13
O65	0.18	0.15	0.13	0.10	0.16	0.04	0.14	0.02	0.17	0.19	0.13	0.13
O66	0.20	0.15	0.08	0.03	0.09	0.14	0.07	0.13	0.20	0.20	0.12	0.14
O67	0.19	0.09	0.14	0.11	0.23	0.09	0.04	0.10	0.14	0.27	0.15	0.15
O68	0.16	0.16	0.13	0.07	0.16	0.08	0.07	0.13	0.21	0.31	0.15	0.17
O69	0.04	0.05	0.04	0.08	0.21	0.17	0.11	0.05	0.14	0.06	0.09	0.11
O70	0.11	0.19	0.18	0.20	0.34	0.22	0.21	0.10	0.22	0.20	0.20	0.20
O71	0.20	0.16	0.14	0.18	0.16	0.11	0.08	0.08	0.31	0.26	0.18	0.19
O72	0.03	0.04	0.17	0.25	0.30	0.23	0.13	0.09	0.22	0.22	0.18	0.20
O73	0.17	0.15	0.13	0.07	0.14	0.14	0.04	0.03	0.05	0.10	0.11	0.08
O74	0.16	0.17	0.16	0.11	0.15	0.11	0.15	0.08	0.16	0.16	0.14	0.13
O75	0.16	0.23	0.05	0.03	0.14	0.11	0.09	0.08	0.32	0.32	0.14	0.19
O76	0.15	0.12	0.19	0.25	0.42	0.23	0.02	0.07	0.07	0.13	0.20	0.15
O77	0.12	0.17	0.16	0.27	0.35	0.23	0.21	0.15	0.28	0.38	0.24	0.28
O78	0.08	0.21	0.15	0.31	0.27	0.19	0.24	0.21	0.34	0.38	0.24	0.29
O79	0.14	0.12	0.13	0.28	0.31	0.20	0.18	0.16	0.28	0.35	0.22	0.26
O80	0.13	0.06	0.13	0.33	0.40	0.22	0.19	0.19	0.26	0.28	0.23	0.26
O81	0.08	0.08	0.06	0.03	0.08	0.14	0.22	0.25	0.32	0.31	0.13	0.22
O82	0.07	0.08	0.13	0.10	0.05	0.04	0.04	0.08	0.03	0.15	0.09	0.08
O83	0.18	0.28	0.14	0.09	0.11	0.11	0.06	0.12	0.20	0.17	0.15	0.14
O84	0.02	0.01	0.19	0.11	0.07	0.12	0.16	0.12	0.18	0.27	0.12	0.16
O85	0.06	0.08	0.03	0.15	0.05	0.07	0.06	0.06	0.07	0.17	0.09	0.10
O86	0.03	0.03	0.18	0.04	0.04	0.07	0.05	0.12	0.16	0.17	0.09	0.11
O87	0.02	0.09	0.13	0.03	0.02	0.03	0.03	0.03	0.05	0.18	0.06	0.07
O88	0.06	0.08	0.26	0.06	0.06	0.11	0.06	0.03	0.05	0.11	0.09	0.07
O89	0.08	0.02	0.09	0.11	0.14	0.09	0.16	0.13	0.03	0.21	0.10	0.12
O90	0.15	0.11	0.05	0.14	0.19	0.16	0.15	0.03	0.24	0.24	0.14	0.17
O91	0.06	0.19	0.06	0.10	0.21	0.19	0.06	0.25	0.34	0.22	0.17	0.22
O92	0.04	0.16	0.04	0.12	0.34	0.14	0.29	0.24	0.21	0.22	0.16	0.22
O93	0.10	0.01	0.10	0.04	0.07	0.01	0.08	0.06	0.03	0.09	0.06	0.06
O94	0.11	0.04	0.16	0.13	0.35	0.30	0.34	0.23	0.03	0.08	0.16	0.17
O95	0.13	0.14	0.13	0.20	0.18	0.21	0.12	0.23	0.26	0.08	0.17	0.18
O96	0.10	0.10	0.18	0.16	0.37	0.34	0.25	0.10	0.06	0.02	0.16	0.14

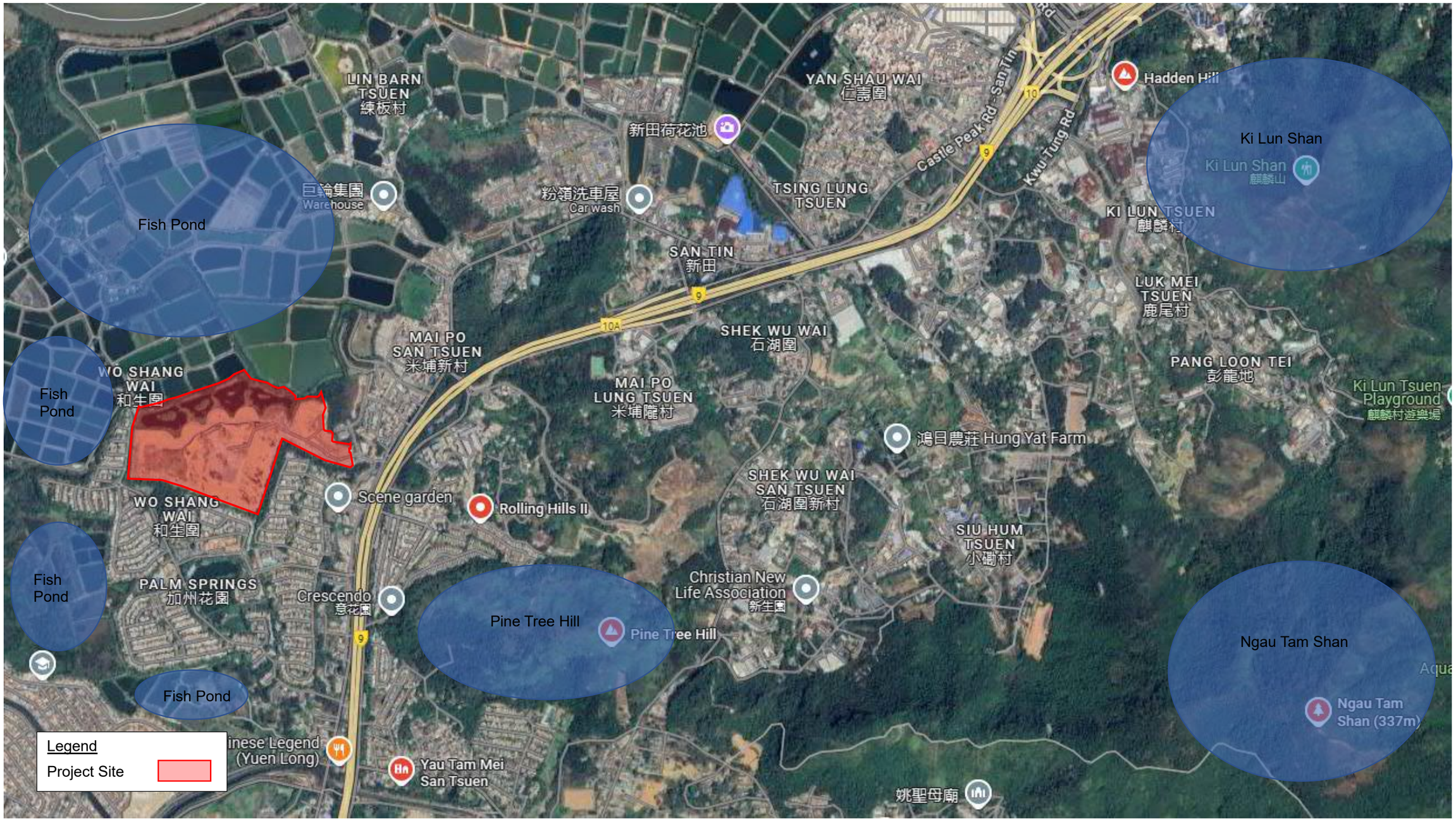
O97	0.14	0.18	0.12	0.21	0.33	0.18	0.23	0.11	0.09	0.05	0.17	0.14
O98	0.09	0.17	0.14	0.26	0.31	0.24	0.28	0.24	0.04	0.12	0.19	0.18
O99	0.12	0.02	0.06	0.16	0.18	0.16	0.16	0.11	0.19	0.09	0.12	0.15
O100	0.07	0.05	0.07	0.03	0.13	0.14	0.04	0.14	0.12	0.23	0.10	0.13
O101	0.20	0.08	0.04	0.04	0.16	0.16	0.17	0.11	0.13	0.13	0.10	0.13
O102	0.13	0.18	0.18	0.13	0.34	0.31	0.24	0.10	0.06	0.01	0.16	0.13
O103	0.10	0.15	0.10	0.26	0.35	0.22	0.24	0.13	0.10	0.08	0.18	0.17
O104	0.12	0.19	0.20	0.16	0.36	0.33	0.19	0.09	0.14	0.14	0.19	0.18
O105	0.07	0.04	0.10	0.14	0.21	0.03	0.06	0.02	0.22	0.10	0.11	0.12
O106	0.09	0.17	0.12	0.30	0.40	0.28	0.26	0.14	0.09	0.06	0.20	0.18
O107	0.08	0.05	0.08	0.20	0.19	0.09	0.10	0.10	0.06	0.04	0.11	0.10
O108	0.05	0.07	0.04	0.06	0.10	0.03	0.04	0.03	0.14	0.10	0.07	0.08
O109	0.07	0.10	0.07	0.15	0.14	0.07	0.05	0.03	0.14	0.10	0.10	0.10
O110	0.02	0.08	0.11	0.10	0.15	0.16	0.18	0.12	0.06	0.09	0.10	0.11
O111	0.04	0.07	0.05	0.07	0.07	0.03	0.06	0.28	0.32	0.26	0.12	0.20
O112	0.07	0.02	0.09	0.07	0.17	0.12	0.05	0.07	0.04	0.15	0.09	0.09
O113	0.24	0.06	0.11	0.12	0.21	0.15	0.17	0.27	0.31	0.32	0.18	0.24
O114	0.22	0.07	0.06	0.05	0.29	0.18	0.14	0.18	0.31	0.24	0.16	0.21
O115	0.22	0.06	0.04	0.09	0.06	0.08	0.07	0.04	0.03	0.05	0.07	0.06
O116	0.18	0.08	0.03	0.06	0.01	0.10	0.16	0.14	0.16	0.12	0.09	0.12
O117	0.19	0.06	0.03	0.03	0.05	0.04	0.04	0.04	0.05	0.09	0.06	0.05
O118	0.19	0.06	0.01	0.01	0.06	0.14	0.17	0.14	0.17	0.14	0.09	0.13
O119	0.01	0.07	0.14	0.08	0.10	0.18	0.21	0.19	0.35	0.16	0.13	0.20
O120	0.05	0.16	0.15	0.11	0.04	0.04	0.13	0.08	0.15	0.13	0.10	0.11
O121	0.26	0.29	0.17	0.05	0.10	0.02	0.03	0.20	0.27	0.14	0.16	0.14
O122	0.14	0.03	0.05	0.15	0.11	0.05	0.11	0.12	0.24	0.25	0.13	0.17
O123	0.13	0.08	0.12	0.15	0.10	0.12	0.02	0.25	0.18	0.16	0.14	0.15
O124	0.13	0.09	0.10	0.16	0.04	0.09	0.04	0.05	0.16	0.23	0.12	0.13
O125	0.28	0.31	0.34	0.26	0.16	0.09	0.05	0.20	0.14	0.28	0.24	0.18
O126	0.11	0.07	0.14	0.11	0.16	0.17	0.20	0.18	0.33	0.16	0.15	0.20
O127	0.19	0.08	0.13	0.09	0.07	0.10	0.26	0.24	0.35	0.20	0.15	0.21
O128	0.31	0.34	0.20	0.05	0.13	0.12	0.00	0.25	0.27	0.17	0.19	0.16
O129	0.19	0.07	0.05	0.03	0.09	0.10	0.08	0.24	0.09	0.14	0.09	0.12
O130	0.10	0.23	0.27	0.26	0.15	0.06	0.04	0.23	0.03	0.12	0.18	0.13
O131	0.12	0.08	0.22	0.21	0.09	0.02	0.01	0.10	0.13	0.30	0.15	0.14
O132	0.29	0.04	0.09	0.10	0.01	0.15	0.12	0.15	0.19	0.22	0.12	0.15
O133	0.23	0.16	0.11	0.12	0.12	0.03	0.15	0.16	0.17	0.25	0.14	0.16
O134	0.26	0.19	0.09	0.06	0.09	0.06	0.15	0.20	0.24	0.31	0.15	0.19
O135	0.35	0.23	0.13	0.09	0.05	0.11	0.14	0.21	0.29	0.37	0.18	0.22
O136	0.27	0.35	0.17	0.21	0.14	0.12	0.16	0.25	0.25	0.33	0.23	0.23
O137	0.30	0.19	0.03	0.16	0.16	0.02	0.20	0.19	0.19	0.30	0.17	0.19
O138	0.34	0.34	0.18	0.18	0.21	0.10	0.14	0.16	0.24	0.30	0.22	0.21
O139	0.32	0.19	0.13	0.14	0.04	0.09	0.13	0.22	0.25	0.34	0.18	0.21
O140	0.32	0.35	0.25	0.17	0.08	0.08	0.23	0.17	0.27	0.36	0.22	0.22
O141	0.22	0.10	0.07	0.22	0.15	0.08	0.07	0.23	0.26	0.35	0.18	0.22
O142	0.35	0.36	0.31	0.29	0.19	0.11	0.18	0.24	0.33	0.42	0.29	0.28
O143	0.28	0.28	0.28	0.32	0.17	0.09	0.03	0.26	0.10	0.21	0.24	0.17
O144	0.32	0.34	0.34	0.41	0.27	0.16	0.04	0.09	0.33	0.30	0.30	0.24
O145	0.34	0.35	0.34	0.33	0.30	0.19	0.10	0.23	0.28	0.42	0.31	0.28
O146	0.32	0.34	0.32	0.35	0.29	0.15	0.09	0.23	0.25	0.33	0.30	0.25

O147	0.32	0.34	0.32	0.31	0.30	0.21	0.18	0.22	0.14	0.27	0.28	0.23
O148	0.31	0.33	0.33	0.32	0.27	0.27	0.06	0.13	0.36	0.39	0.30	0.27
O149	0.31	0.33	0.37	0.38	0.28	0.16	0.17	0.19	0.23	0.34	0.30	0.25
O150	0.32	0.35	0.39	0.44	0.24	0.11	0.16	0.14	0.28	0.34	0.31	0.25
O151	0.34	0.35	0.30	0.33	0.30	0.24	0.18	0.21	0.16	0.29	0.29	0.24
O152	0.35	0.36	0.34	0.41	0.27	0.28	0.18	0.24	0.24	0.28	0.32	0.27
O153	0.30	0.32	0.36	0.30	0.27	0.26	0.02	0.08	0.31	0.40	0.29	0.25
O154	0.29	0.33	0.37	0.42	0.26	0.22	0.00	0.08	0.20	0.29	0.30	0.21
O155	0.32	0.33	0.29	0.37	0.19	0.27	0.02	0.10	0.37	0.40	0.30	0.27
O156	0.34	0.35	0.33	0.39	0.20	0.27	0.05	0.16	0.34	0.34	0.31	0.26
O157	0.31	0.33	0.34	0.34	0.18	0.26	0.05	0.05	0.34	0.42	0.29	0.25
O158	0.35	0.37	0.37	0.43	0.27	0.28	0.18	0.13	0.28	0.43	0.34	0.29
O159	0.33	0.35	0.31	0.39	0.23	0.19	0.18	0.15	0.24	0.42	0.30	0.27
O160	0.32	0.35	0.37	0.38	0.19	0.24	0.15	0.04	0.28	0.41	0.30	0.25
O161	0.29	0.33	0.38	0.33	0.19	0.23	0.12	0.09	0.17	0.35	0.27	0.21
O162	0.35	0.37	0.31	0.42	0.28	0.29	0.17	0.06	0.33	0.47	0.33	0.30
O163	0.35	0.37	0.35	0.37	0.27	0.29	0.19	0.05	0.38	0.46	0.33	0.30
O164	0.33	0.36	0.31	0.35	0.24	0.15	0.19	0.18	0.27	0.44	0.30	0.28
O165	0.34	0.36	0.35	0.37	0.32	0.20	0.20	0.20	0.32	0.48	0.34	0.32
O166	0.33	0.35	0.38	0.41	0.23	0.18	0.17	0.06	0.19	0.41	0.30	0.24
O167	0.33	0.35	0.40	0.34	0.26	0.23	0.15	0.05	0.12	0.39	0.29	0.22
O168	0.34	0.36	0.35	0.39	0.34	0.26	0.20	0.18	0.31	0.47	0.34	0.32
O169	0.32	0.35	0.39	0.41	0.22	0.13	0.14	0.03	0.15	0.41	0.29	0.22
O170	0.31	0.33	0.31	0.31	0.24	0.07	0.09	0.02	0.07	0.28	0.23	0.15
O171	0.27	0.32	0.40	0.22	0.10	0.02	0.05	0.06	0.17	0.12	0.20	0.11
O172	0.28	0.30	0.29	0.21	0.23	0.41	0.25	0.23	0.16	0.14	0.25	0.21
O173	0.33	0.32	0.38	0.31	0.21	0.27	0.15	0.28	0.27	0.28	0.30	0.26
O174	0.34	0.36	0.34	0.38	0.24	0.19	0.17	0.03	0.20	0.42	0.29	0.24
O175	0.33	0.35	0.37	0.33	0.36	0.47	0.30	0.13	0.13	0.42	0.32	0.28
O176	0.30	0.30	0.30	0.32	0.16	0.11	0.10	0.13	0.05	0.26	0.23	0.16
O177	0.33	0.35	0.39	0.35	0.37	0.47	0.31	0.16	0.11	0.37	0.33	0.28
P1	0.19	0.17	0.33	0.38	0.13	0.24	0.31	0.21	0.13	0.17	0.24	0.21
P2	0.20	0.11	0.10	0.21	0.29	0.23	0.26	0.20	0.12	0.06	0.17	0.17
P3	0.12	0.05	0.14	0.45	0.23	0.12	0.23	0.16	0.12	0.14	0.20	0.19
P4	0.15	0.17	0.09	0.35	0.06	0.10	0.25	0.16	0.10	0.12	0.17	0.15
P5	0.24	0.28	0.10	0.08	0.19	0.27	0.18	0.10	0.06	0.07	0.15	0.12
P6	0.30	0.32	0.03	0.08	0.21	0.29	0.22	0.13	0.31	0.26	0.19	0.22
P7	0.31	0.31	0.07	0.04	0.22	0.33	0.29	0.24	0.30	0.25	0.20	0.25
P8	0.41	0.35	0.22	0.16	0.14	0.18	0.26	0.32	0.39	0.35	0.26	0.29
P9	0.26	0.22	0.30	0.25	0.13	0.13	0.11	0.18	0.28	0.37	0.24	0.23
P10	0.09	0.13	0.16	0.15	0.12	0.15	0.22	0.03	0.08	0.15	0.12	0.12
P11	0.15	0.03	0.19	0.25	0.22	0.14	0.09	0.08	0.13	0.10	0.16	0.13
P12	0.30	0.15	0.20	0.28	0.14	0.09	0.17	0.21	0.08	0.20	0.19	0.17
P13	0.17	0.11	0.07	0.27	0.09	0.12	0.24	0.18	0.32	0.17	0.17	0.21
P14	0.21	0.17	0.08	0.23	0.13	0.21	0.15	0.14	0.30	0.18	0.19	0.20
P15	0.16	0.17	0.12	0.15	0.11	0.23	0.32	0.30	0.20	0.32	0.18	0.24
P16	0.11	0.23	0.16	0.02	0.33	0.27	0.28	0.24	0.22	0.33	0.19	0.25
P17	0.14	0.15	0.11	0.06	0.39	0.31	0.29	0.24	0.21	0.37	0.20	0.27
P18	0.17	0.27	0.19	0.11	0.30	0.30	0.30	0.22	0.13	0.38	0.22	0.25
P19	0.18	0.32	0.35	0.26	0.37	0.24	0.16	0.25	0.25	0.30	0.28	0.26

P20	0.20	0.11	0.32	0.19	0.19	0.05	0.08	0.16	0.13	0.19	0.18	0.15
P21	0.15	0.34	0.21	0.23	0.22	0.25	0.20	0.26	0.34	0.29	0.25	0.27
P22	0.13	0.32	0.30	0.22	0.17	0.05	0.03	0.13	0.29	0.26	0.22	0.19
P23	0.02	0.23	0.16	0.20	0.17	0.12	0.04	0.16	0.31	0.37	0.19	0.23
P24	0.07	0.19	0.05	0.17	0.19	0.13	0.30	0.14	0.24	0.19	0.15	0.20
P25	0.10	0.16	0.04	0.09	0.14	0.12	0.25	0.12	0.18	0.12	0.12	0.15
P26	0.02	0.09	0.03	0.03	0.10	0.09	0.13	0.05	0.13	0.12	0.07	0.10
P27	0.07	0.04	0.14	0.20	0.10	0.12	0.16	0.10	0.32	0.12	0.14	0.17
P28	0.10	0.09	0.12	0.01	0.13	0.17	0.22	0.18	0.24	0.10	0.11	0.16
P29	0.05	0.04	0.03	0.07	0.18	0.16	0.16	0.17	0.26	0.12	0.11	0.17
P30	0.13	0.13	0.16	0.20	0.29	0.22	0.25	0.24	0.26	0.10	0.19	0.22
P31	0.09	0.05	0.06	0.03	0.05	0.03	0.20	0.21	0.06	0.17	0.07	0.12
P32	0.08	0.04	0.09	0.09	0.08	0.07	0.23	0.22	0.23	0.21	0.12	0.18
P33	0.05	0.04	0.05	0.02	0.09	0.11	0.09	0.27	0.35	0.21	0.11	0.20
P34	0.35	0.36	0.34	0.18	0.13	0.09	0.09	0.27	0.28	0.22	0.24	0.20
P35	0.29	0.36	0.36	0.32	0.19	0.09	0.02	0.21	0.07	0.15	0.25	0.14
P36	0.29	0.30	0.33	0.35	0.19	0.10	0.07	0.22	0.06	0.25	0.25	0.17
P37	0.31	0.32	0.36	0.40	0.21	0.12	0.12	0.14	0.29	0.30	0.29	0.24
P38	0.31	0.34	0.37	0.42	0.23	0.11	0.16	0.12	0.22	0.29	0.29	0.22
P39	0.32	0.35	0.38	0.44	0.25	0.16	0.11	0.07	0.20	0.28	0.30	0.21
P40	0.29	0.32	0.35	0.42	0.25	0.22	0.04	0.09	0.17	0.29	0.29	0.21
P41	0.28	0.33	0.37	0.40	0.26	0.26	0.07	0.06	0.16	0.33	0.29	0.21
P42	0.29	0.33	0.38	0.35	0.19	0.23	0.12	0.10	0.16	0.35	0.28	0.22
P43	0.31	0.35	0.40	0.31	0.10	0.25	0.16	0.06	0.14	0.37	0.27	0.20
P44	0.32	0.35	0.40	0.32	0.23	0.26	0.15	0.07	0.12	0.37	0.28	0.21
P45	0.31	0.34	0.32	0.32	0.15	0.25	0.14	0.06	0.10	0.28	0.25	0.18
P46	0.30	0.29	0.32	0.33	0.14	0.20	0.09	0.04	0.08	0.25	0.23	0.15
P47	0.30	0.32	0.36	0.32	0.15	0.05	0.08	0.05	0.02	0.22	0.22	0.12
P48	0.29	0.34	0.41	0.29	0.12	0.05	0.09	0.07	0.07	0.13	0.22	0.11
P49	0.22	0.28	0.40	0.20	0.04	0.04	0.06	0.03	0.16	0.12	0.18	0.10
P50	0.16	0.21	0.36	0.08	0.12	0.07	0.06	0.06	0.15	0.18	0.15	0.11
S1	0.37	0.35	0.07	0.05	0.20	0.32	0.30	0.18	0.28	0.36	0.21	0.25
S2	0.44	0.43	0.25	0.24	0.06	0.15	0.22	0.07	0.14	0.09	0.22	0.13
S3	0.14	0.04	0.06	0.26	0.22	0.16	0.17	0.14	0.15	0.09	0.15	0.15
S4	0.28	0.04	0.01	0.28	0.15	0.16	0.35	0.15	0.18	0.15	0.16	0.19
S5	0.18	0.05	0.13	0.25	0.17	0.17	0.28	0.20	0.19	0.18	0.18	0.20
S6	0.20	0.09	0.10	0.01	0.15	0.09	0.15	0.11	0.33	0.22	0.13	0.18
S7	0.34	0.12	0.02	0.07	0.14	0.15	0.07	0.06	0.26	0.26	0.14	0.16
S8	0.37	0.28	0.16	0.19	0.11	0.14	0.20	0.13	0.35	0.22	0.21	0.21
S9	0.25	0.18	0.10	0.24	0.13	0.20	0.18	0.14	0.25	0.19	0.19	0.19
S10	0.12	0.05	0.04	0.02	0.20	0.19	0.17	0.05	0.06	0.09	0.08	0.10
S11	0.13	0.08	0.09	0.03	0.15	0.04	0.05	0.04	0.01	0.10	0.07	0.06
S12	0.13	0.11	0.22	0.05	0.08	0.02	0.05	0.06	0.03	0.02	0.08	0.04
S13	0.07	0.18	0.10	0.02	0.04	0.04	0.05	0.04	0.05	0.06	0.06	0.04
S14	0.04	0.05	0.06	0.07	0.05	0.03	0.04	0.01	0.02	0.05	0.05	0.04
S15	0.10	0.14	0.10	0.05	0.06	0.08	0.03	0.06	0.07	0.20	0.09	0.09
S16	0.19	0.20	0.18	0.14	0.03	0.08	0.01	0.18	0.22	0.24	0.16	0.15
S17	0.05	0.15	0.07	0.04	0.09	0.12	0.08	0.14	0.14	0.17	0.10	0.12
S18	0.05	0.04	0.09	0.05	0.02	0.09	0.11	0.06	0.09	0.05	0.06	0.07
S19	0.10	0.24	0.07	0.30	0.25	0.22	0.05	0.05	0.04	0.14	0.18	0.13

S20	0.15	0.14	0.10	0.29	0.16	0.11	0.19	0.12	0.09	0.15	0.17	0.15
S21	0.22	0.17	0.11	0.17	0.14	0.21	0.18	0.08	0.02	0.14	0.14	0.12
S22	0.25	0.22	0.12	0.15	0.25	0.26	0.16	0.14	0.12	0.05	0.17	0.14
S23	0.26	0.19	0.28	0.08	0.06	0.08	0.01	0.16	0.05	0.01	0.13	0.06
S24	0.09	0.10	0.17	0.22	0.14	0.26	0.28	0.27	0.19	0.10	0.18	0.20
S25	0.08	0.22	0.06	0.06	0.11	0.15	0.17	0.15	0.18	0.12	0.12	0.14
S26	0.20	0.35	0.08	0.18	0.10	0.07	0.09	0.20	0.21	0.15	0.17	0.16
S27	0.21	0.32	0.09	0.04	0.22	0.30	0.13	0.14	0.05	0.08	0.15	0.12
S28	0.13	0.09	0.17	0.03	0.24	0.16	0.17	0.16	0.07	0.15	0.12	0.13
S29	0.08	0.06	0.17	0.03	0.09	0.24	0.09	0.14	0.19	0.27	0.12	0.17
S30	0.07	0.11	0.16	0.02	0.09	0.10	0.11	0.18	0.30	0.35	0.13	0.20
S31	0.13	0.17	0.23	0.19	0.12	0.08	0.09	0.17	0.20	0.24	0.17	0.17
S32	0.12	0.10	0.09	0.04	0.06	0.09	0.15	0.26	0.21	0.19	0.11	0.16

Appendix E – Bird View of the Topography Surrounding Project Site


LIN BARN TSUEN
練板村
YAN SHAU WAI
仁壽圍
新田荷花池
Castle Peak Rd - San Tin
Kwu Tung Rd
Hadden Hill
Ki Lun Shan
Ki Lun Shan
麒麟山
巨輪集團
Warehouse
粉嶺洗車屋
Car wash
TSING LUNG TSUEN
KI LUN TSUEN
麒麟村
Fish Pond
SAN TIN
新田
LUK MEI TSUEN
鹿尾村
MAI PO SAN TSUEN
米埔新村
SHEK WU WAI
石湖圍
PANG LOON TEI
彭龍地
WO SHANG WAI
和生圍
Fish Pond
MAI PO LUNG TSUEN
米埔隴村
Ki Lun Tsuen Playground
麒麟村遊樂場
鴻日農莊 Hung Yat Farm
SHEK WU WAI SAN TSUEN
石湖圍新村
WO SHANG WAI
和生圍
Scene garden
Rolling Hills II
SIU HUM TSUEN
小磡村
Fish Pond
PALM SPRINGS
加州花園
Crescendo
意花園
Christian New Life Association
新生團
Pine Tree Hill
Pine Tree Hill
Ngau Tam Shan
Fish Pond
Ngau Tam Shan (337m)
Legend
Project Site
Yau Tam Mei San Tsuen
姚聖母廟

Appendix F – VR Contour and Vector plots of the Whole Computational Domain (Baseline Scheme & Proposed Scheme)

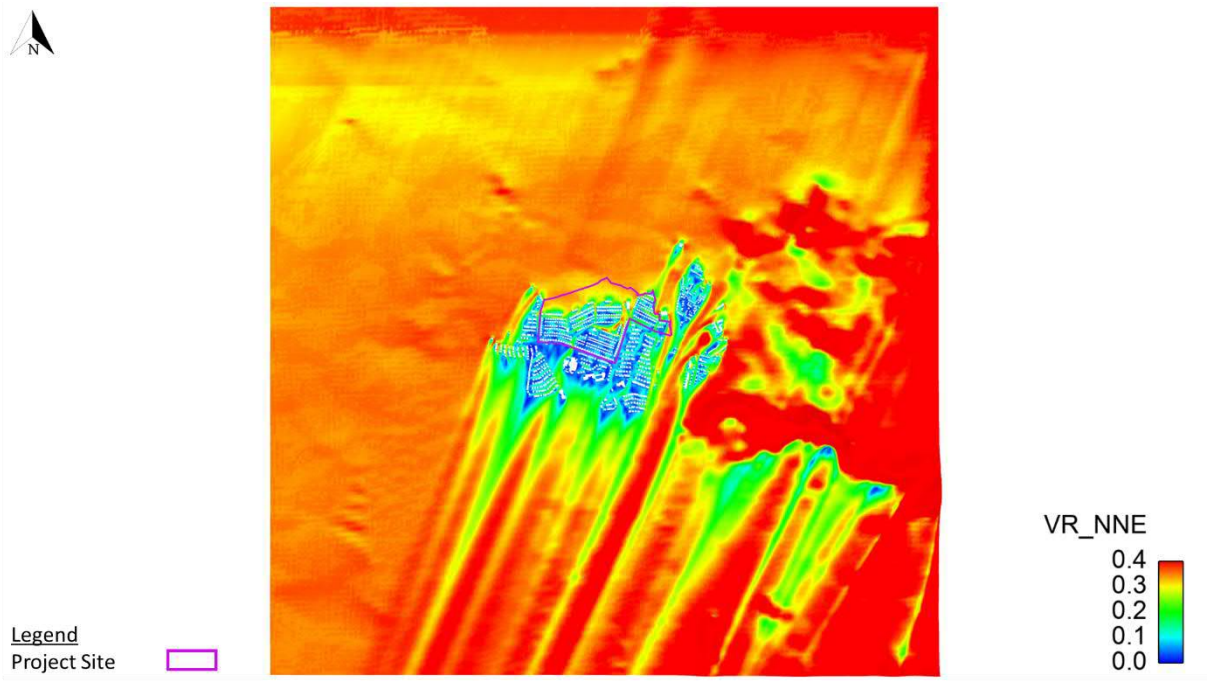


Figure 1 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

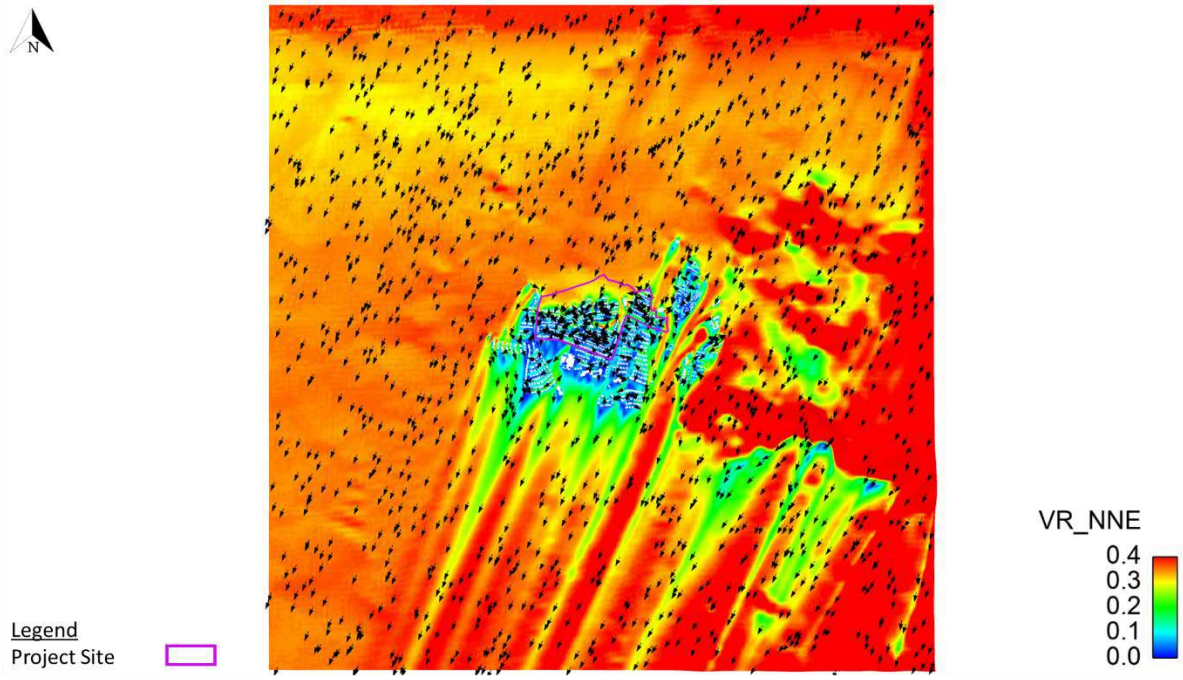


Figure 2 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

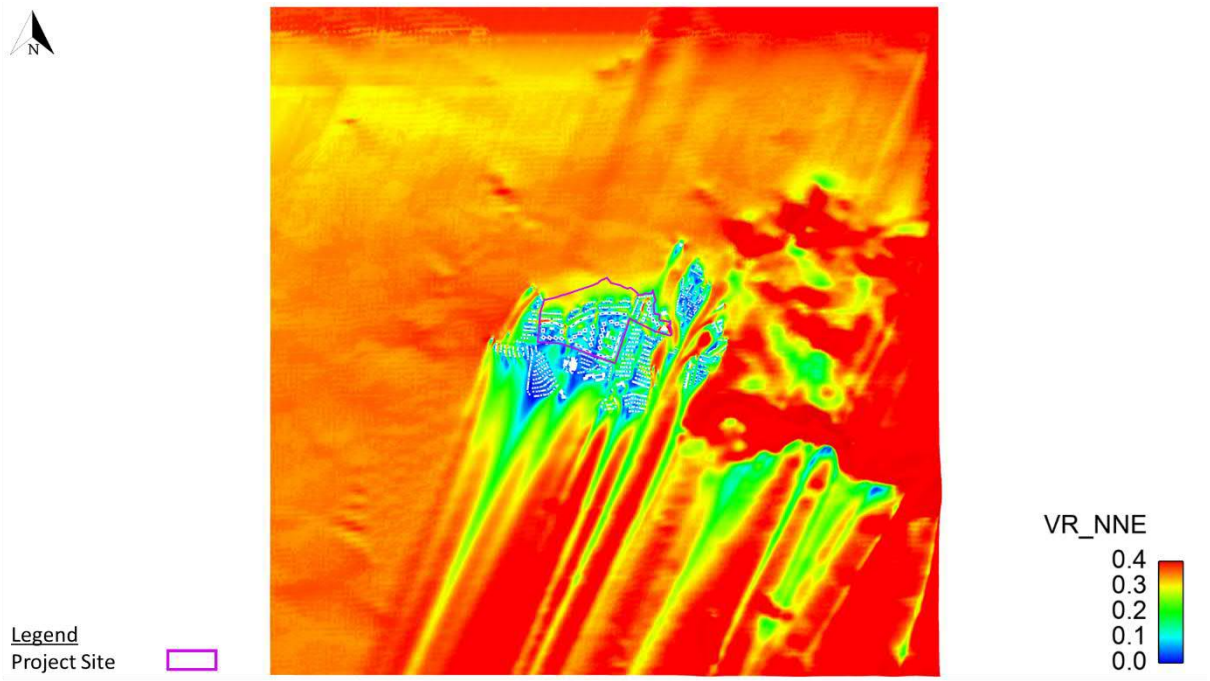


Figure 3 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

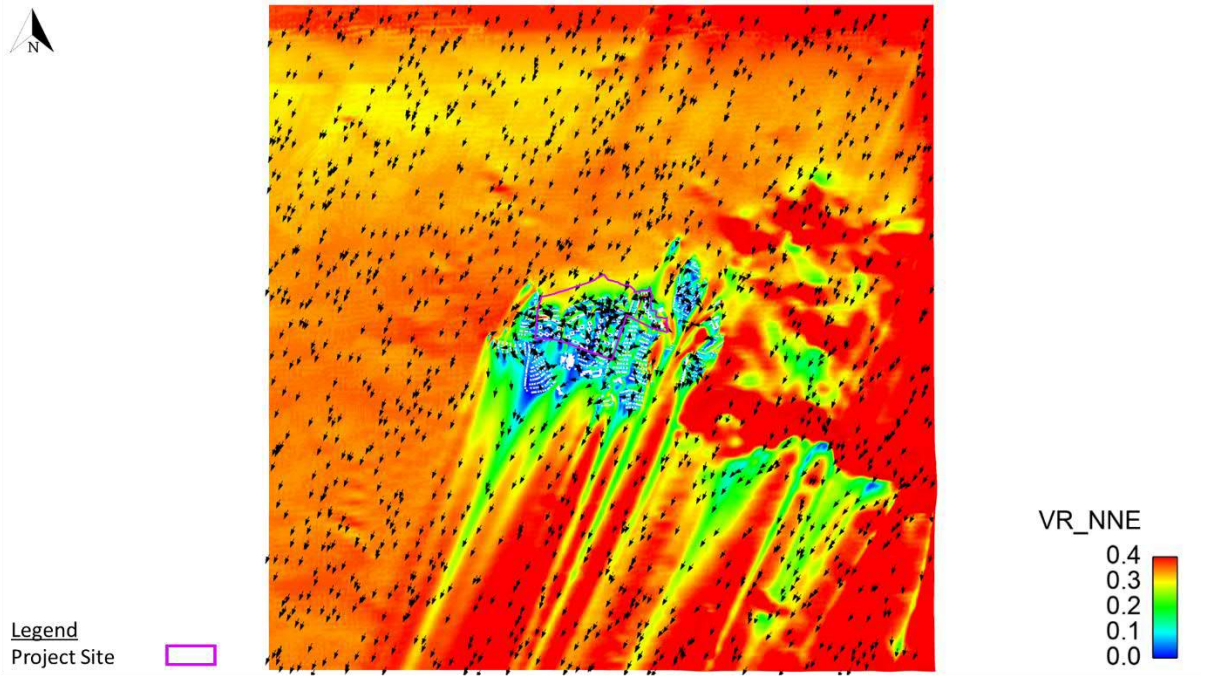


Figure 4 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

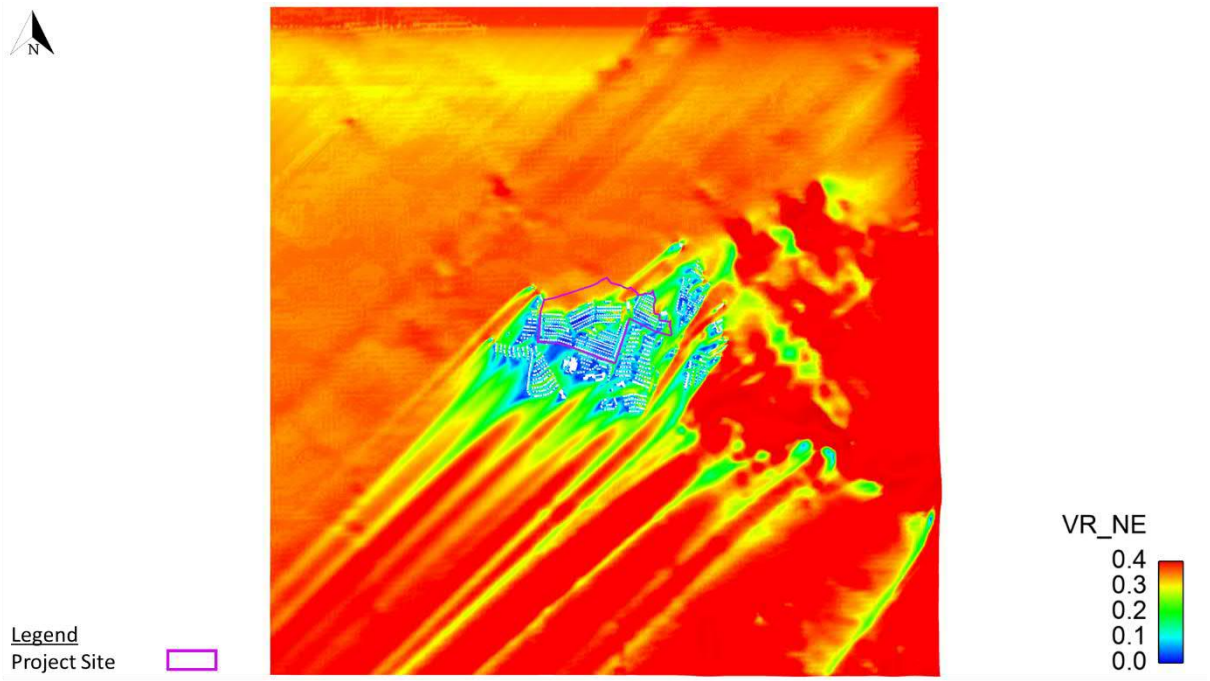


Figure 5 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

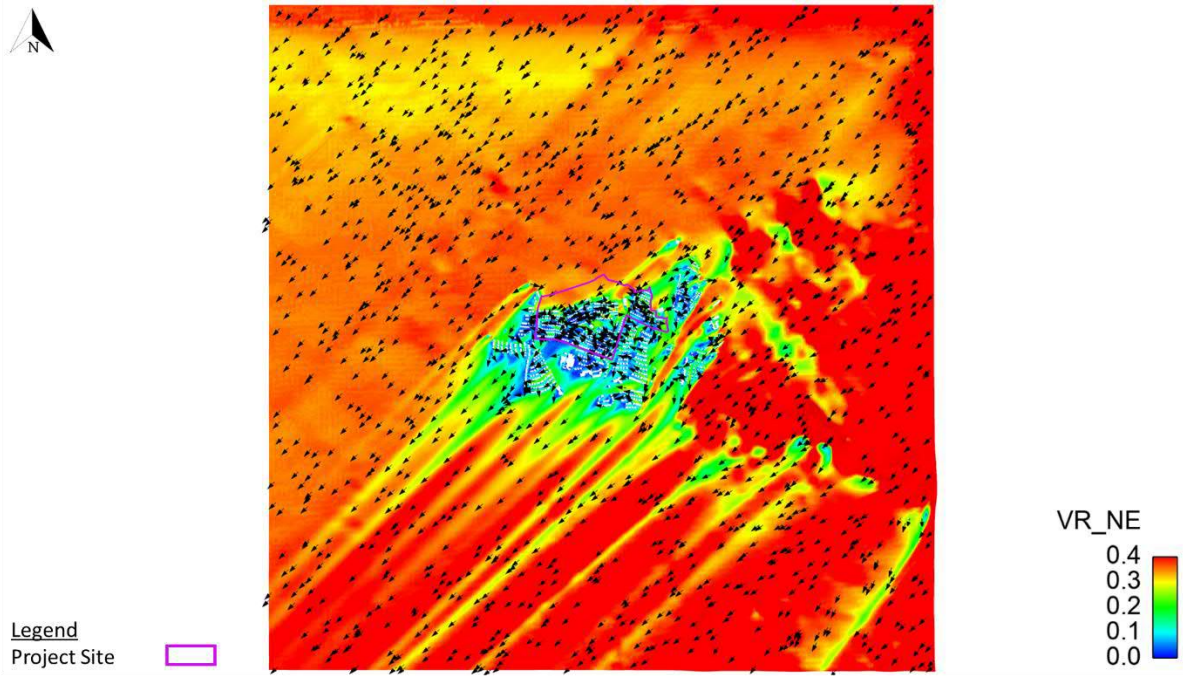


Figure 6 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

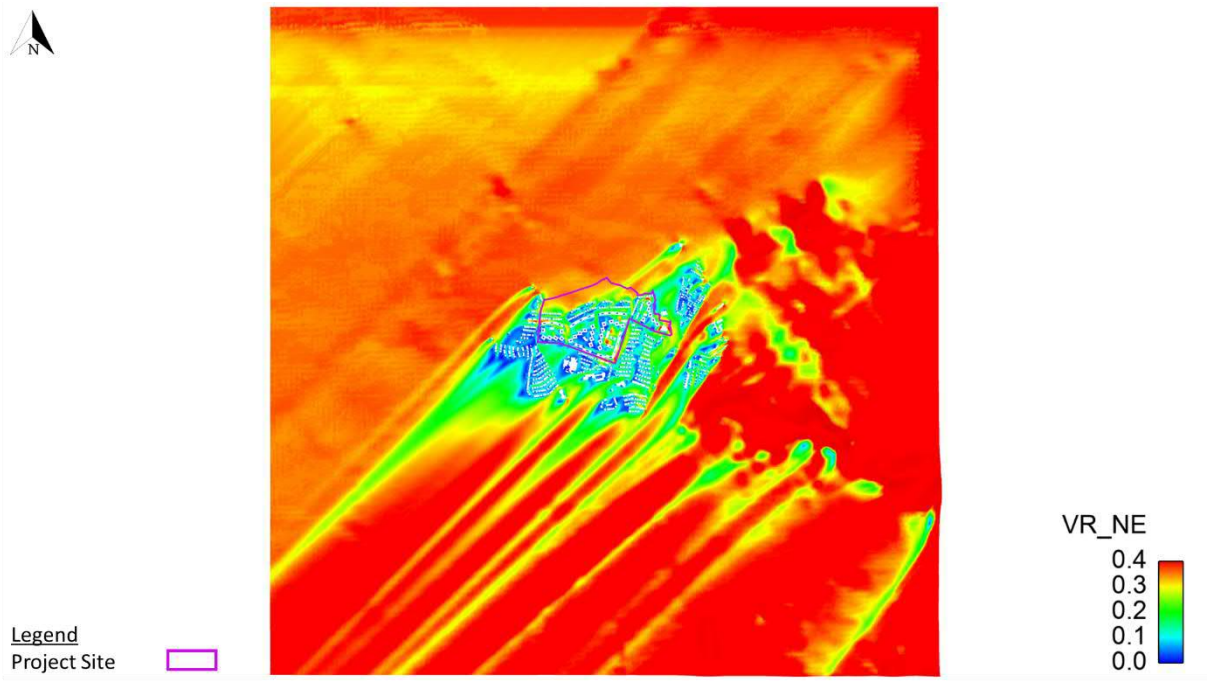


Figure 7 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

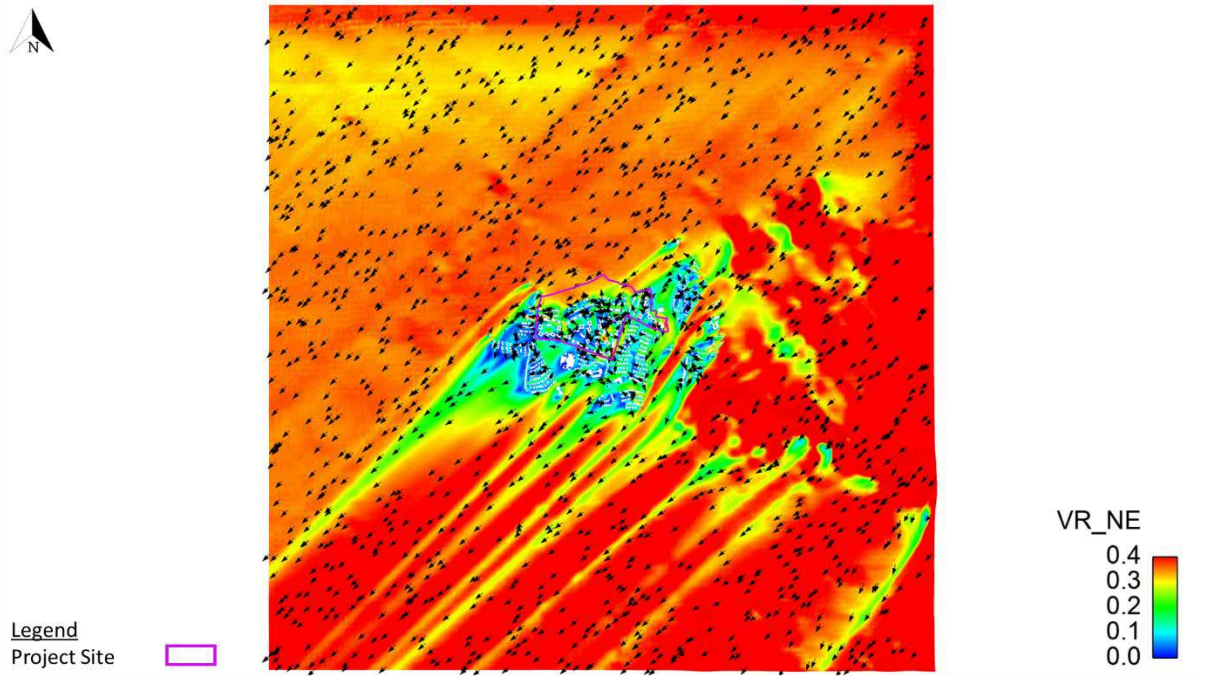


Figure 8 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

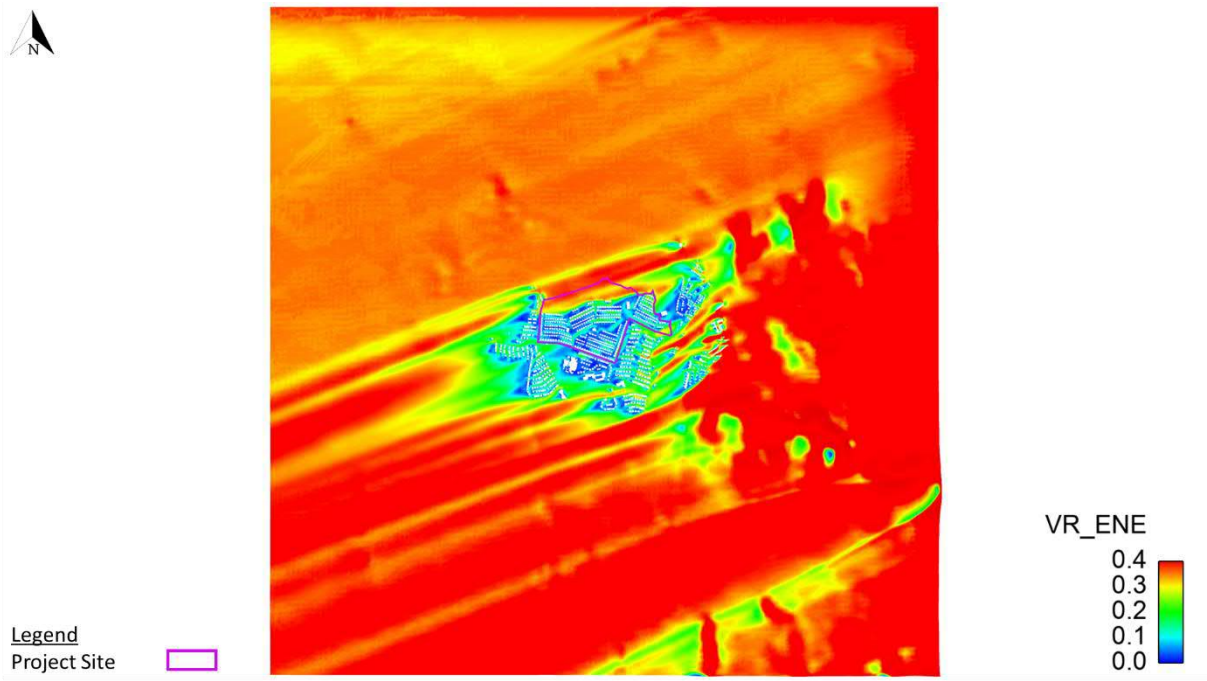


Figure 9 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

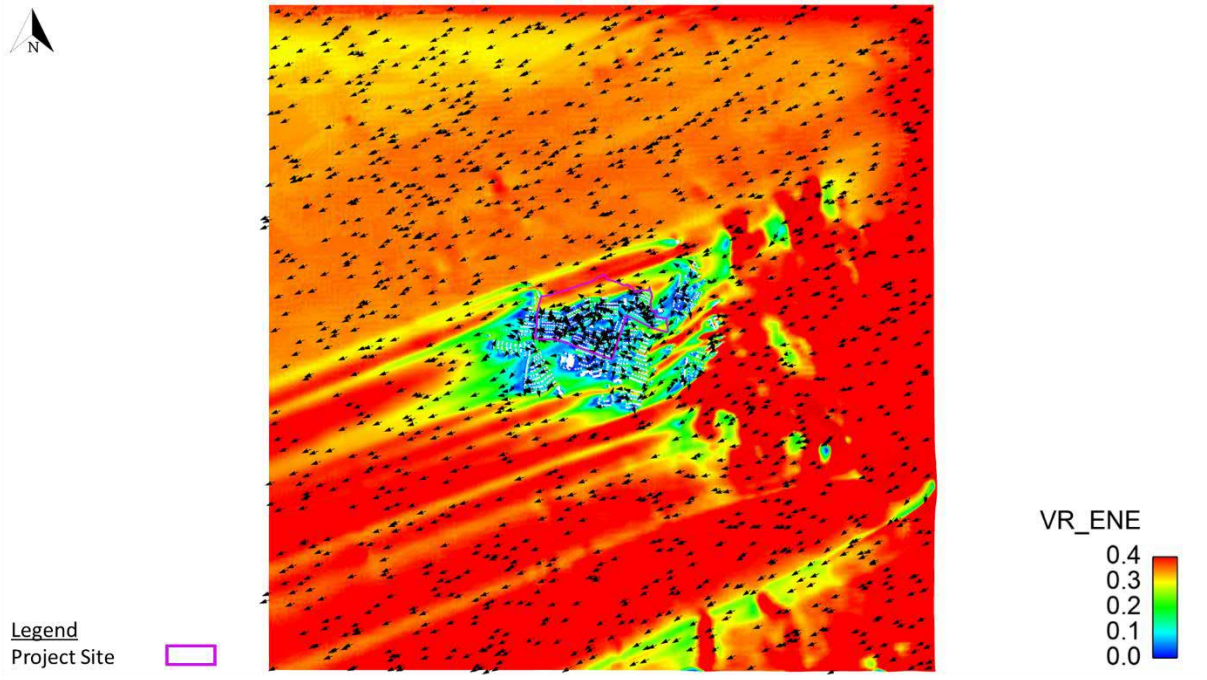


Figure 10 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

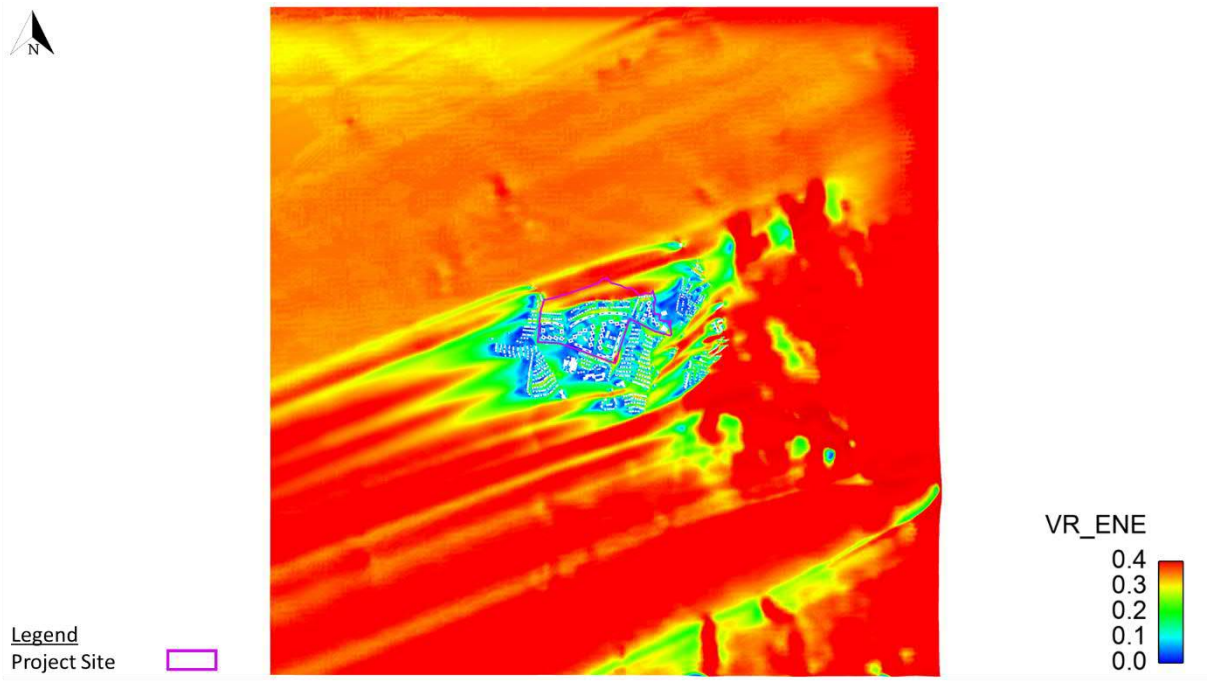


Figure 11 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

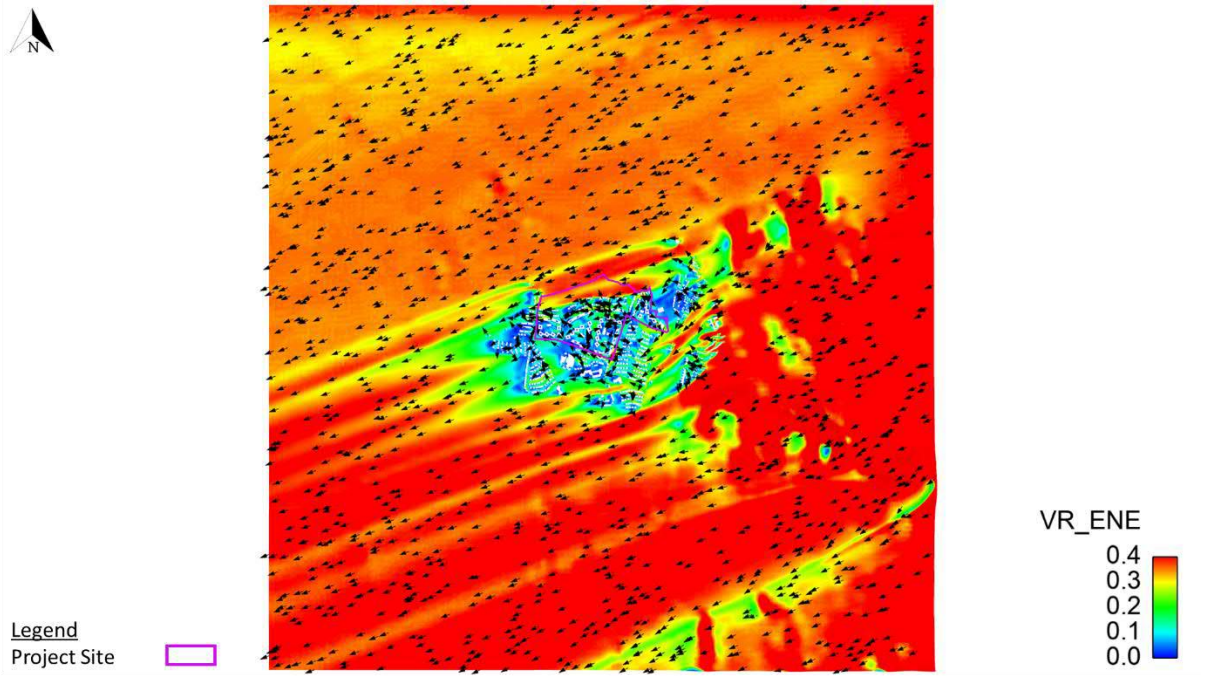


Figure 12 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

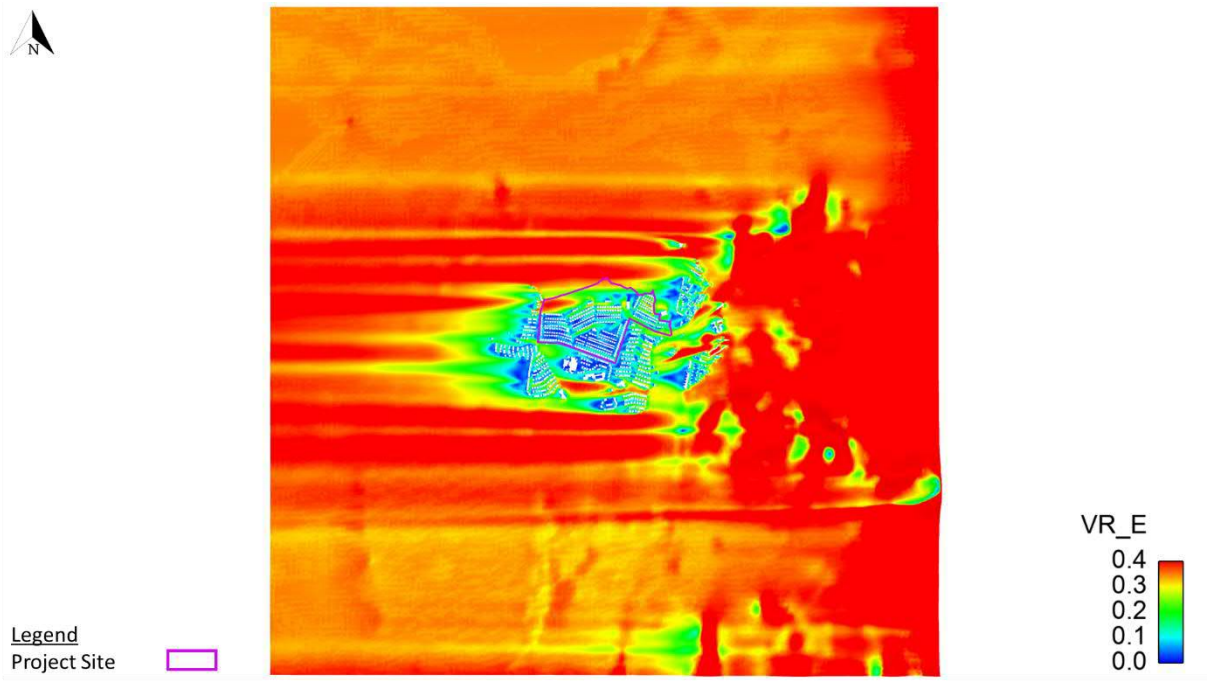


Figure 13 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

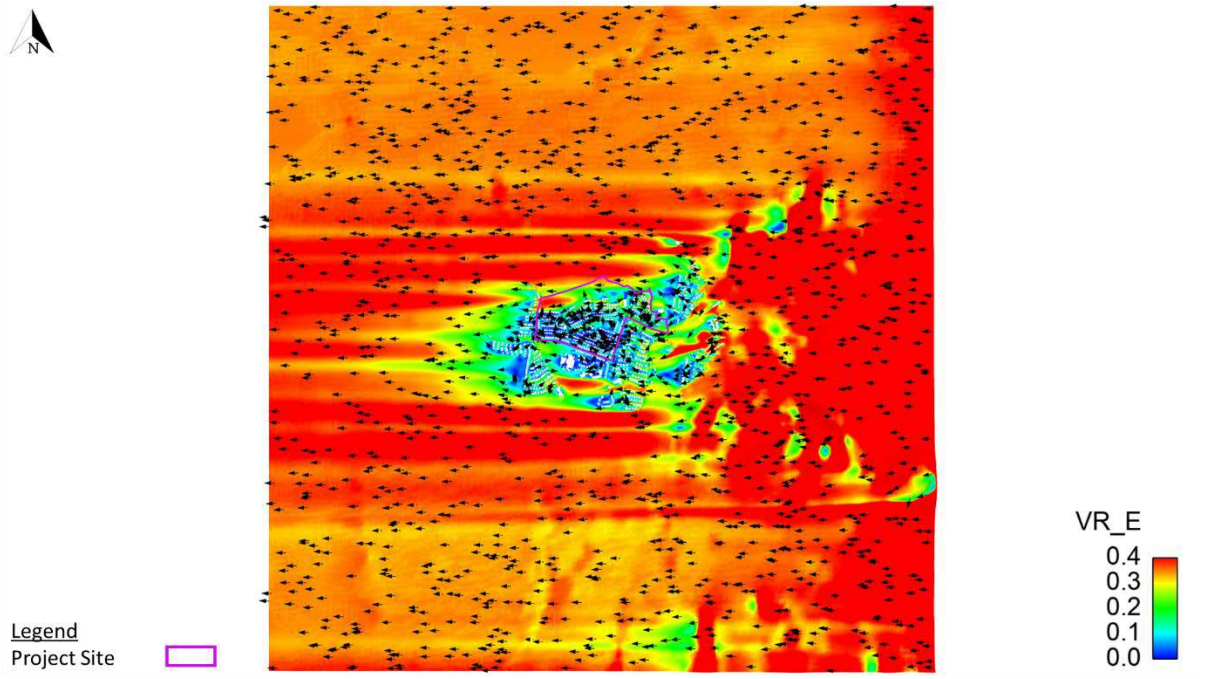


Figure 14 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

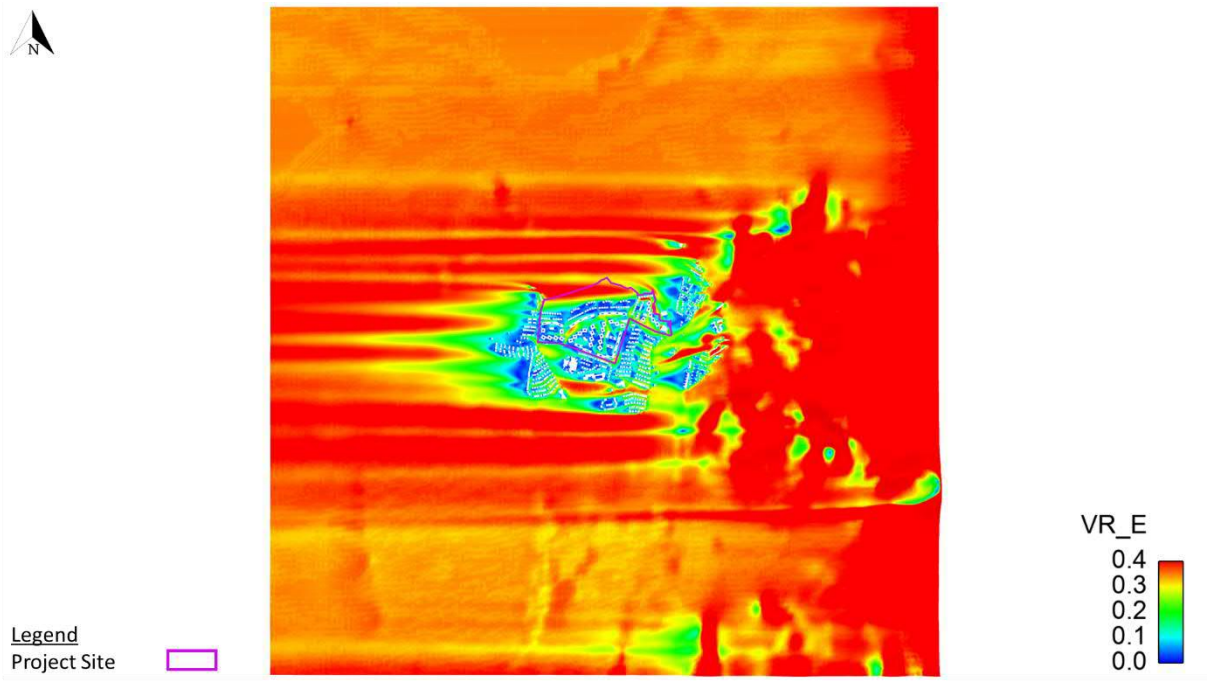


Figure 15 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

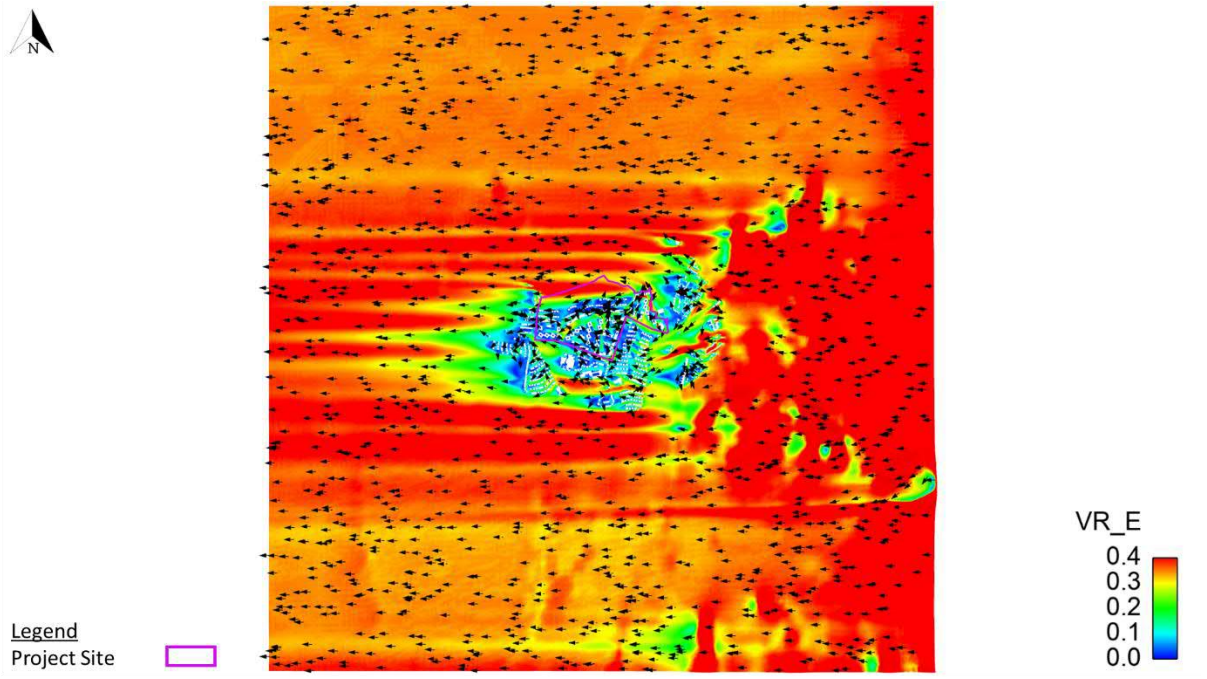


Figure 16 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

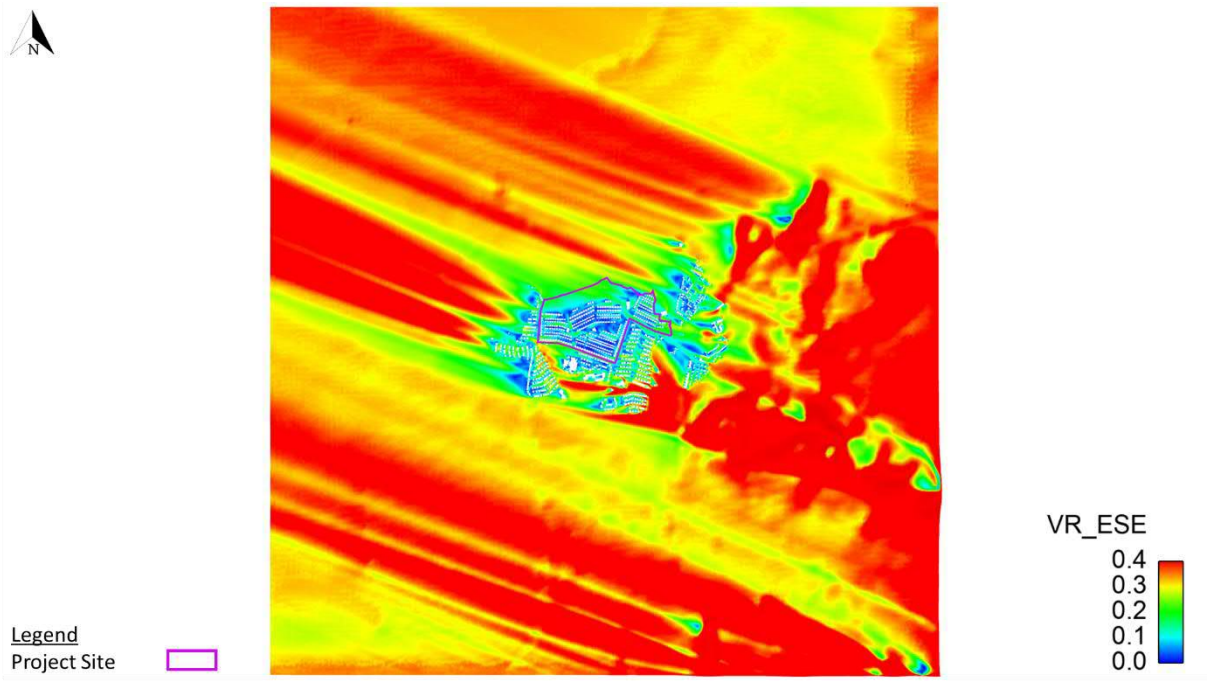


Figure 17 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

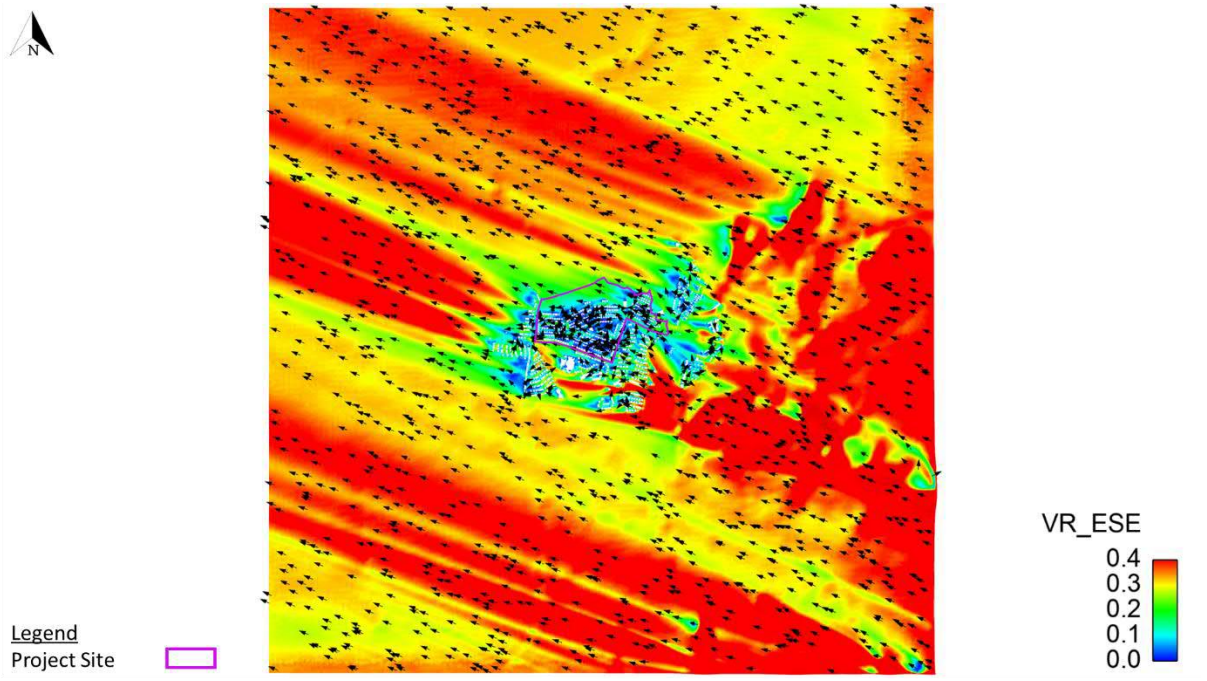


Figure 18 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

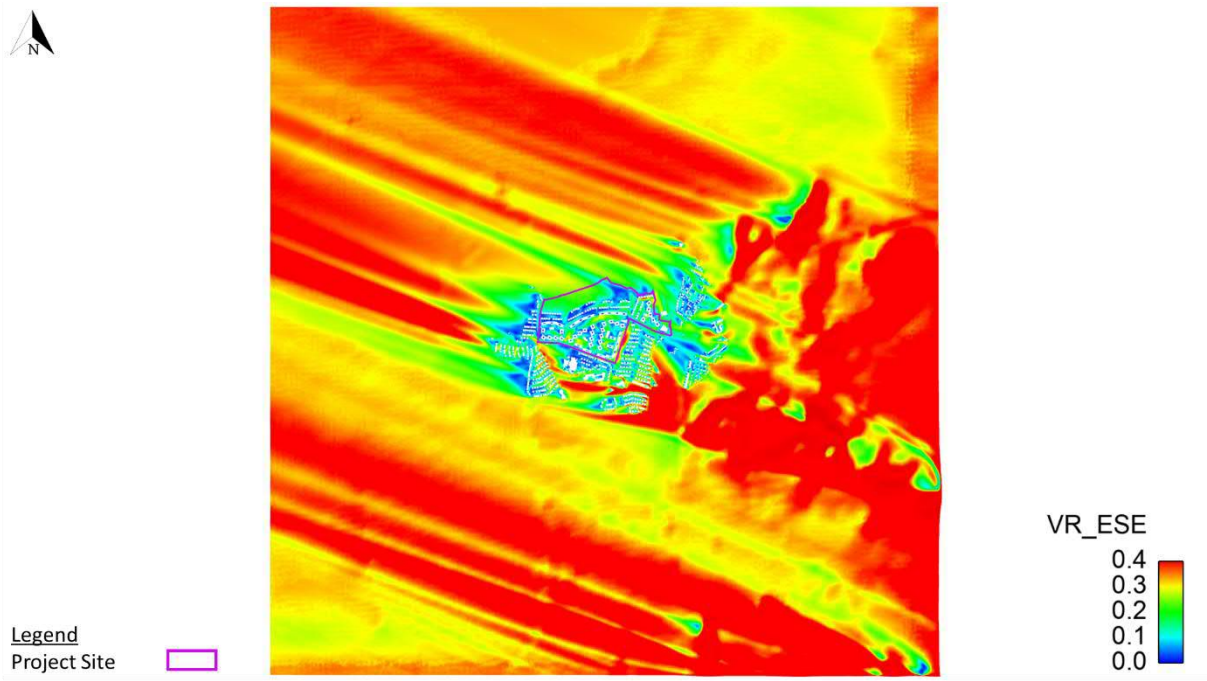


Figure 19 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

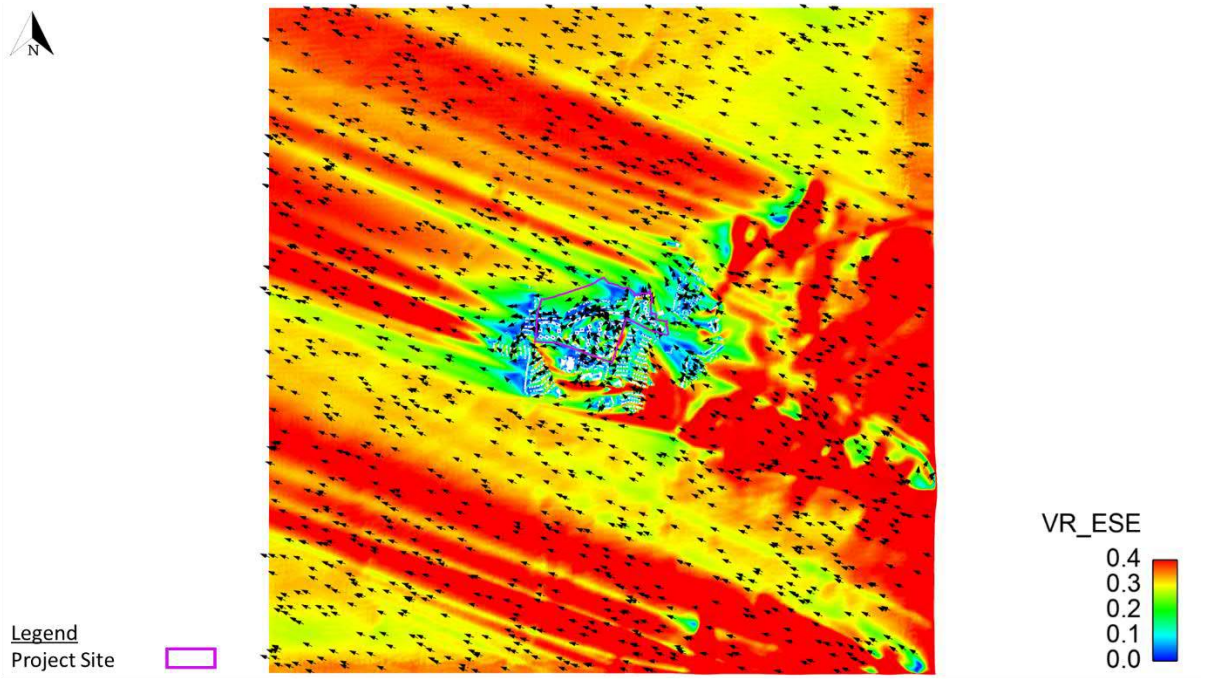


Figure 20 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

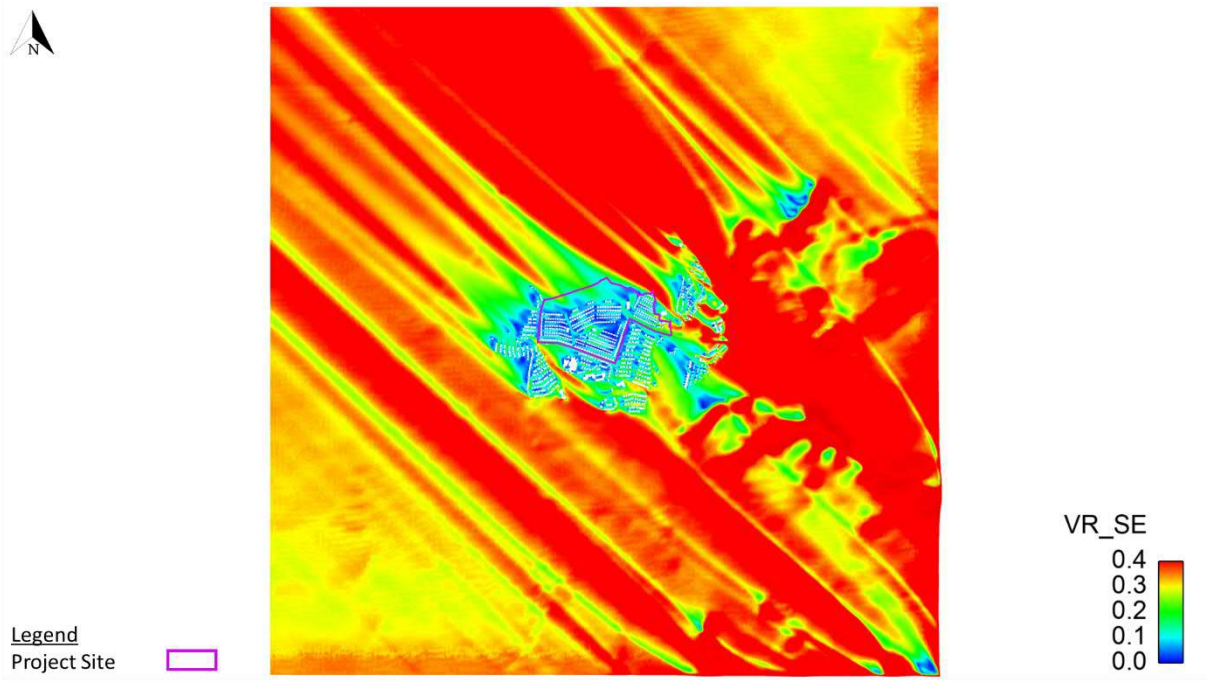


Figure 21 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

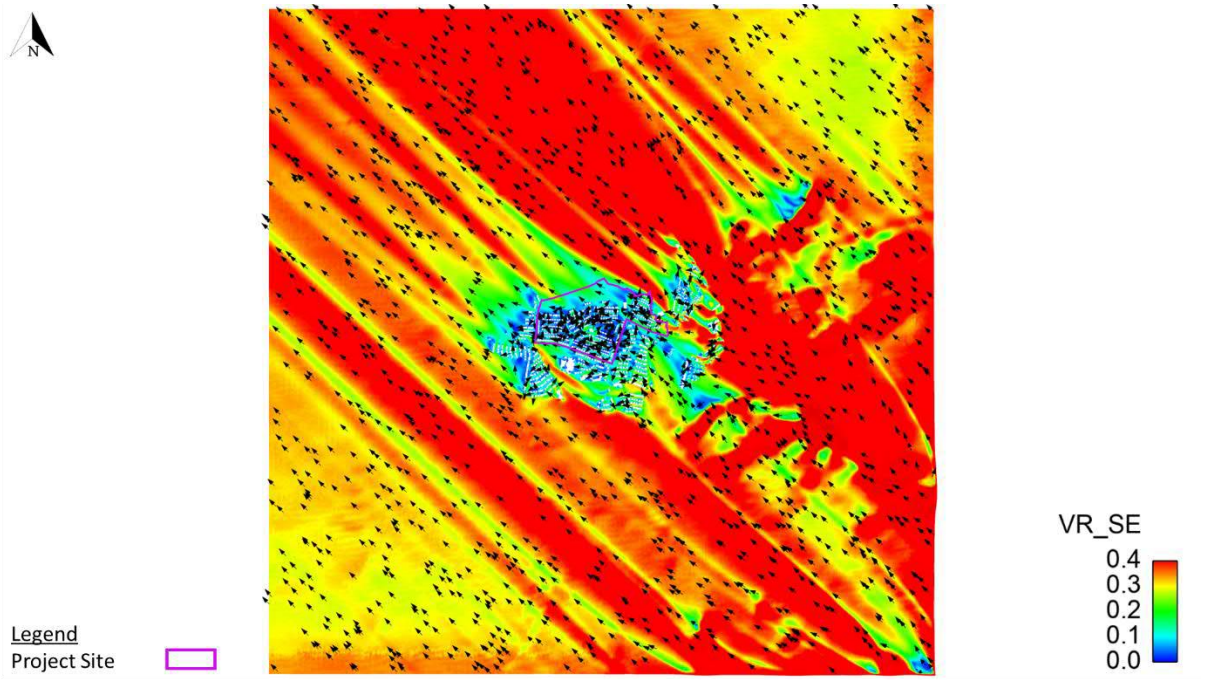


Figure 22 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

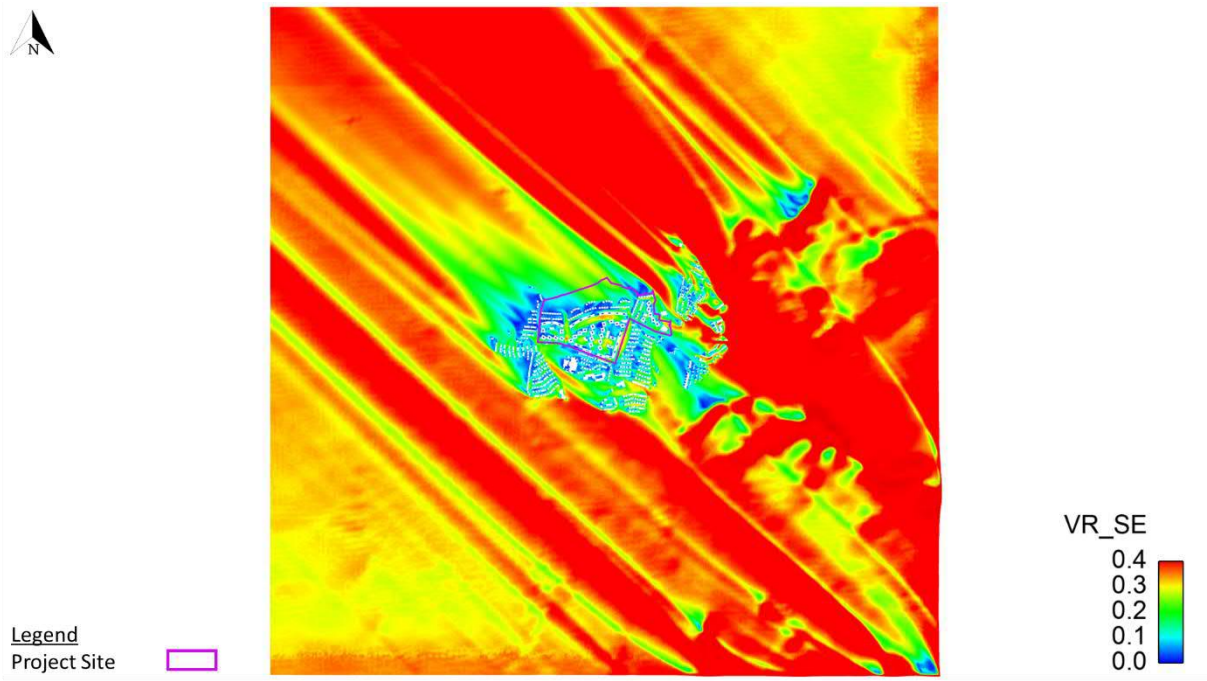


Figure 23 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

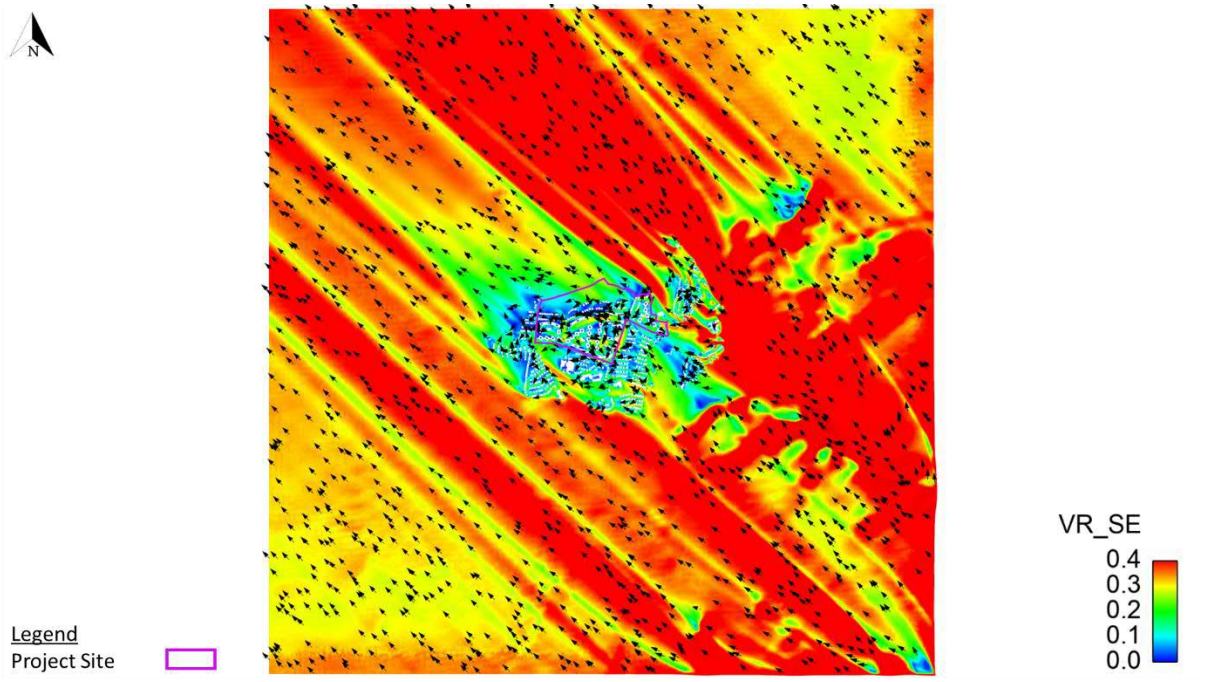


Figure 24 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

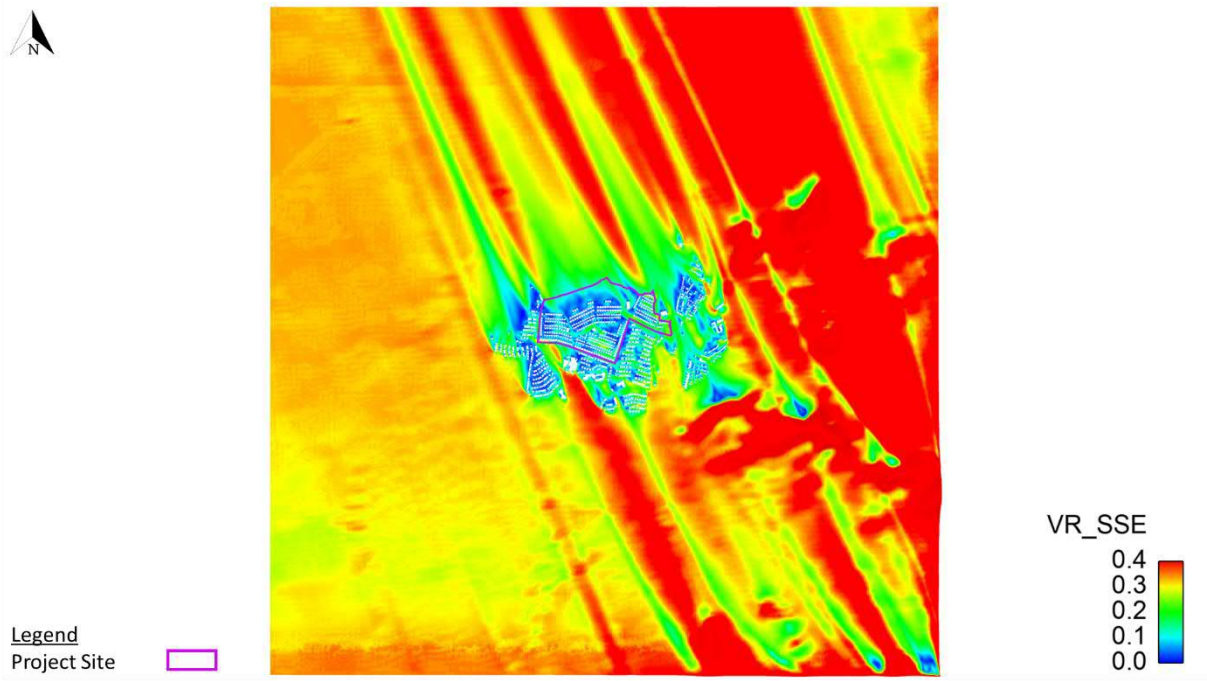


Figure 25 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

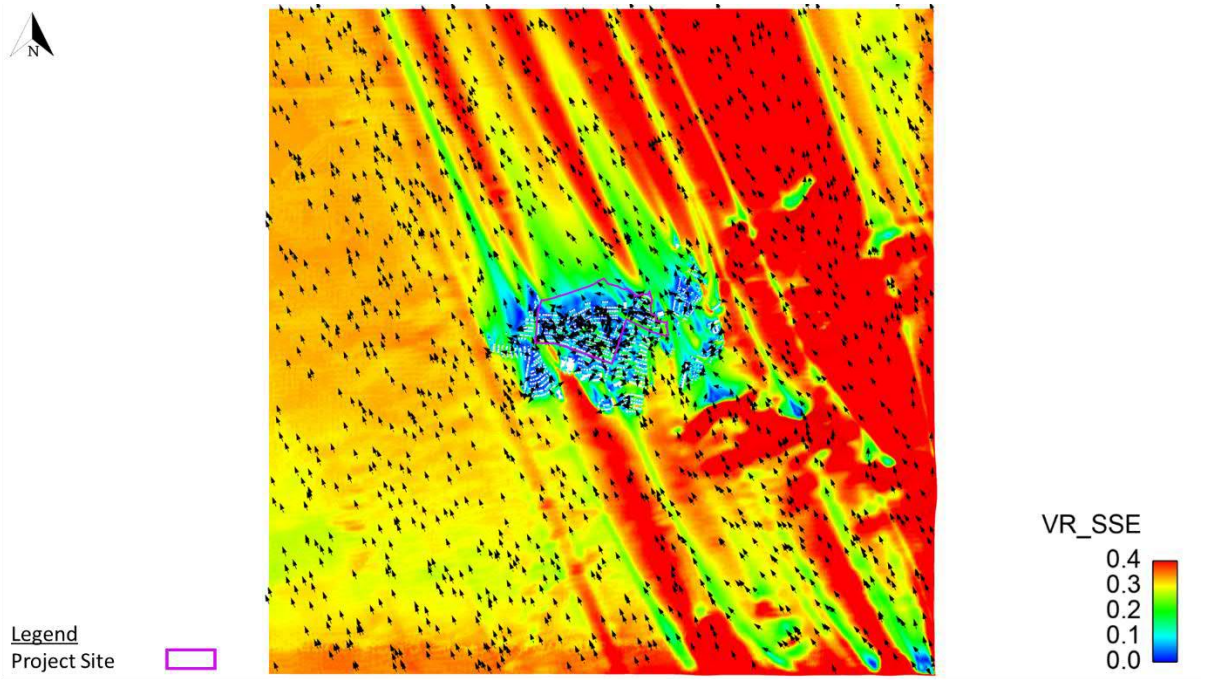


Figure 26 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

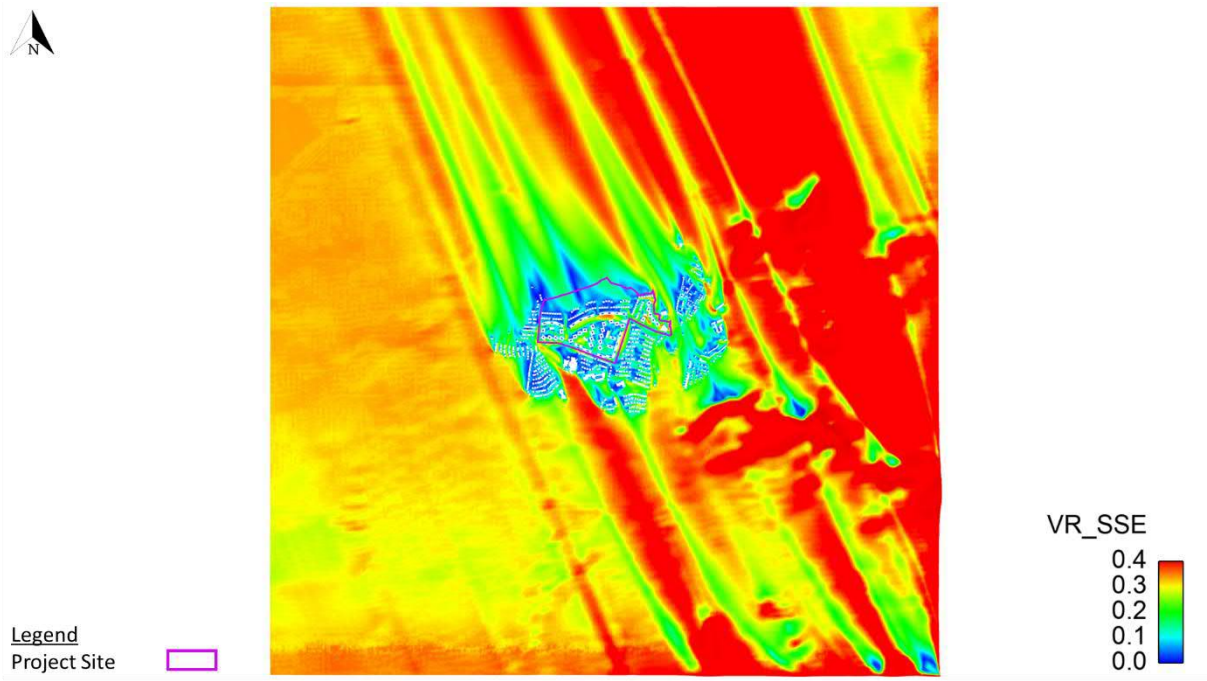


Figure 27 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

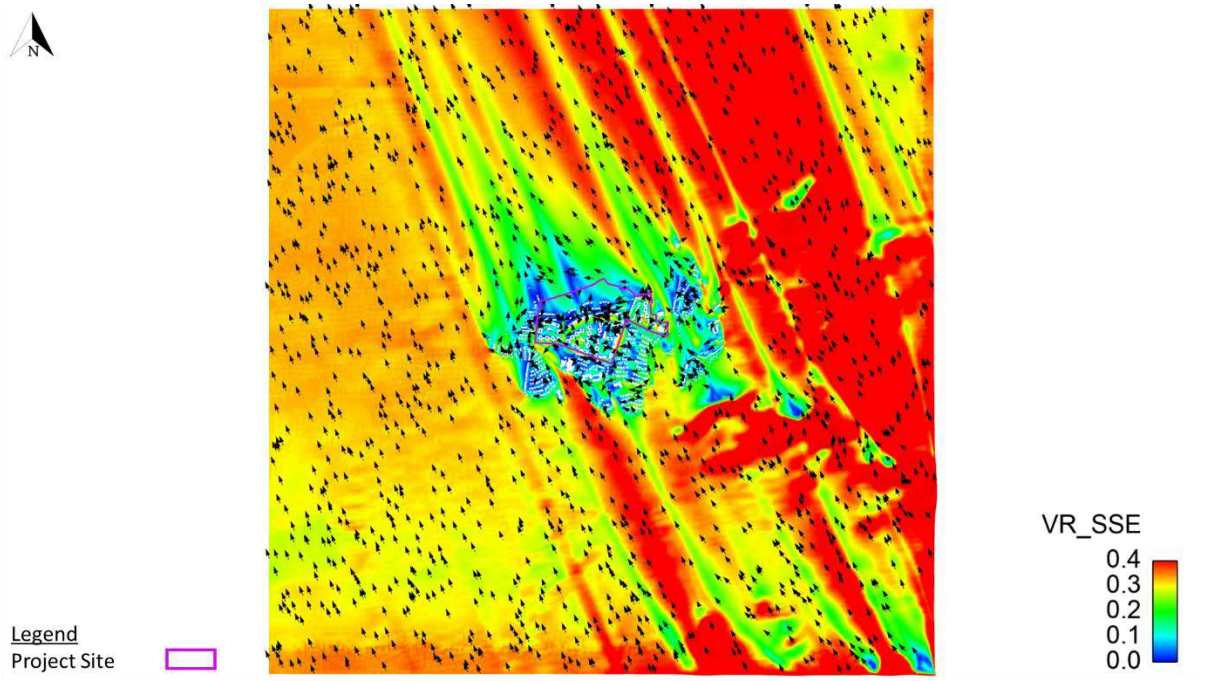


Figure 28 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

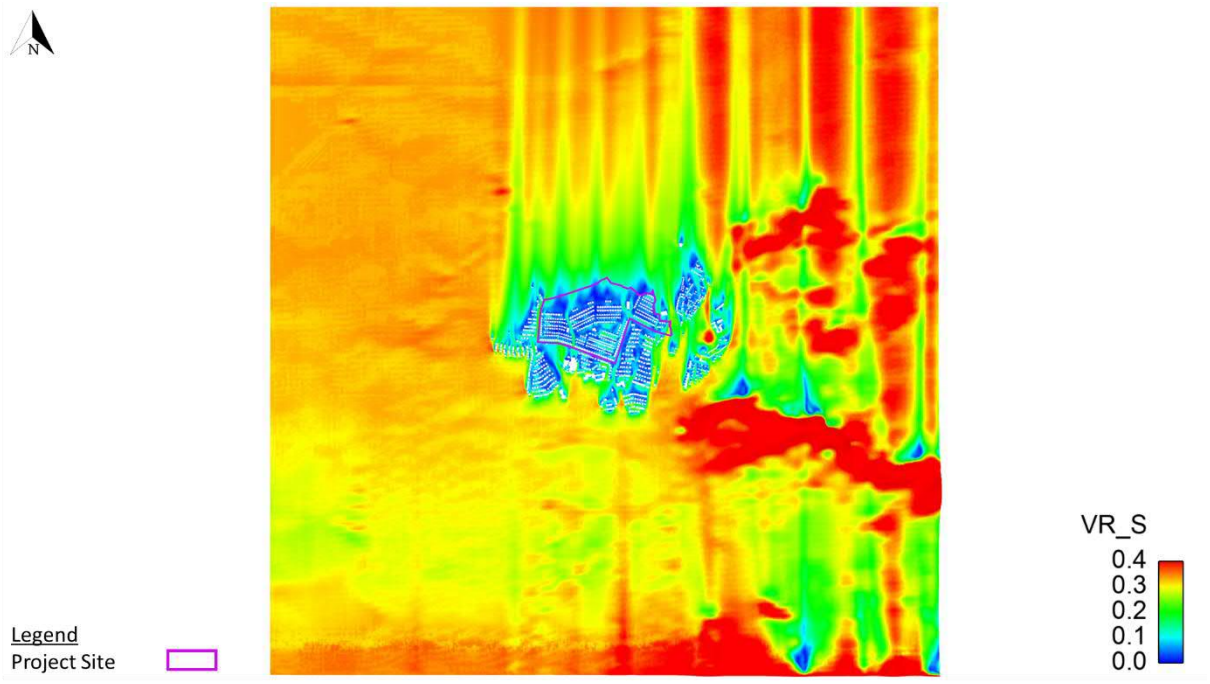


Figure 29 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

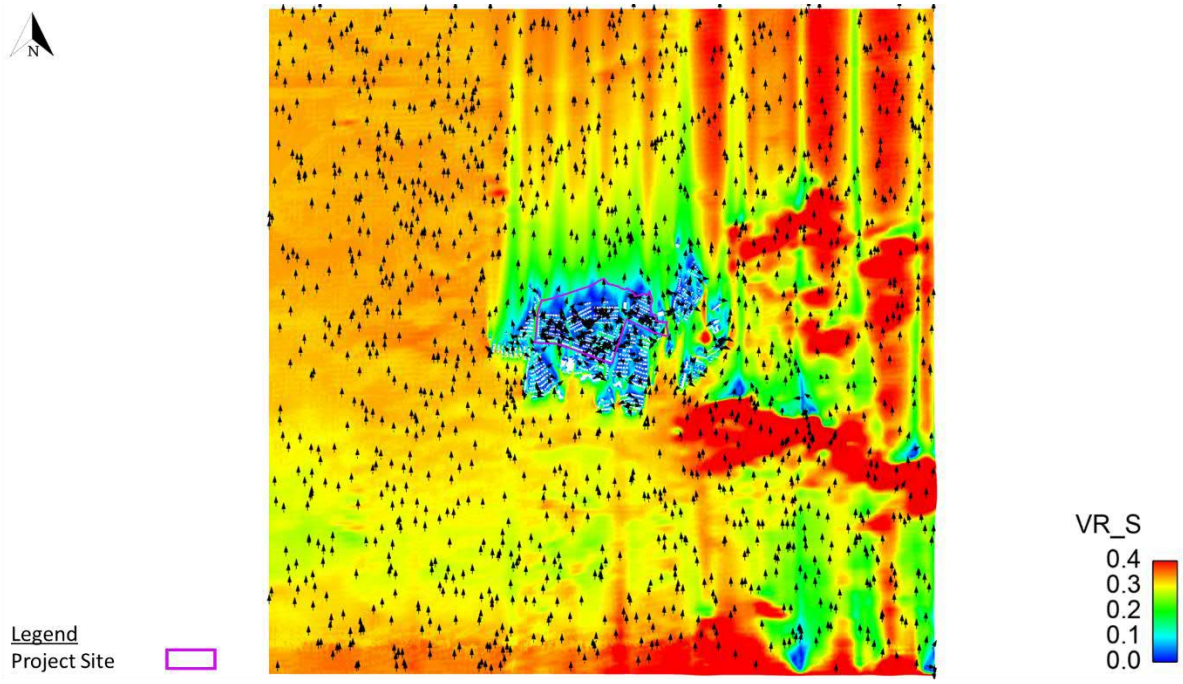


Figure 30 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

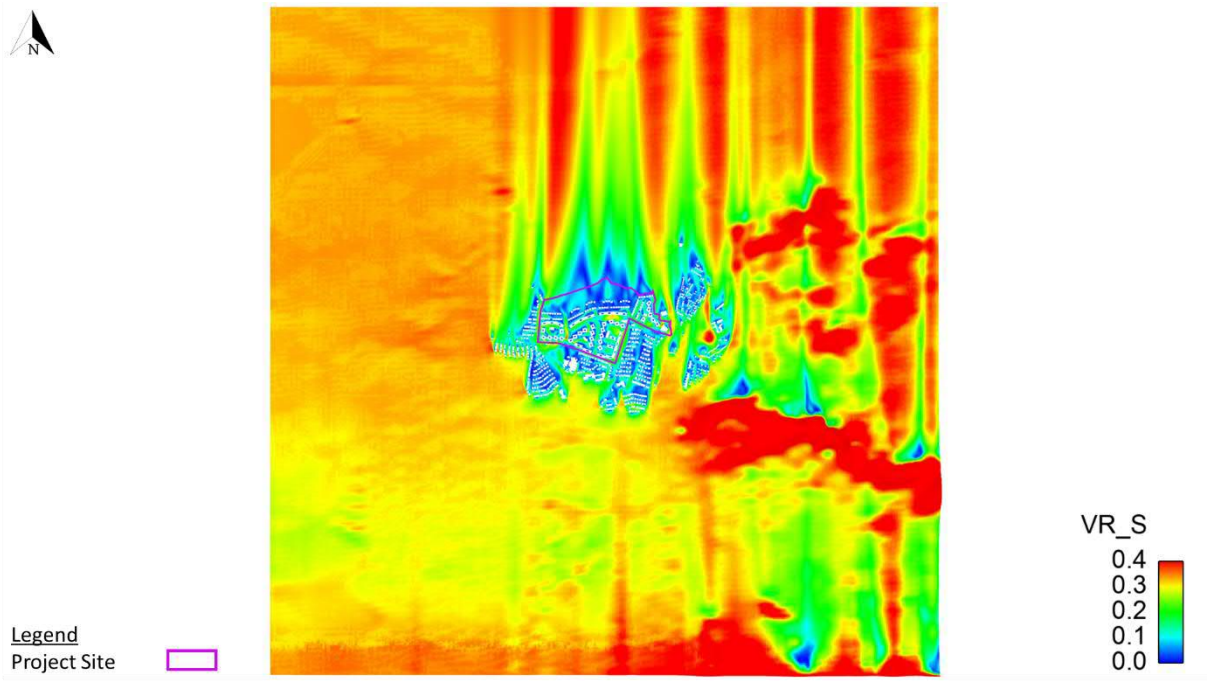


Figure 31 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

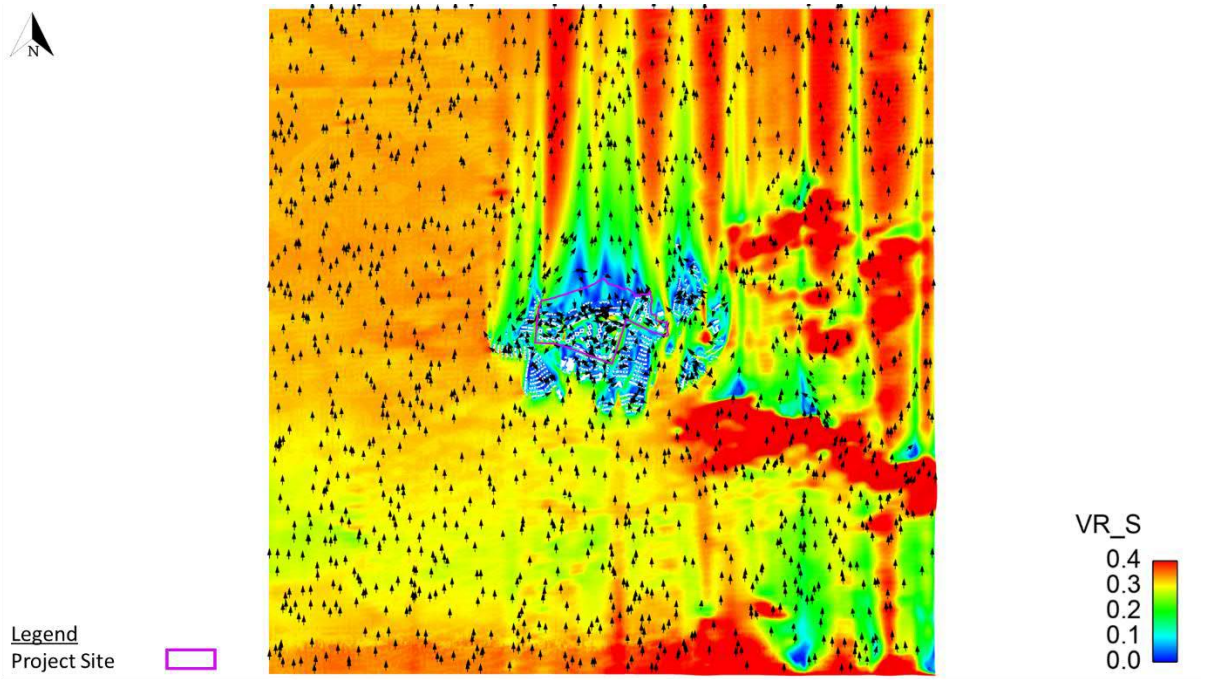


Figure 32 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

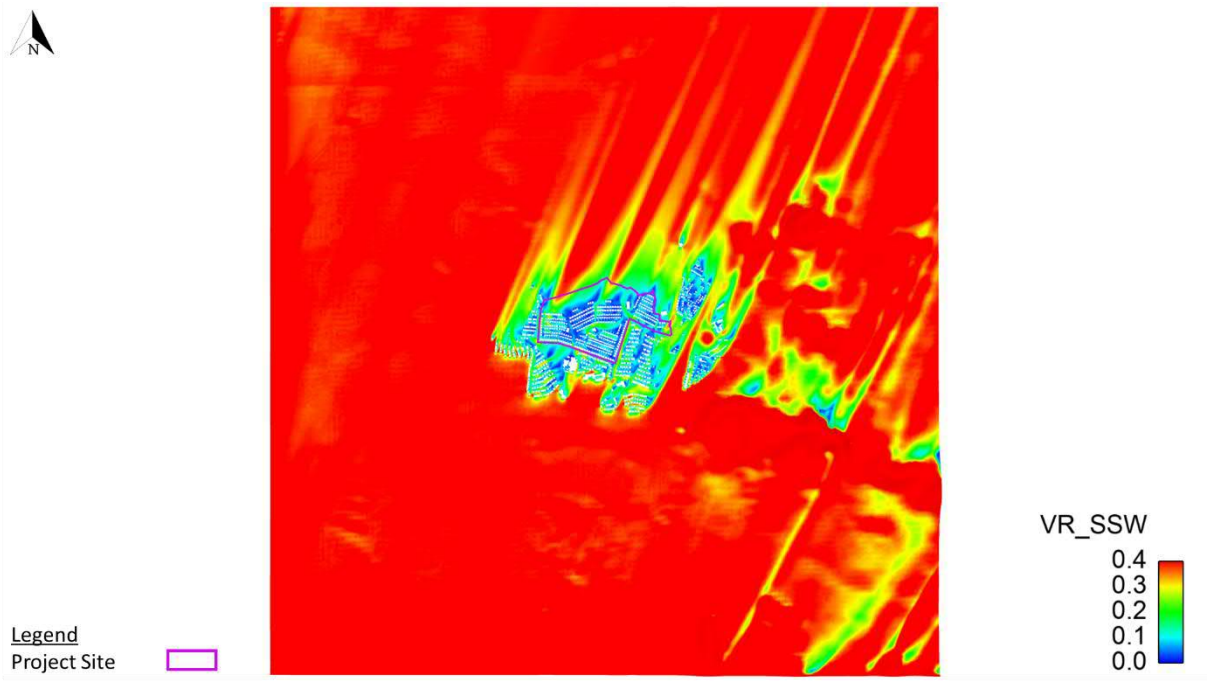


Figure 33 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

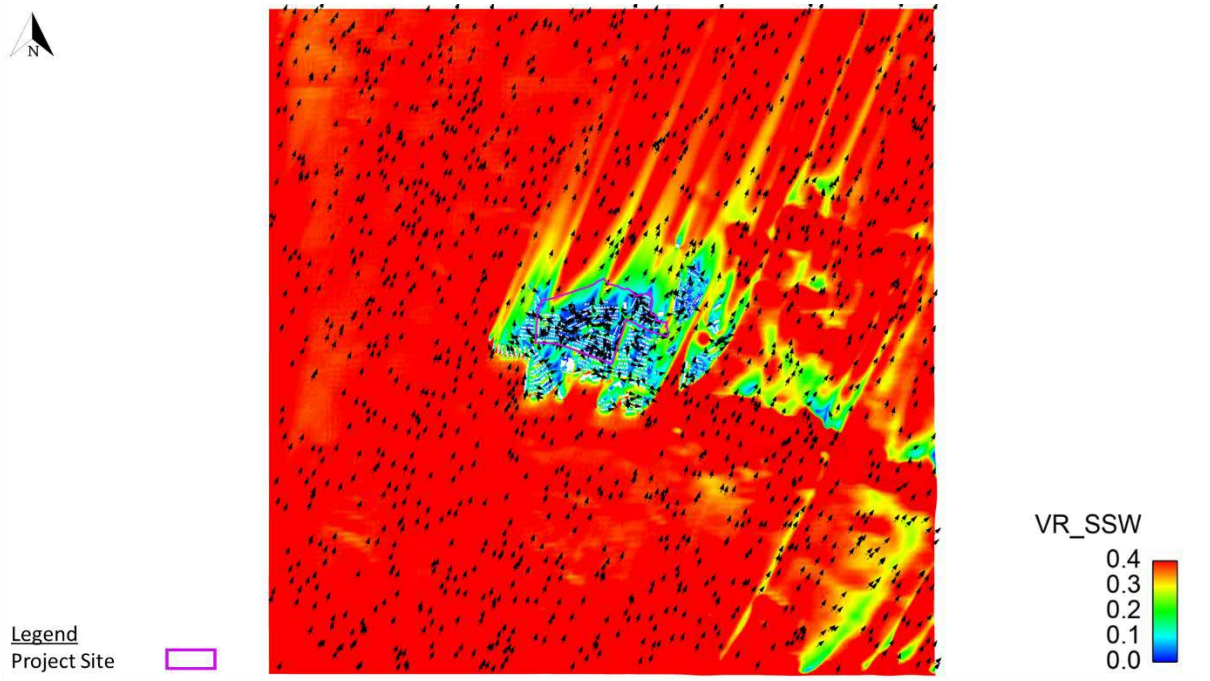


Figure 34 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

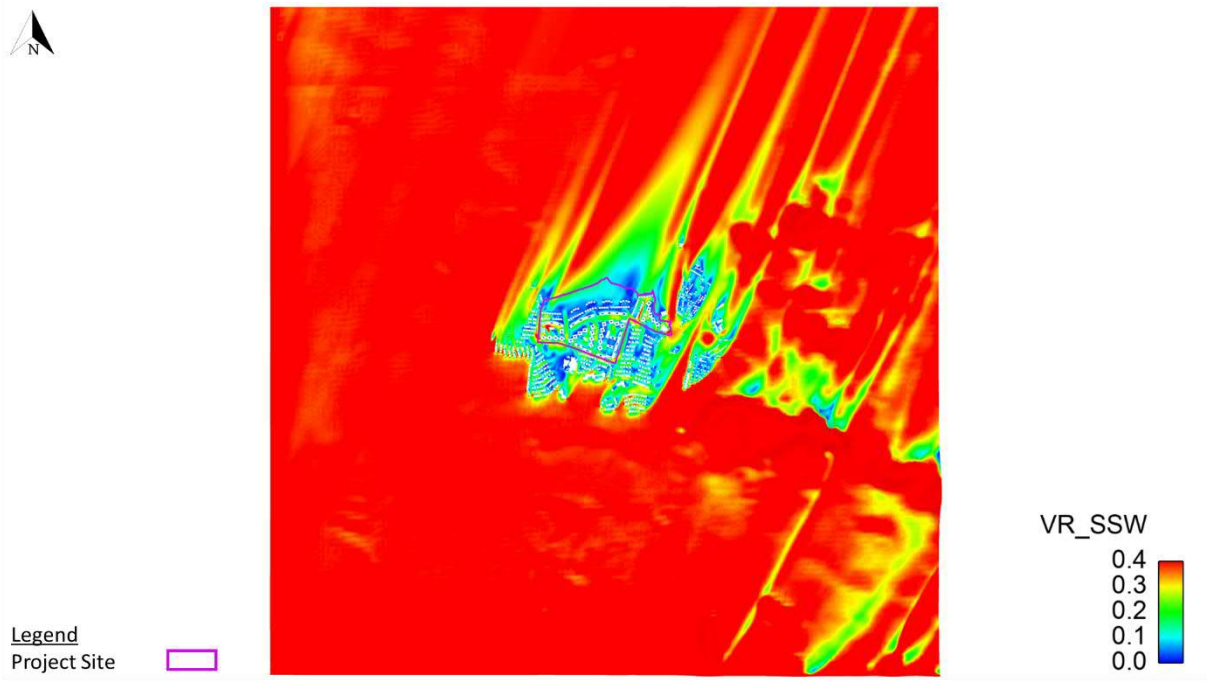


Figure 35 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

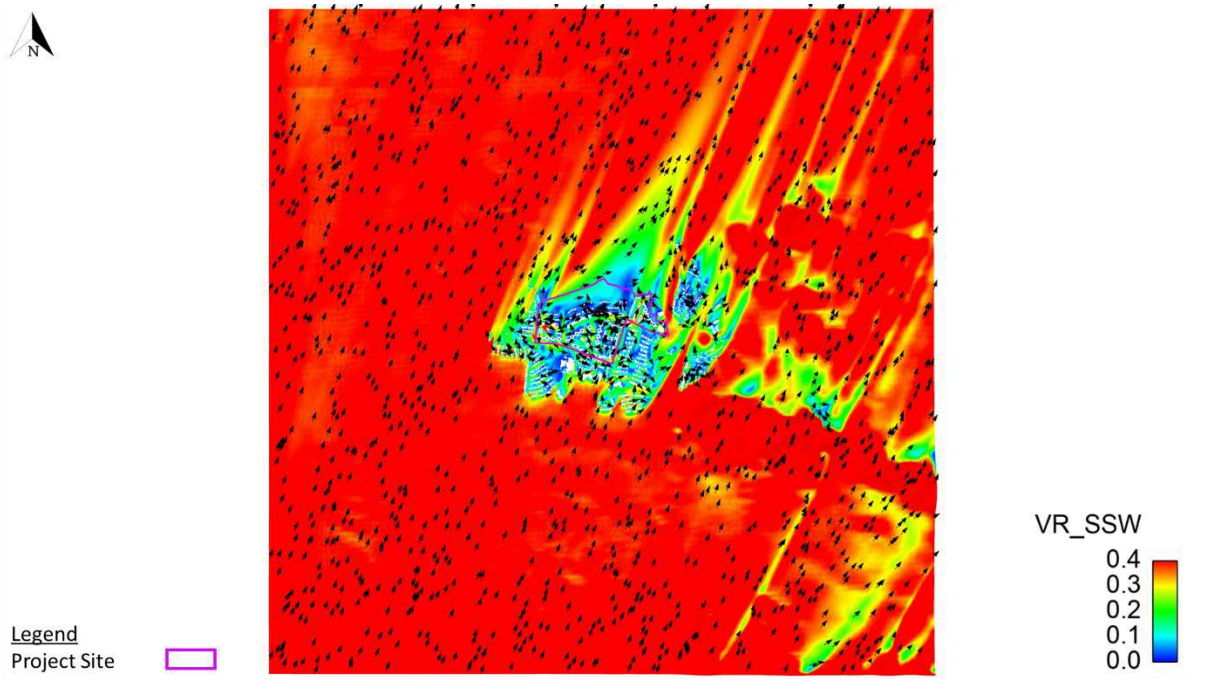


Figure 36 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

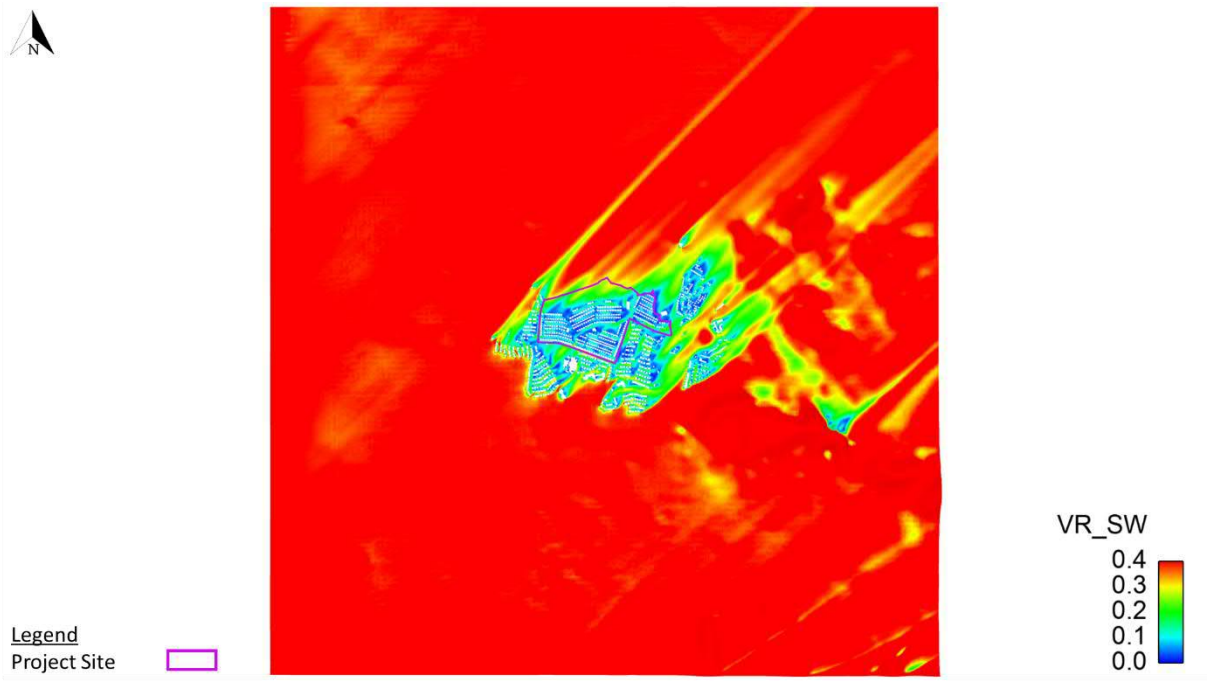


Figure 37 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

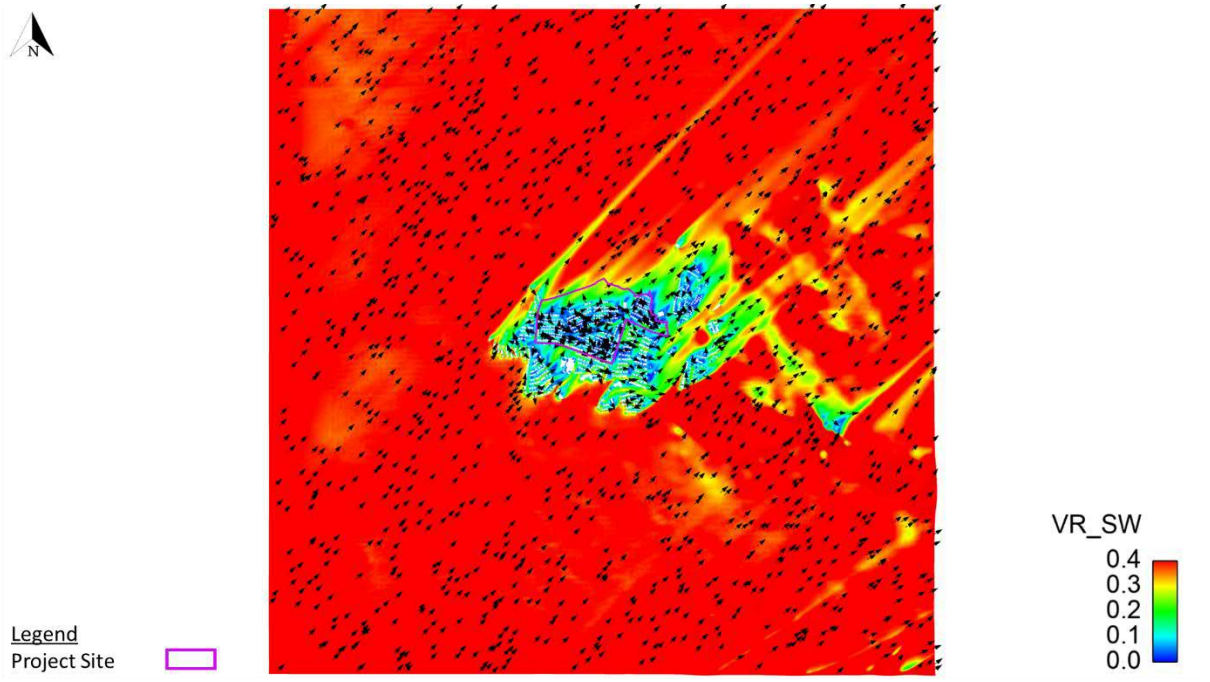


Figure 38 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

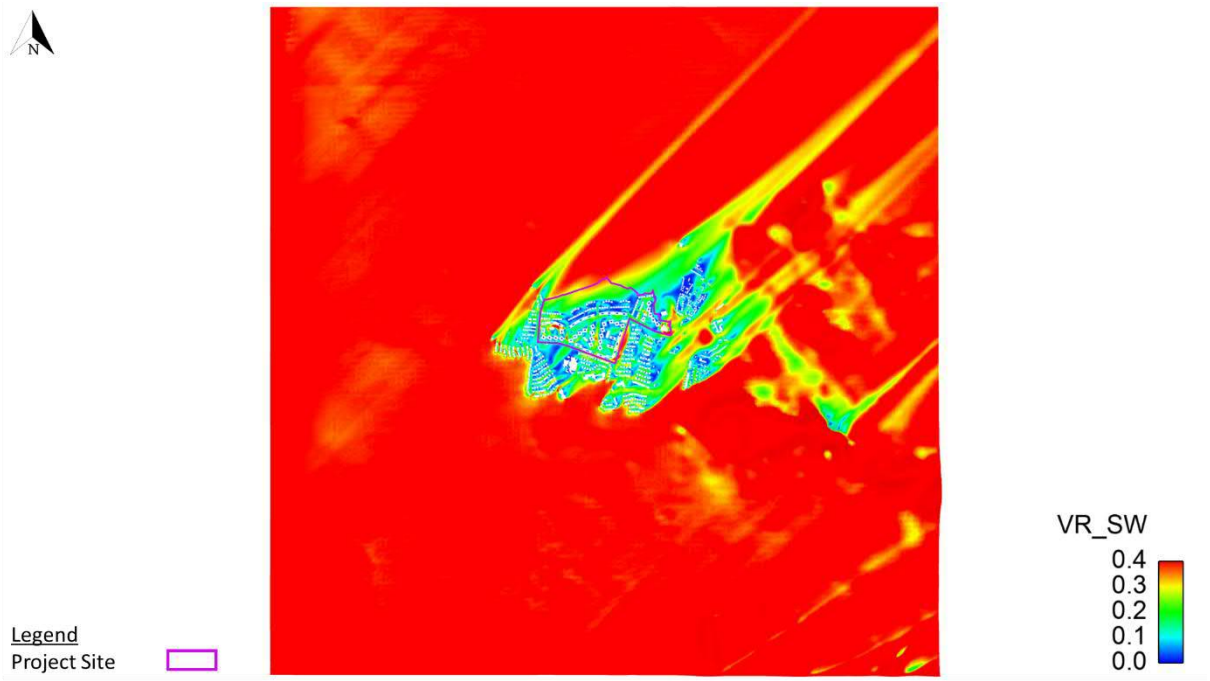


Figure 39 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

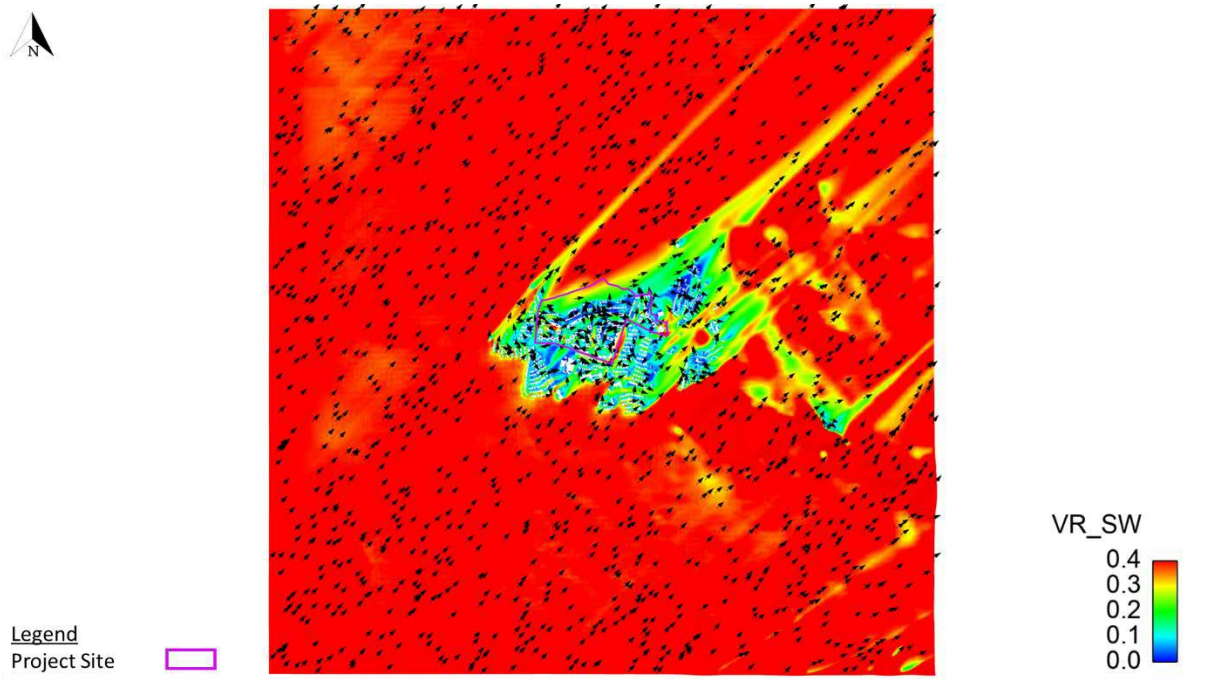


Figure 40 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

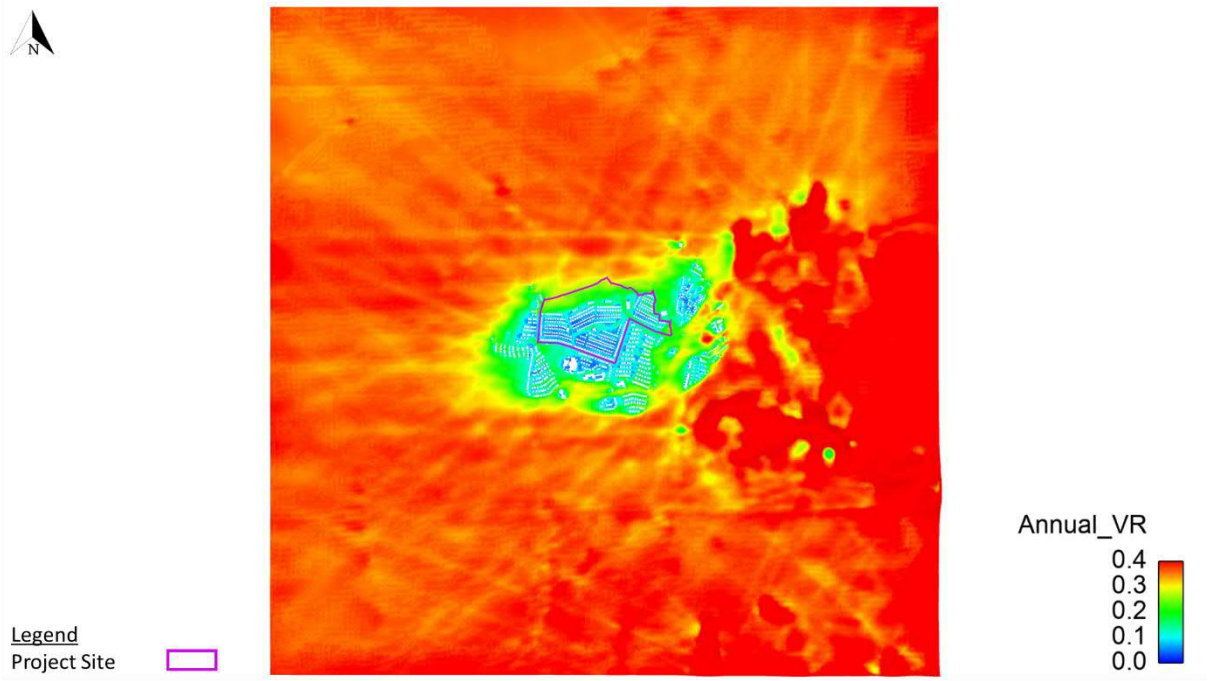


Figure 41 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

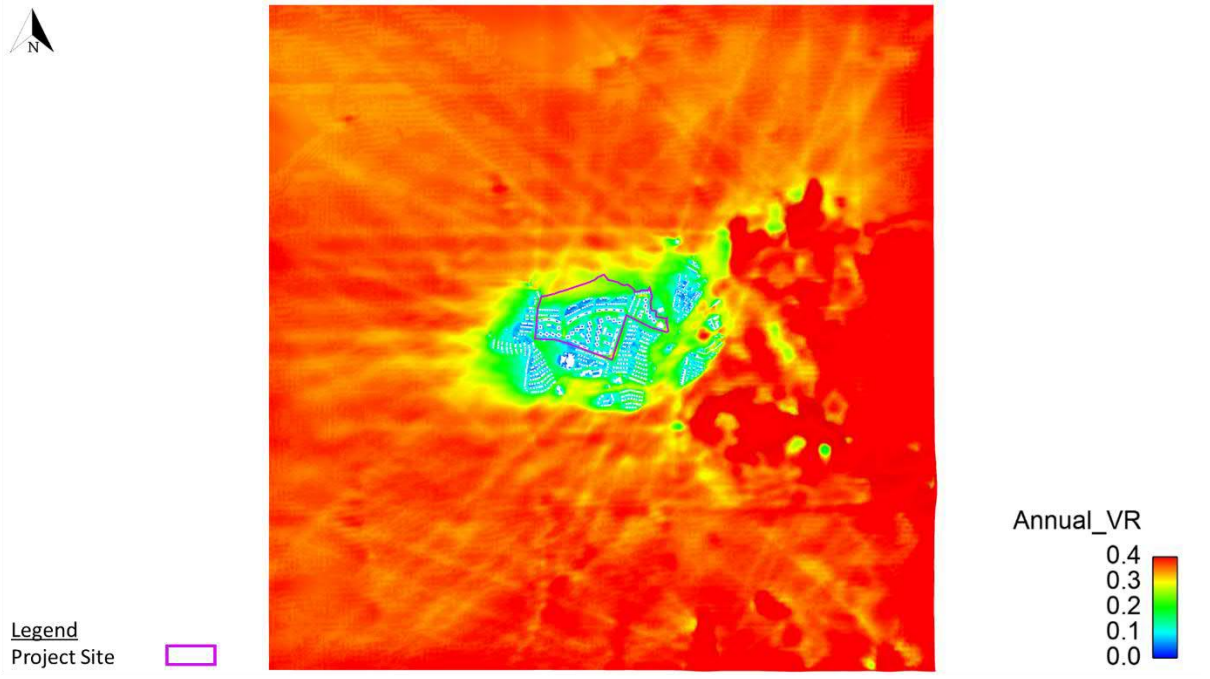


Figure 42 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

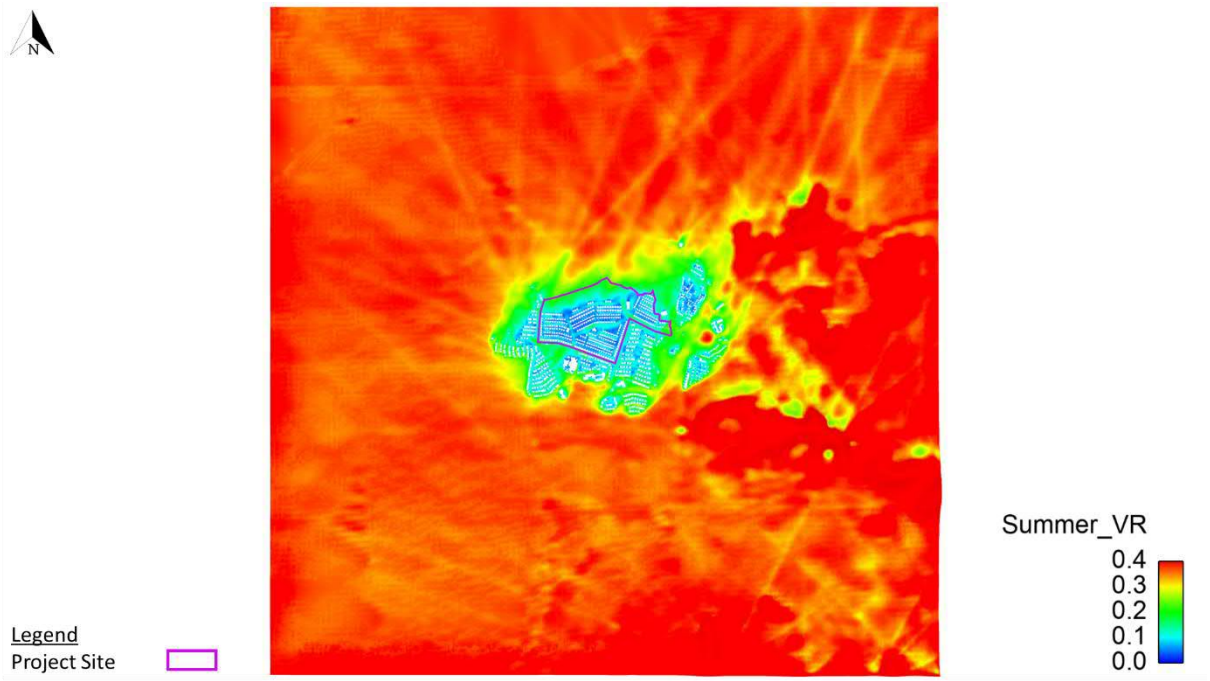


Figure 43 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

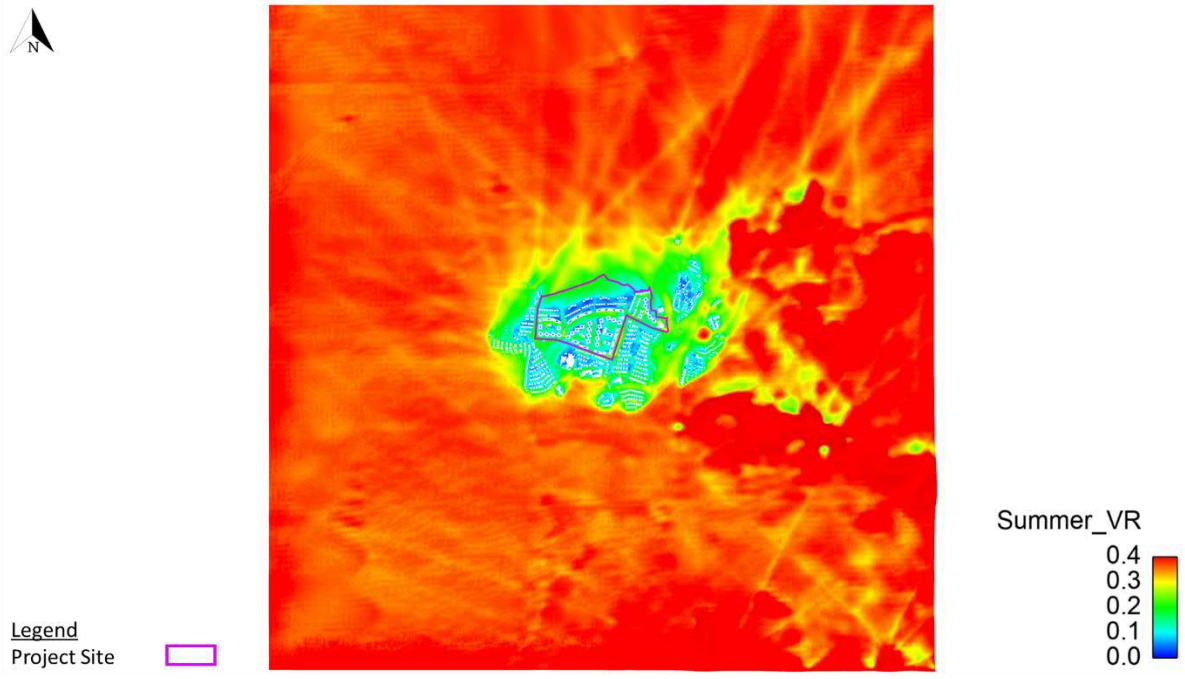
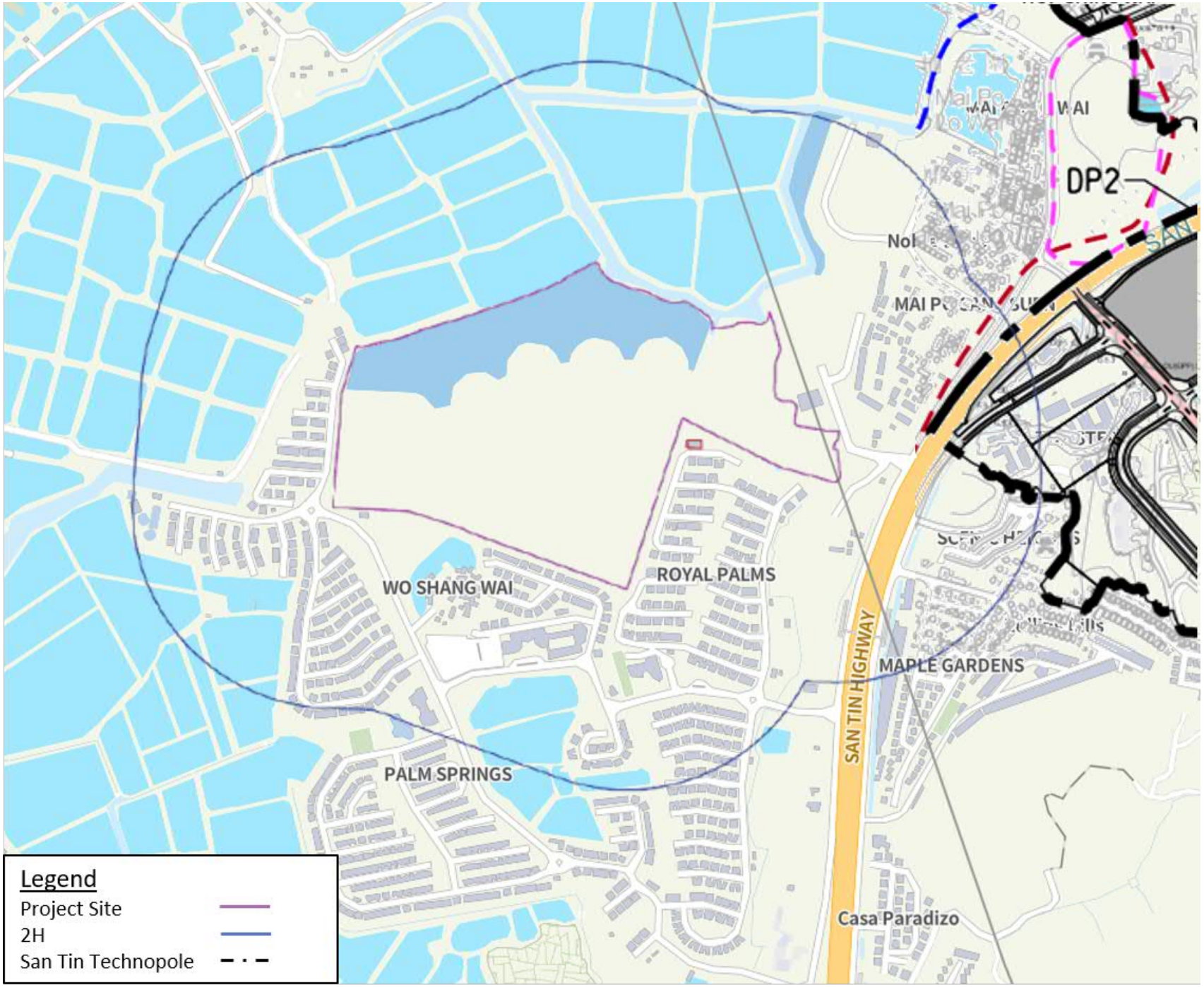


Figure 44 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

Appendix G – Location of the Planned / Committed Developments within the Surrounding Area


DP2
WO SHANG WAI
ROYAL PALMS
PALM SPRINGS
SAN TIN HIGHWAY
MAPLE GARDENS
Casa Paradizo
Legend
Project Site
2H
San Tin Technopole

ISO A1 594mm x 841mm

Approved:

Checked:

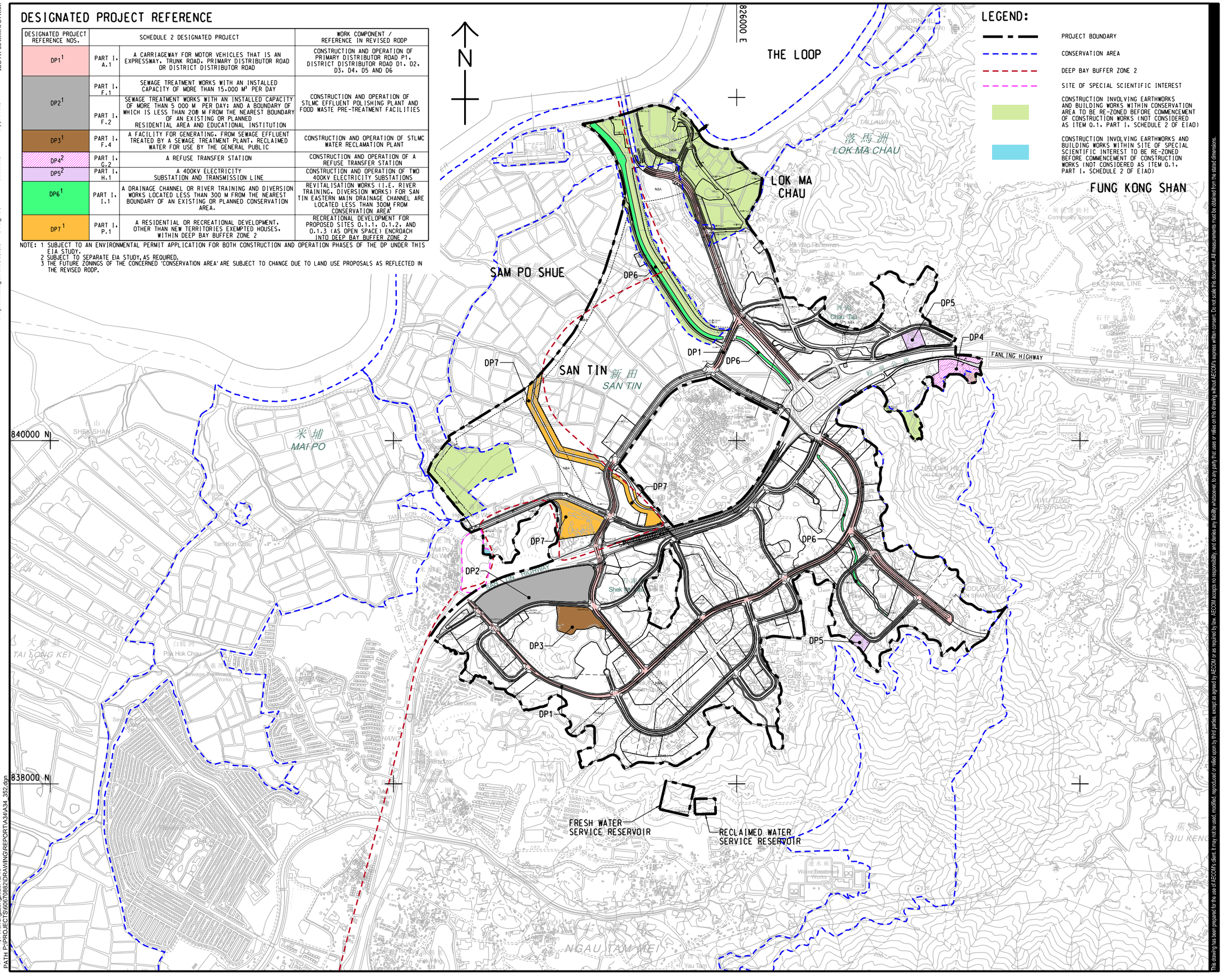
Designer:

Project Management Initials:

DESIGNATED PROJECT REFERENCE

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT		WORK COMPONENT / REFERENCE IN REVISED RODP
DP1[1]	PART I, A.1	A CARRIAGEWAY FOR MOTOR VEHICLES THAT IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD	CONSTRUCTION AND OPERATION OF PRIMARY DISTRIBUTOR ROAD P1, DISTRICT DISTRIBUTOR ROAD D1, D2, D3, D4, D5 AND D6
DP2[1]	PART I, F.1	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 15,000 M^3 PER DAY	CONSTRUCTION AND OPERATION OF STLMC EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES
	PART I, F.2	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 5 000 M PER DAY; AND A BOUNDARY OF WHICH IS LESS THAN 200 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED RESIDENTIAL AREA AND EDUCATIONAL INSTITUTION	
DP3[1]	PART I, F.4	A FACILITY FOR GENERATING, FROM SEWAGE EFFLUENT TREATED BY A SEWAGE TREATMENT PLANT, RECLAIMED WATER FOR USE BY THE GENERAL PUBLIC	CONSTRUCTION AND OPERATION OF STLMC WATER RECLAMATION PLANT
DP4[2]	PART I, G.2	A REFUSE TRANSFER STATION	CONSTRUCTION AND OPERATION OF A REFUSE TRANSFER STATION
DP5[2]	PART I, H.1	A 400KV ELECTRICITY SUBSTATION AND TRANSMISSION LINE	CONSTRUCTION AND OPERATION OF TWO 400KV ELECTRICITY SUBSTATIONS
DP6[1]	PART I, I.1	A DRAINAGE CHANNEL OR RIVER TRAINING AND DIVERSION WORKS LOCATED LESS THAN 300 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED CONSERVATION AREA.	REVITALISATION WORKS (I.E. RIVER TRAINING, DIVERSION WORKS) FOR SAN TIN EASTERN MAIN DRAINAGE CHANNEL ARE LOCATED LESS THAN 300M FROM CONSERVATION AREA[3]
DP7[1]	PART I, P.1	A RESIDENTIAL OR RECREATIONAL DEVELOPMENT, OTHER THAN NEW TERRITORIES EXEMPTED HOUSES, WITHIN DEEP BAY BUFFER ZONE 2	RECREATIONAL DEVELOPMENT FOR PROPOSED SITES O.1.1, O.1.2, AND O.1.3 (AS OPEN SPACE) ENCROACH INTO DEEP BAY BUFFER ZONE 2

NOTE: 1 SUBJECT TO AN ENVIRONMENTAL PERMIT APPLICATION FOR BOTH CONSTRUCTION AND OPERATION PHASES OF THE DP UNDER THIS EIA STUDY.
2 SUBJECT TO SEPARATE EIA STUDY, AS REQUIRED.
3 THE FUTURE ZONINGS OF THE CONCERNED 'CONSERVATION AREA' ARE SUBJECT TO CHANGE DUE TO LAND USE PROPOSALS AS REFLECTED IN THE REVISED RODP.



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AECOM

PROJECT
項目
FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

CLIENT
業主
土木工程拓展署 Civil Engineering and Development Department
規劃署 Planning Department

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核

STATUS
階段

SCALE 比例: A3 1 : 20000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60670882
AGREEMENT NO. 協議編號: CE 20/2021

SHEET TITLE
圖紙名稱
LOCATION OF DESIGNATED PROJECTS

SHEET NUMBER
圖紙編號
60670882/A34/FIGURE 1.2

Plot File by: WunhingZeng@2023/12/15
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_352.dgn

Appendix H – Overviews of the 3D Model Covering Whole Computational Domain

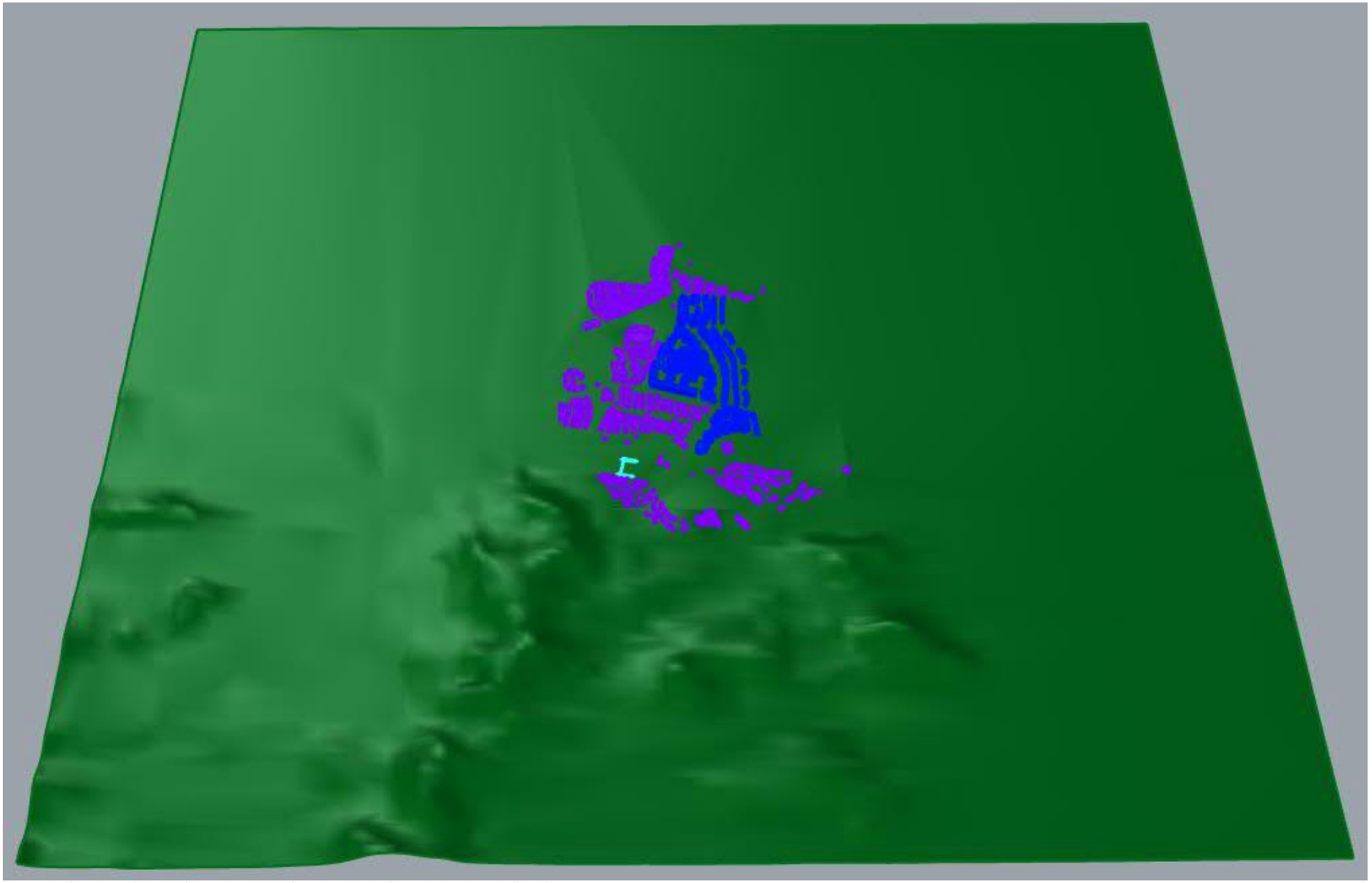


Figure 1a: Overview of the 3D Simulation Model Covering Whole Computation Domain (East)



Figure 1b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (East)

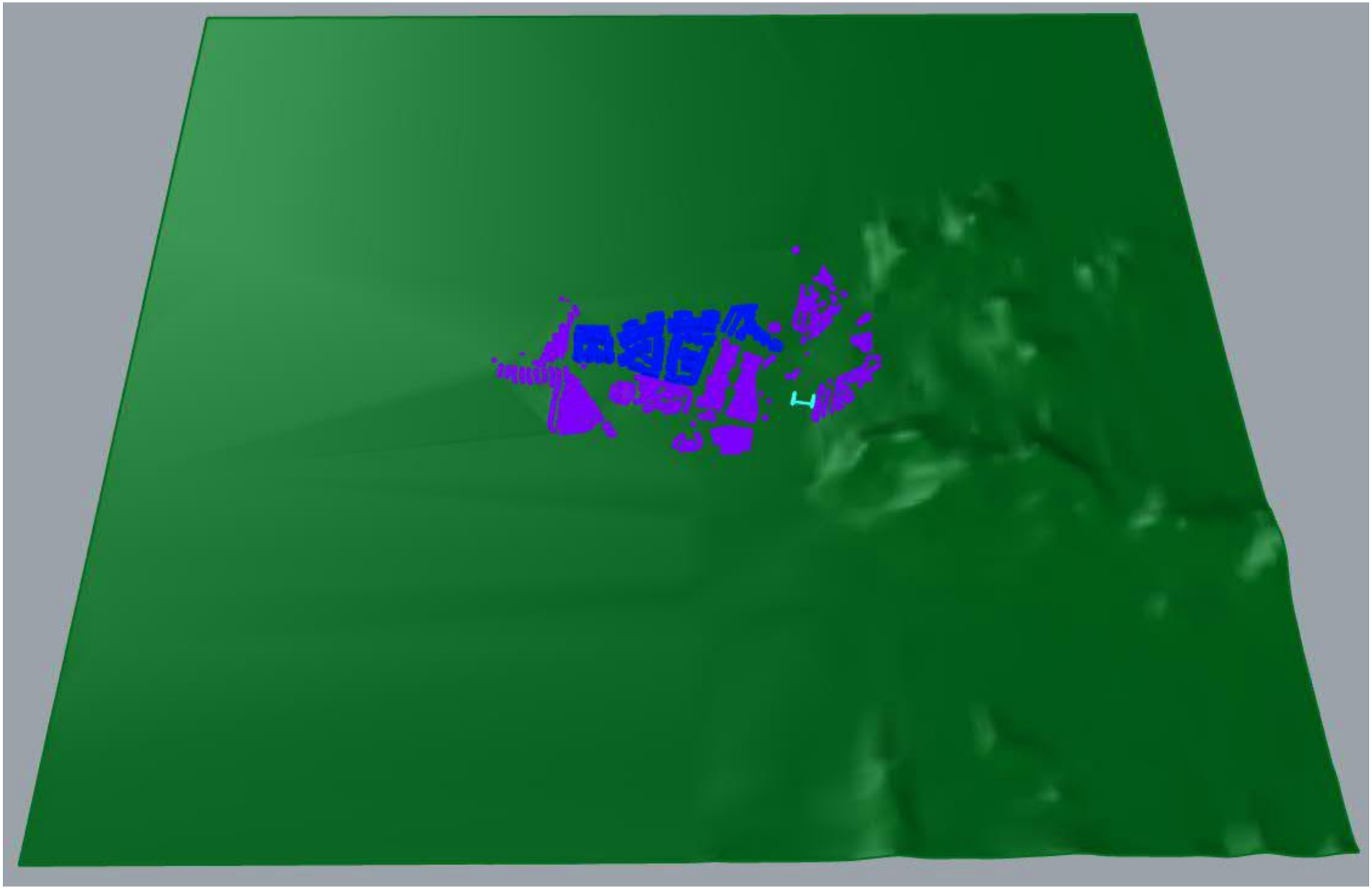


Figure 2a: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)



Figure 2b: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)

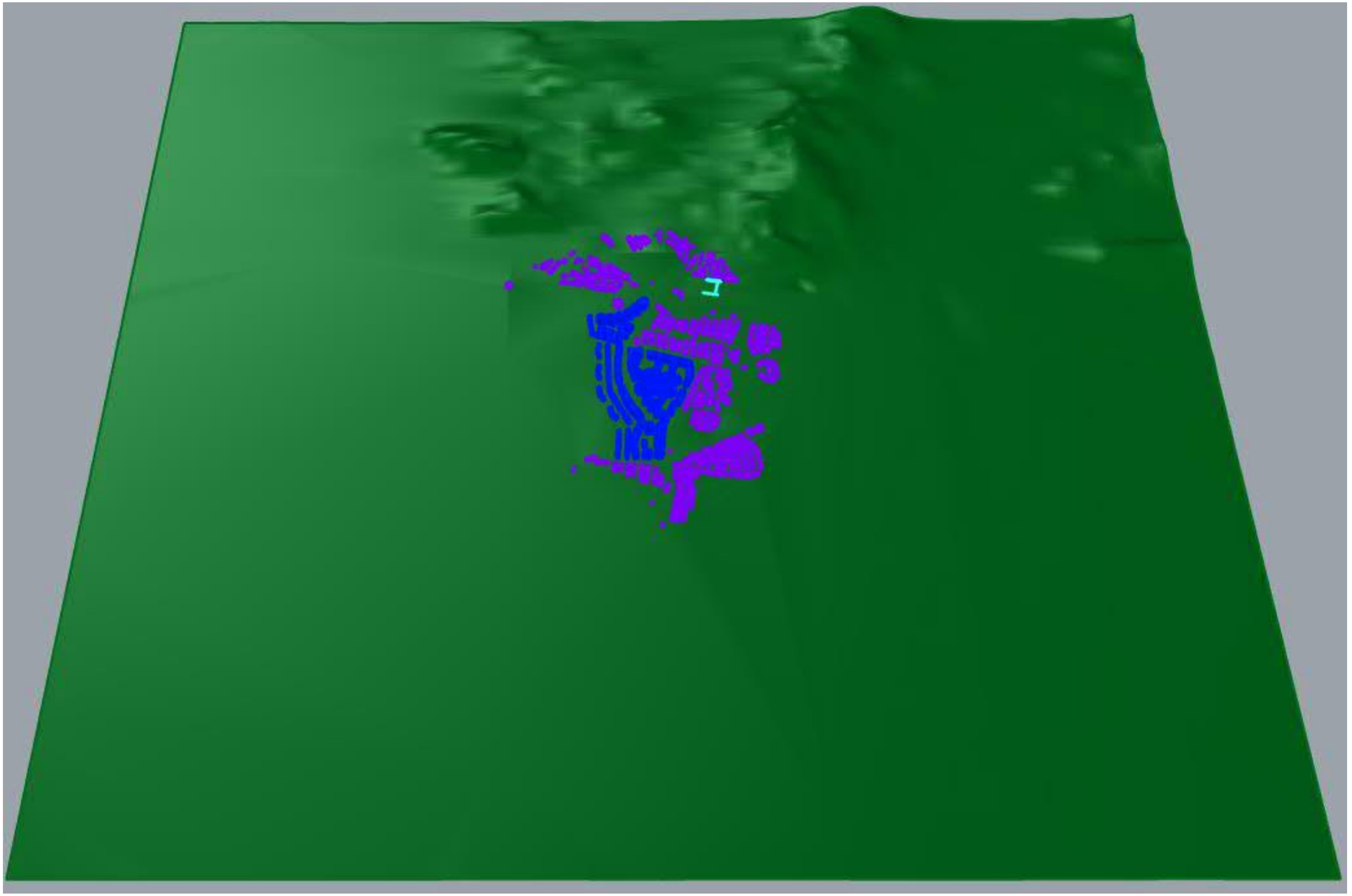


Figure 3a: Overview of the 3D Simulation Model Covering Whole Computation Domain (West)

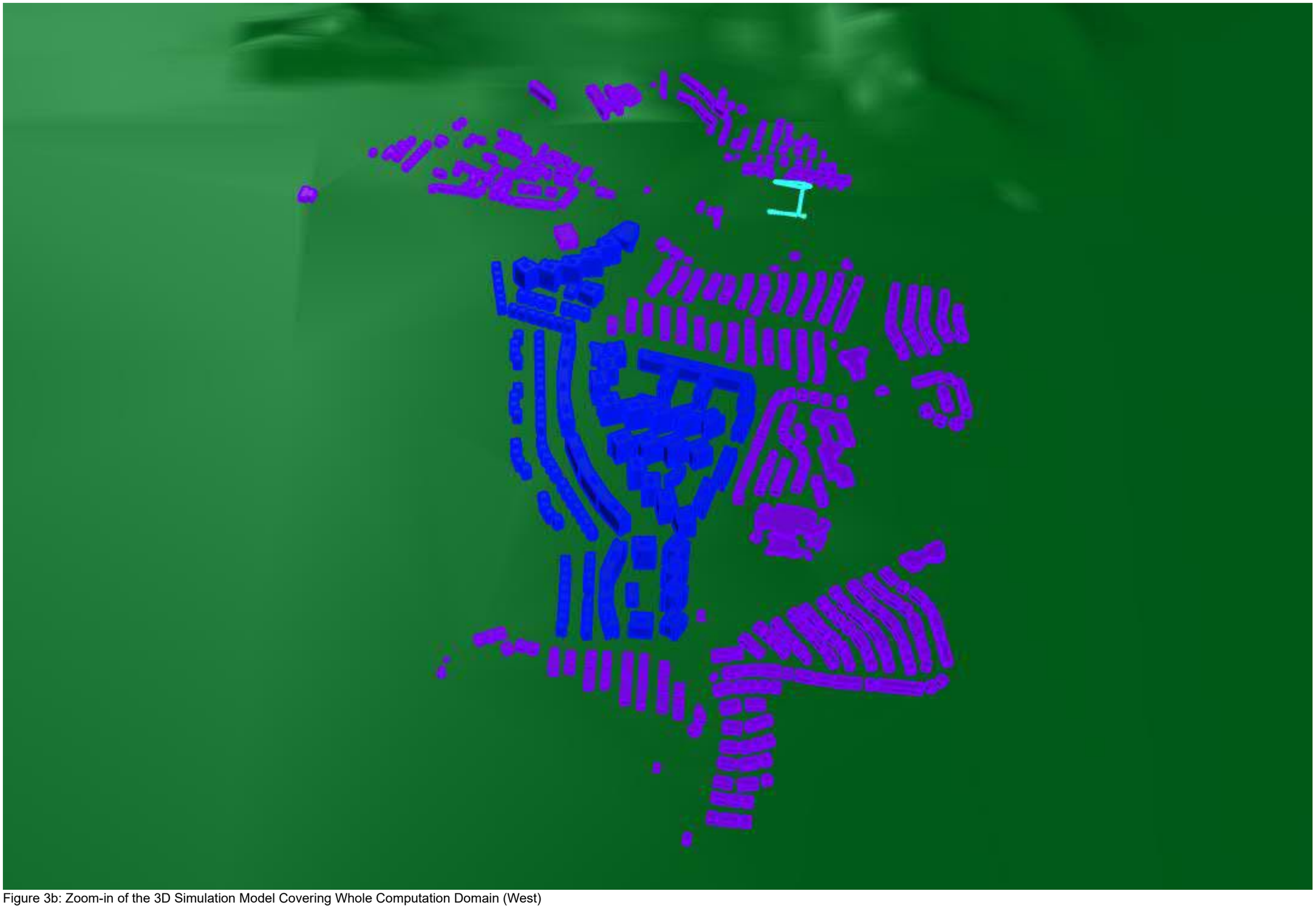


Figure 3b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (West)

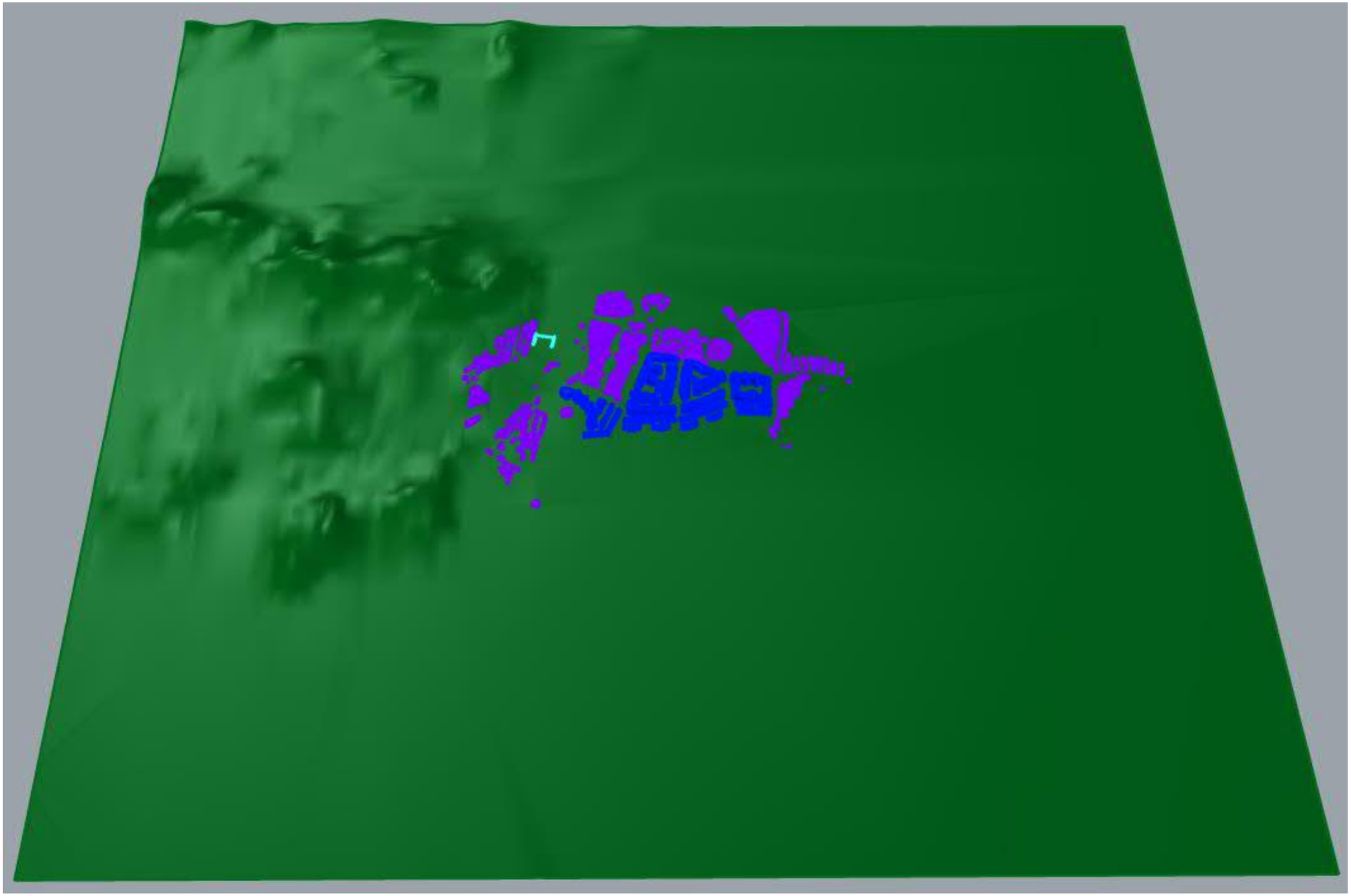


Figure 4a: Overview of the 3D Simulation Model Covering Whole Computation Domain (North)

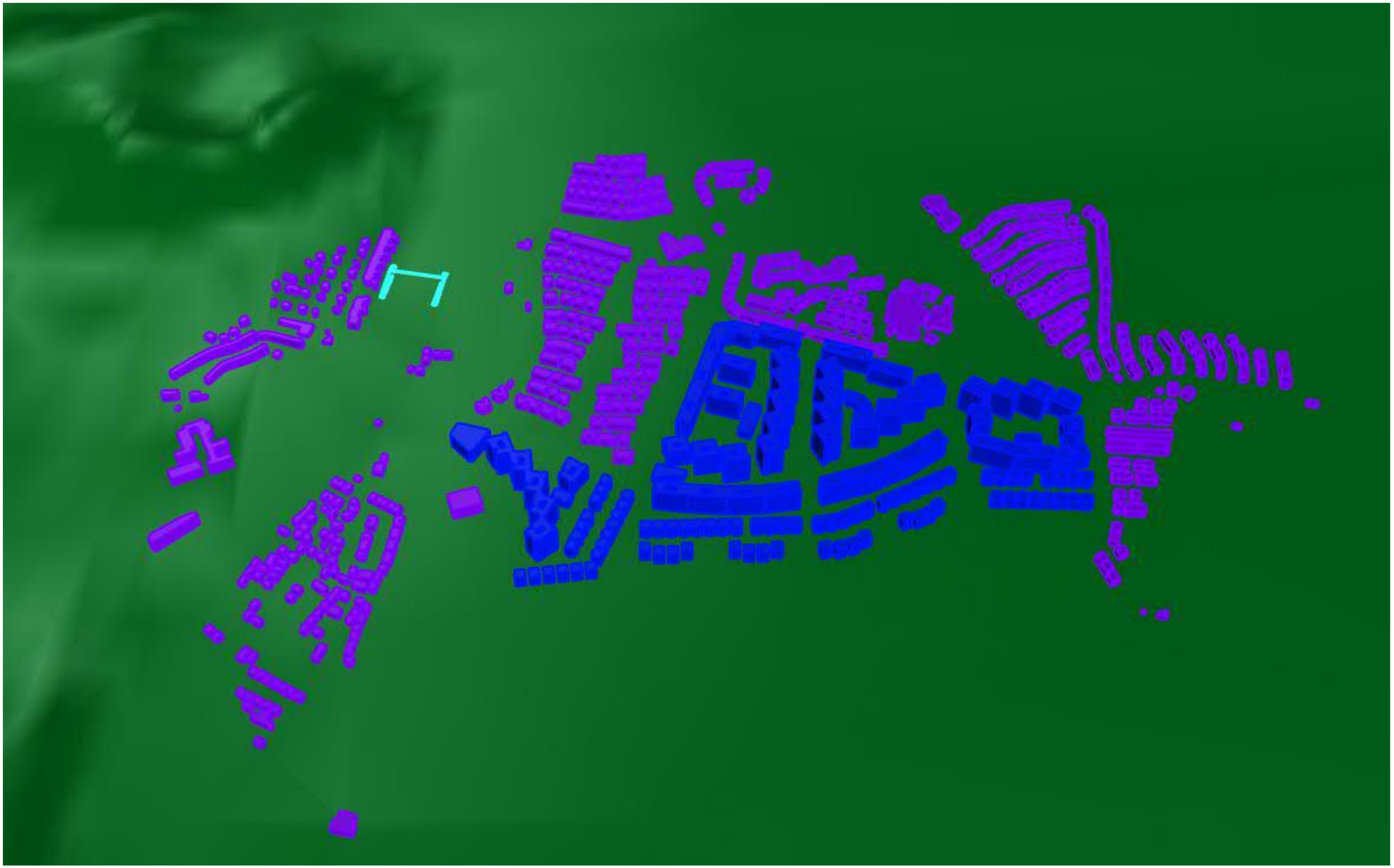
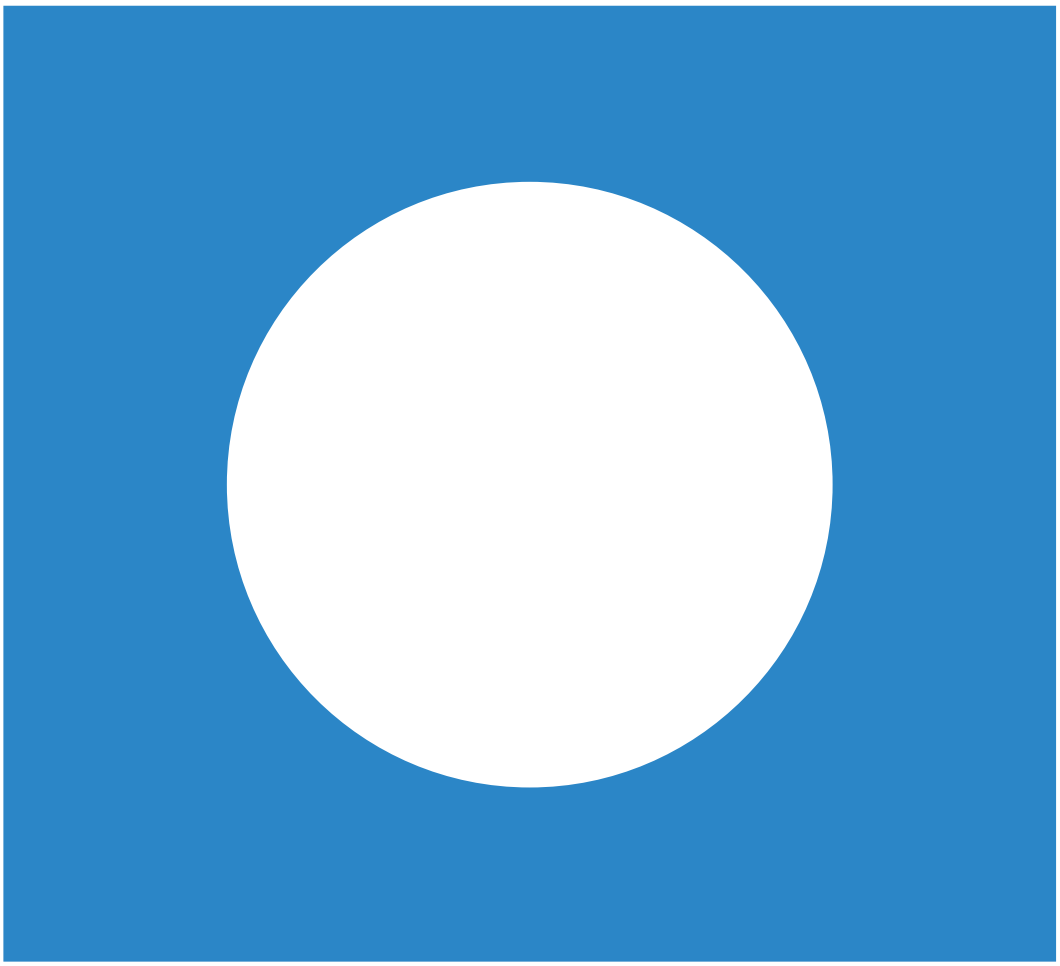


Figure 4b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (North)



26/05/2025

Reference number CHK50800610

TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

TRAFFIC IMPACT ASSESSMENT

SYSTRA MVA

IDENTIFICATION TABLE	
Client/Project owner	Profit Point Enterprises Limited
Project	To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101
Study	Traffic Impact Assessment
Type of document	final Report_v3
Date	26/05/2025
File name	final rpt_WSW 12A TIA_v3_20250526.docx
Reference number	CHK50800610

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1. INTRODUCTION

1.1 Background

1.1.1 The subject site is located in Lots 77 and 50 S.A in D.D.101, Wo Shang Wai, Mai Po, Yuen Long. It is sited on the north of Royal Palms and Palm Springs residential developments. **Drawing 2.1** shows the location of the subject site.

1.1.2 The site falls within an area zoned as Other Specified Uses (Comprehensive Development to include wetland restoration area) on the Mai Po & Fairview Park OZP (OZP No. S/YL-MP/8). The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses.

1.1.3 According to the latest development schedule of San Tin Technopole (STT), the first population intake will start from Year 2031, while the bulk population intake of the Main Phase will start from Year 2034, around the same planned completion year of the Mass Transit Railway (MTR) Northern Link (NOL). The relevant site formation and engineering infrastructure (road works) for STT Development Phase 1 (under PWP Item Nos. 7899CL and 7852CL-2 (Part)) was gazetted on 1 March 2024 and these road works are planned for completion by Year 2031 and the proposed development traffic is expected to be served by the new STT Phase 1 road network (the gazetted new roads) with full road network completion by design year 2034.

1.1.4 A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/7. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site. This traffic impact assessment is to investigate the potential traffic impact on the adjacent local road network and transport facilities by this upzoning proposal. Upon previous submission of the TIA report, comments were received from Transport Department (TD) and this revised TIA report was prepared to reflect the latest development programme and to address TD's comments.

1.2 Study Objectives

1.2.1 The objectives of this TIA study are summarised as follows:

- Present the proposed development schedule and its internal transport provisions;
- Review the current traffic conditions in the vicinity;
- Estimate the traffic generation/attraction of the proposed development;
- Produce traffic forecasts for the local road network at the adopted design year;
- Investigate the traffic impact on the local road network upon operation of the proposed development; and,
- Suggest any traffic improvement measures, if considered necessary, to alleviate the potential traffic problem.

1.3 Report Structure

1.3.1 Following this introductory chapter, there are five further chapters;

- Chapter 2 – Proposed Development, introduces the proposed development scheme;
- Chapter 3 – Existing Traffic Context, reviews the current traffic condition in the vicinity;
- Chapter 4 – Traffic Forecasting, describes the traffic forecasting methodology;
- Chapter 5 – Traffic Impact Assessment, describes the assessments conducted;
- Chapter 6 – Conclusions, summarises and concludes the study findings.

2. PROPOSED DEVELOPMENT

2.1 Proposed Development Schedule

2.1.1 Under the current proposed MLP, the number of residential units will be increased from 789 in the approved scheme in Section 16 application to 3,571, with provision of a 3,800 m^2 100-bed Residential Care Homes for the Elderly (RCHE). The current scheme will provide 3,571 units with average house size of 74.5 m^2.

2.1.2 The domestic GFA, flat mix, plot ratio will be changed, compared with those in the previous approved S16 application. **Table 2.1** summarises the changes in flat mix of the previous approved and current proposed scheme.

Table 2.1 Comparison of Flat Mix in Previous Approved Scheme and Current Proposed Scheme

	Previous Approved MLP (Application no. A/YL-MP/344)	Current Proposed MLP	Difference
Domestic GFA	82,963 m^2	265,847 m^2	+182,884 m^2
Domestic Plot Ratio	0.4	1.28	+0.88
No. of Units	789 Units	3,571 Units	+2,782 Units
Average House Size	105.1 m^2	74.5 m^2	-30.6 m^2
Non-domestic Plot Ratio	-	0.02	+0.02
Non-domestic GFA	-	3,800 m^2	+3,800 m^2

2.1.3 As indicated in **Table 2.1**, the current proposed MLP has an increase of 2,782 units with the change of both domestic and plot ratio, and leading to a decrease of average house size, with the provision of a RCHE.

2.1.4 It is anticipated that the proposed development will be completed by year 2031.

2.2 Vehicular Access

2.2.1 Same as the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po, which is abutting the site. The location of the vehicular access is illustrated in **Drawing 2.1**. With the gazetted new roads for STT to be completed on or before Year 2031, it is anticipated that the development traffic will mainly access via Fairview Park Boulevard Interchange and the new Shek Wu Wai

Interchange, Road L11 onto Castle Peak Road – San Tin and Castle Peak Road - Mai Po, with minority of traffic heading to/from Sheung Shui, as indicated in **Drawing 3.1**.

2.3 Internal Transport Facility

2.3.1 The provision of the internal transport facilities in the current proposed MLP is determined based on the latest Hong Kong Planning Standards and Guidelines (HKPSG). **Table 2.2** summarises the proposed provision of the internal transport facilities for the current proposed MLP, as shown in **Drawing 2.2**. Since there is no specific requirement stipulated in Hong Kong Planning Standards & Guidelines (HKPSG) for the RCHE, the provision of car parking spaces and the loading/unloading facilities are proposed with reference to the parking ratios of the applications of similar social warfare developments as listed in **Table 2.3**, as well as the operation need for the loading/unloading facilities.

Table 2.2 Proposed Provision of the Internal Transport Facilities

Internal Transport Facilities	Previous Approved MLP (Application no. A/YL-MP/344) – 789 Units		Current Proposed MLP – 3,571 Units (128 houses included) with RCHE		
	Proposed Requirement	Proposed Provision	Parameters	Proposed Requirement under HKPSG	Proposed Provision
Residential Parking Provision					
Residential Carparking Space	2 spaces per house[1]	1,578	128 Houses	2 spaces per house[2]	256
	-		1,291 units	1 space per 3.03 units for 40<FS≤70	428
			2,096 units	1 space per 1.52 units for 70<FS≤100	1,386
			56 units	1 space per 0.89 units for 100<FS≤130	64
	Sub -total	1,578		Sub-total	2,134
Visitor Parking Space	5 spaces[1]	5	47 blocks	5 spaces per block with more than 75 units	235
Accessible Parking Space	6 accessible car parking space for car parking space in lot above 450 by Building Authority	6	2,113 private car parking spaces	6 accessible car parking space for car parking space in lot above 450 by Building Authority	27
Motorcycle Parking Space	37 spaces[1]	37	2,113 spaces	1 per 10 car parking spaces[4]	212
Loading/unloading Bay	1 bay per 800 units[3]	1	47 blocks	1 bay per each housing block[4]	47
Bicycle Parking Spaces	-	-	1,291 units	1 space per 7.5 flats (unit size < 70m²)[4]	173
RCHE Parking Provision[5]					
Ancillary Private Car Parking Space	-	-	100-bed	1 space per 38 beds	3

Loading/Unloading Bay for HGV	-	-	100-bed	1 space per 150 beds	1
Ambulance Lay-by			100-bed	1 space per 150 beds	1
Light-bus Lay-by	-	-	100-bed	1 space per 150 beds	1

Remarks: (1) Requirement included in the approved land exchange application.
(2) Assume 2 parking spaces per house.
(3) Requirement adopted in previous approved S.16 application.
(4) According to the latest comments from Transport Department.
(5) For RCHE parking provision, referring to the approved planning application of RCHE in Table 2.3.

2.3.2 The proposed provision of car parking spaces has been reviewed with reference to various approved planning application of the similar social welfare development, as listed in **Table 2.3**.

Table 2.3 Car Parking and Loading/unloading Facilities Provision in Other RCHE Development

Application No.	Site Location	No. of Bed	No. of Car Parking Spaces	Derived Parking Ratio	No. of HGV Loading/ Unloading Bay	Derived HGV Loading/ Unloading Bay Ratio	No. of Ambulance Lay-by	Derived Ambulance Lay-by Ratio	No. of Light-bus Lay-by	Derived Light-bus Lay-by Ratio
A/YL/256	Lots 1695 S.E ss.1 RP, 1695 S.F ss.1 and 1695 S.H RP (Part) in D.D. 120, Tai Kei Leng, Yuen Long	170	3	1 per 57 beds	1	1 per 170 beds	1	1 per 170 beds	1	1 per 170 beds
Y/NE-KTS/16	Lot No. 953 RP (Part) in D.D. 92 and adjoining Government Land, Kam Hang Road, Kwu Tung South	150	4	1 per 38 beds	1	1 per 150 beds	1	1 per 150 beds	1	1 per 150 beds

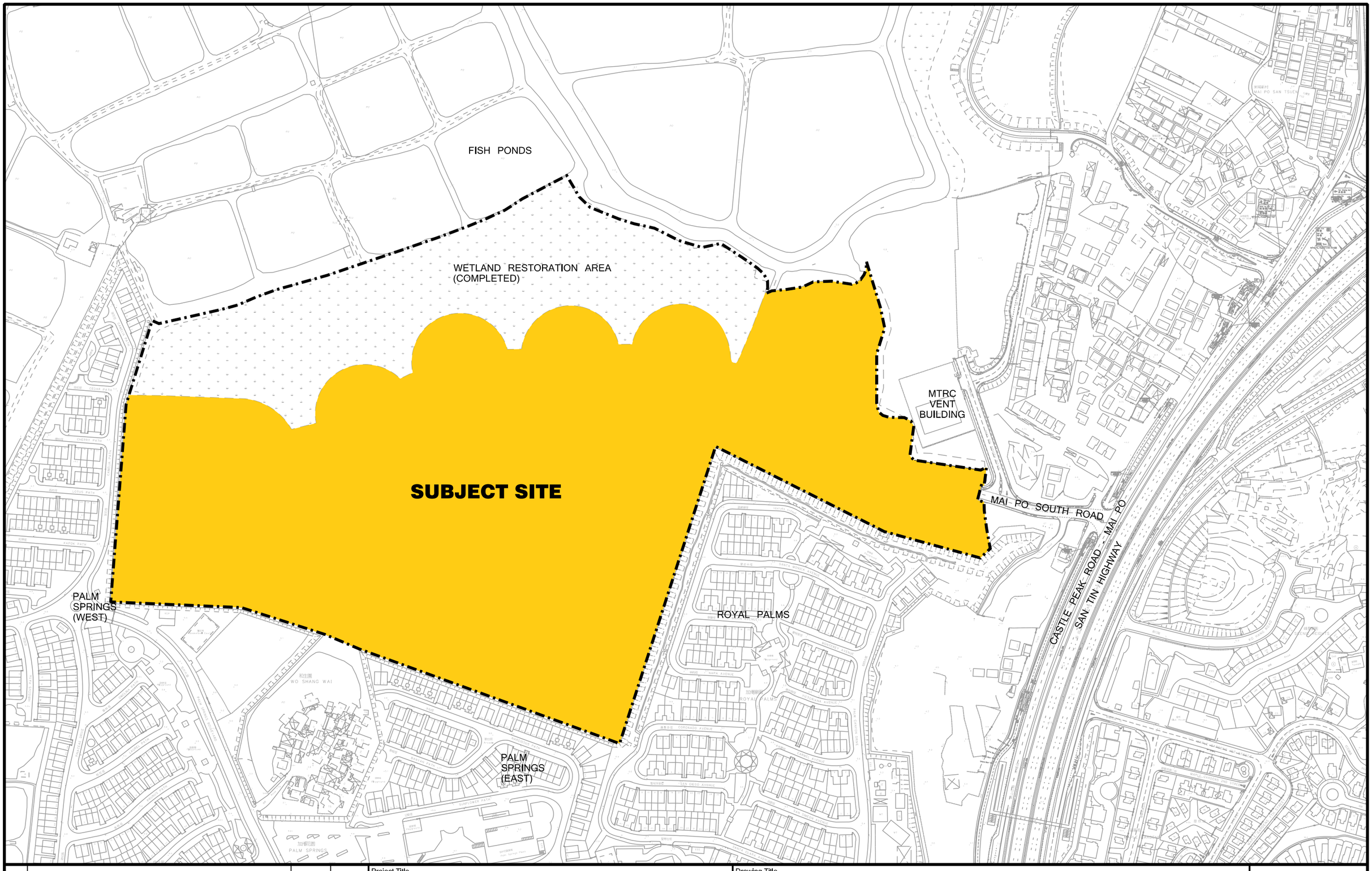
2.3.3 **Table 2.3** shows that the ratios of car parking provision in the similar applications are ranged from 1 space per 38 places to 1 space per 57 places, and therefore the proposed 3 nos. of car parking spaces for the Proposed Development are considered reasonable.

2.3.4 Apart from the car parking spaces, spaces for loading/unloading of goods vehicles and ambulance are also proposed to serve the necessary operation need. To allow flexibility for future operation, it is proposed that the loading/unloading spaces would be shared used with the loading/unloading or parking of private light bus.

2.3.5 Since some of the units of the proposed development is smaller than 70m^2 in flat size, there will be provision of the bicycle parking spaces.

2.3.6 The actual carparking provisions may be subject to agreement by the authority.

2.3.7 The allocation of related parking provision will be studied and reviewed in later detailed design stage. Drop-bar gate will be provided within the site for access control. Sufficient waiting spaces between the drop-bar gate and public road will be provided for vehicle queueing within the development. The location of the drop-bar gate will be provided at later detailed design stage.



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

SITE LOCATION

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**2.1**	A

SYSTRA MVA

CHK50800610/TIA/F21-A.DGN/KCM/21JAN25

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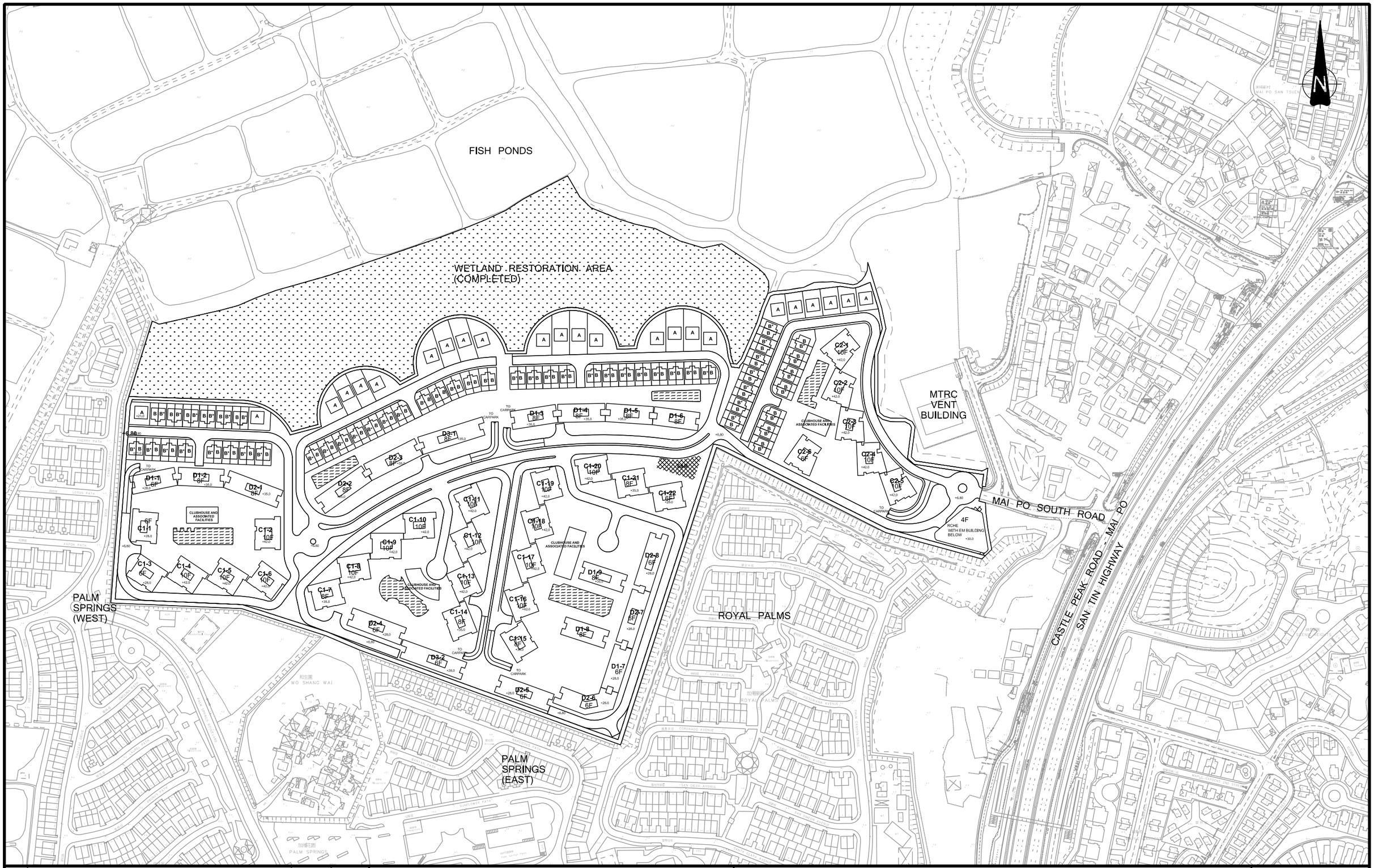


Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MLP UPDATED	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED MASTER LAYOUT PLAN

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:3000(A3)	JUL 2024	2.2	A

CHK50800610/TIA/F22-A.DGN/KCM/21JAN25

Original Size : A3

3. EXISTING TRAFFIC CONTEXT

3.1 Surrounding Road Network

3.1.1 As indicated in **Drawing 2.1**, the site is bounded by Mai Po South Road to the east, fishponds to the north and Royal Palms & Palm Springs residential development to the south. The development traffic from San Tin Highway to Mai Po South Road connecting the site are either via Castle Peak Road – Mai Po Section from the south or Castle Peak Road – San Tin Section from the north.

3.1.2 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway. At the existing Shek Wu Wai Interchange (SWWI), apart from improvement of existing slip roads at its western side connecting to San Tin Highway, a pair of new slip roads is proposed at the eastern side of SWWI to facilitate traffic movement. Also, the existing junction of Castle Peak Road – San Tin / Shek Wu Wai Road would be upgraded from priority junction to 4-arm signalized junction. With the above consideration of enhanced road network, the future ingress and egress routes of the subject site are illustrated in **Drawing 3.1**.

3.1.3 San Tin Highway is a dual 3-lane expressway. It forms a section of Route 9 of the strategic highway network connecting Fanling Highway in the north and Yuen Long Highway/Tai Lam Tunnel in the south.

3.1.4 San Tam Road and Castle Peak Road - Mai Po are both single 2-lane carriageways running parallel to San Tin Highway serving the adjacent local developments.

3.1.5 Mai Po South Road is about 7.3m wide with 2m footpaths on both sides. It mainly serves as an access to MTRC ventilation building.

3.1.6 The existing nearby road network is subject to major changes upon completion of the new roads planned under STT project, with new roads connecting to the future upgraded Shek Wu Wai Interchange.

3.2 Current Junction Operational Performance

3.2.1 With the consideration of the road network upgrade due to San Tin Technopole project, a total of 11 local junctions and 6 screenlines, as indicated in **Drawing 3.2**, have been identified for assessment purpose in this study. For the strategic road San Tin Highway, as there will be upcoming planned transport infrastructures and enhanced railway network, including the Northern Metropolis Highway and the Northern Link, the traffic condition and efficiency would be significantly improved in the strategic level. The identified junctions are listed in **Table 3.1**, and their existing layouts are shown in **Drawings 3.3** to **Drawings 3.14**.

Table 3.1 Identified Local Key Junctions and Road Links

Ref.(1)	Junction/Road Links	Type	Drawing No.
A1	Shek Wu Wai Road / San Tin Highway Slip Road (2)	Priority	3.3
A2	Shek Wu Wai Road / Mai Po Lung Road (2)	Priority	3.4
B	Castle Peak Road – San Tin / Shek Wu Wai Road (2)	Priority	3.5
C	Castle Peak Road – Mai Po/San Tam Road	Priority	3.6
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	Priority	3.7
E	Castle Peak Road – Mai Po/Geranium Path	Priority	3.8
F	Castle Peak Road – Tam Mi/Yau Pok Road	Priority	3.9
G	Castle Peak Road – Tam Mi/Kam Pok Road	Priority	3.10
H	Fairview Park Interchange	Roundabout	3.11
I	Castle Peak Road – Mai Po/Mai Po South Road	Priority	3.12
J	Castle Peak Road – San Tin/Kwun Tung Road (3)	Priority	3.13
K	San Tin Interchange (3)	Roundabout	3.14
Screenline L1	Mai Po South Road	Single 2-lane carriageway	3.2
Screenline L2	Castle Peak Road – Mai Po (South to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L3	Castle Peak Road – Mai Po (North to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L4	Castle Peak Road – Tam Mi	Single 2-lane carriageway	3.2
Screenline L5	Shek Wu Wai Road	Single 2-lane carriageway	3.2
Screenline L6	San Tin Highway	Dual 3-lane expressway	3.2

Remark: (1) Refer to **Drawing 3.2** for junction reference.
(2) Junctions will be upgraded by San Tin Technopole project.
(3) Subject to the planned road network, the traffic flow induced by subject site would not pass through the concerned junctions in the Design Year of 2034.

Traffic Surveys

3.2.2 A series of manual classified traffic surveys have been conducted at the identified junctions to establish the current traffic condition in the vicinity. The surveys were carried out during the morning and evening peak hour periods on a typical weekday in April 2024. The observed traffic data indicates that the morning peak hour and evening peak hour occurred from 8:00am to 9:00am and 5:00pm to 6:00pm. The observed peak periods are adopted for forecasting and assessment purposes in this study.

3.2.3 Subject to previous TD comment, since the observed traffic flow in traffic survey in a typical weekday in April 2024 was considered under normal traffic condition, the traffic flow in arm G in Fairview Park Interchange under previous approved Planning Application A/YL-MP/344 was adopted in the assessment in conservative approach. The observed peak hour traffic flows are shown in **Drawing 3.15**.

3.2.4 Junction capacity and Volume/Capacity Ratio (V/C Ratio) assessments have been conducted for the identified junctions and road links with respect to the observed traffic flows to evaluate their current operational performance during the weekday peak hours and the results are as shown in **Table 3.2** and **Table 3.3**. The junction calculation sheets are attached in **Annex A**.

Table 3.2 Current Junction Operational Performance

Ref. (1)	Junction	RC/RFC (2)	
		AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.38	0.38
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.48	0.29
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.75	0.63
C	Castle Peak Road – Mai Po/ San Tam Road	0.21	0.13
D	Castle Peak Road – Mai Po/ Palm Springs Boulevard	0.56	0.31
E	Castle Peak Road – Mai Po/ Geranium Path	0.02	0.02
F	Castle Peak Road – Tam Mi/ Yau Pok Road	0.03	0.03
G	Castle Peak Road – Tam Mi/ Kam Pok Road	0.12	0.10
H	Fairview Park Interchange	0.56	0.64
I	Castle Peak Road – Mai Po/ Mai Po South Road	0.01	0.02
J	Castle Peak Road – San Tin/Kwun Tung Road	0.54	0.72
K	San Tin Interchange	0.49	0.41

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

Table 3.3 Current Road Links Performance

Ref.(1)	Road Link	Directions	Design Capacity, (veh/hr)	Design Capacity, (pcu/hr) (4)	2024 Traffic Flow			
					Traffic Flow (pcu/hr)		V/C (5)	
					AM	PM	AM	PM
L1	Mai Po South Road	EB	700(2)	910	0	10	0.00	0.01
		WB	700(2)	910	15	10	0.02	0.01
L2	Castle Peak Road – Mai Po	NB	700(2)	910	185	210	0.20	0.23
		SB	700(2)	910	185	155	0.20	0.17
L3	Castle Peak Road – Mai Po	NB	700(2)	910	240	240	0.26	0.26
		SB	700(2)	910	490	235	0.54	0.26
L4	Castle Peak Road – Tam Mi	NB	700(2)	910	420	390	0.46	0.43
		SB	700(2)	910	475	350	0.52	0.38
L5	Shek Wu Wai Road	NB	700(2)	910	345	310	0.38	0.34
		SB	700(2)	910	455	380	0.50	0.42
L6	San Tin Highway	NB	4,700(3)	6,100	4,720	4,280	0.77	0.70
		SB	4,700(3)	6,100	4,630	4,635	0.76	0.76

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction.
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction.
(4) PCU factor of 1.3 adopted.
(5) V/C = volume to capacity ratio.

3.2.5 The results in **Table 3.2** and **Table 3.3** have indicated that all identified junctions and road links are currently operating with ample capacity during the typical weekday morning and evening peak hours.

3.3 Nearby Public Transport

3.3.1 The current road-based public transport services are available at Castle Peak Road and San Tam Road, with service stops located within 500-metre walking distance from the subject site, as shown in **Drawing 3.16** and as summarized in **Table 3.4** below.

Table 3.4 Existing Nearby Public Transport Services

Route No.	Destination	Frequency (min)
Franchised Bus		
76K	Sheung Shui (Ching Ho) – Long Ping Estate	20 - 30
Green Minibus (GMB)		
75	Yuen Long (Fook Hong Street) – Lok Ma Chau Spur Line PTI	10 - 20
76	Yuen Long (Fook Hong Street) – Siu Hom Tsuen	15 - 20
78	Lok Ma Chau (San Tin) PTI – Pat Heung Road (near Tai Lam Bus-Bus Interchange)	20 - 25
Public Light Bus (PLB)		
17	Sheung Shui – Yuen Long	Flexible (1)

Remarks: (1) Peak hour frequency is observed to be 3-5 minutes.

Public Transport Utilization

3.3.2 A traffic survey was also conducted on a typical weekday in April 2024 to identify the peak hour public transport utilization at the existing nearest bus stops near Royal Palms at Castle Peak Road and Maple Garden at San Tam Road. The survey results are summarized in **Table 3.5**.

Table 3.5 Observed Peak Hour Public Transport Utilization

Bound	Mode	Route No.	Observed No. of Vehicles	Total Service Capacity (pax)(1)	Observed Occupancy (pax)	Occupancy Rate (%)
AM Peak (07:00 – 09:00)						
Yuen Long	Bus	76K	5	450	119	26%
	GMB	75	12	198	166	84%
		76	5	83	68	82%
		78	4	76	30	39%
	PLB	17	49	817	579	71%
			Total	**1,624**	**962**	**59%**
Sheung Shui / San Tin	Bus	76K	4	360	47	13%
	GMB	75	14	233	157	67%
		76	4	67	45	67%
		78	5	92	42	46%
	PLB	17	41	674	449	67%
			Total	**1,426**	**740**	**52%**
PM Peak (17:30 – 19:30)						
	Bus	76K	4	360	135	38%

Yuen Long	GMB	75	18	309	297	96%
		76	6	96	70	73%
		78	4	76	32	42%
	PLB	17	43	718	653	91%
			Total	**1,559**	**1,187**	**76%**
Sheung Shui / San Tin	Bus	76K	6	540	47	9%
	GMB	75	10	172	139	81%
		76	6	96	92	96%
		78	4	76	33	43%
	PLB	17	40	667	535	80%
			Total	**1,551**	**846**	**55%**

Remarks: (1) The bus carrying capacity is assumed to be taken at 75% of 120, which equals to 90.

3.3.3 From **Table 3.5**, it can be noted that the passenger demands are mostly served by KMB 76K, GMB 75 and PLB 17. The bus service has an extensive service coverage running between Yuen Long and Sheung Shui, however its service level is still relatively low at a peak hour frequency of 20-30 minutes. For the PLB 17, it is a public light bus service with no designated routing, headway and fares.

3.3.4 Based on the number of boarding and alighting passengers from the survey, it is noted that the directional split of local residents in the vicinity is about 65% towards Yuen Long and 35% towards Sheung Shui in AM peak periods, while 68% towards Yuen Long and 32% towards Sheung Shui in PM peak periods.

3.4 Pedestrian Flow and Queuing Space Assessment

3.4.1 A pedestrian flows survey was also conducted on a typical weekday in October 2024, the operational performance of identified footpaths and concerned queuing area of bus stops at Castle Peak Road – Mai Po and San Tam Road in term of average flow of Level of Services (LOS), as stipulated in Highway Capacity Manual 2000 and Transport Planning & Design Manual (TPDM), has been assessed. The peak hour pedestrian flows in 2024 are shown in **Drawing 3.17**, and the results are summarized in below **Table 3.6** and **Table 3.7**.

Table 3.6 2024 Observed Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2024 Observed Peak Hourly Flow (ped/hr)		2024 Observed Peak Flow Rate (ped/min/m) (3)		LOS (4)	
			AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	11	9	0.17	0.14	A	A
Fp2	2.3	1.3	20	41	0.26	0.53	A	A
Fp3	1.5	0.5	22	37	0.73	1.23	A	A
Fp4	1.7	0.7	5	6	0.12	0.14	A	A

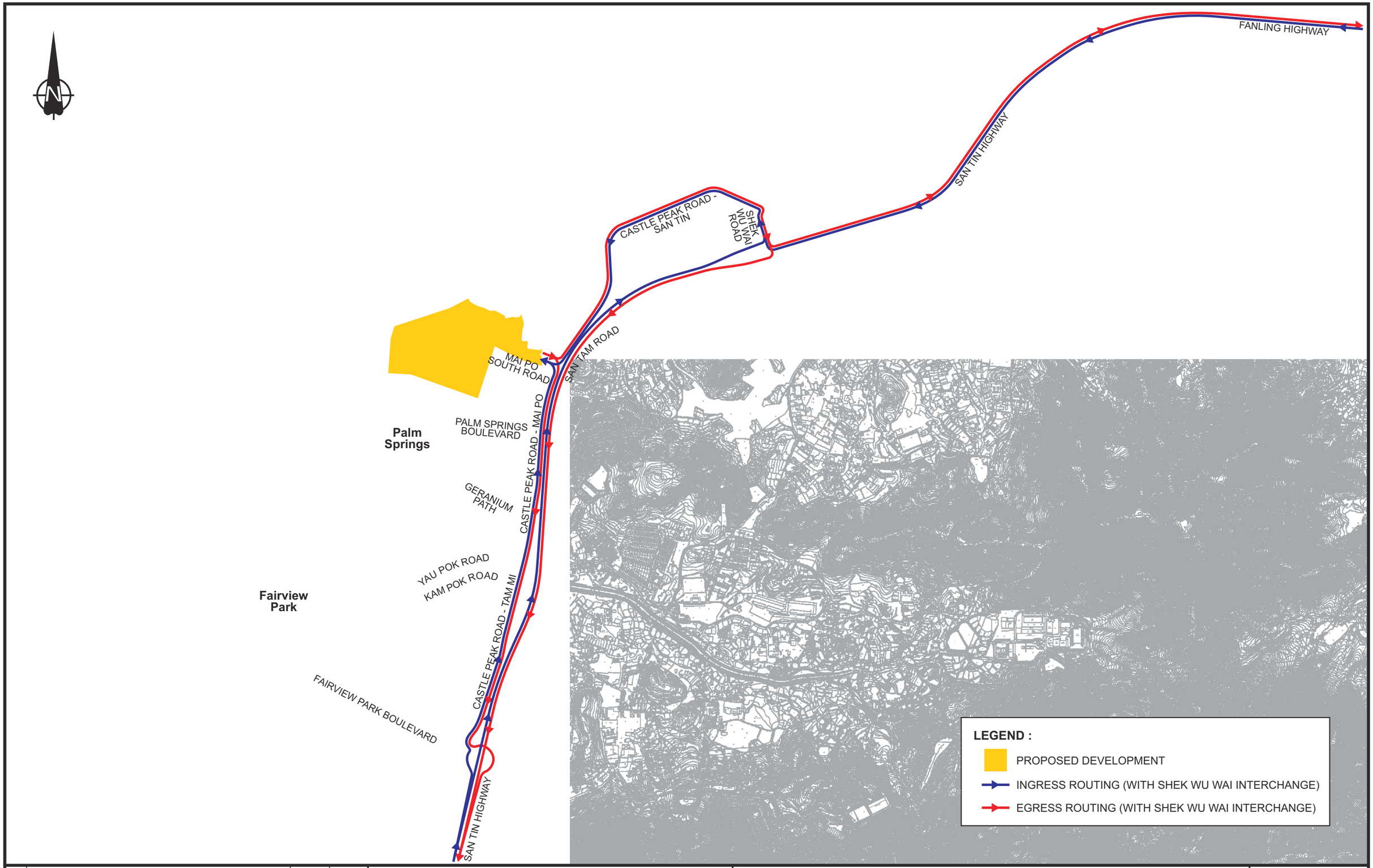
Remarks: (1) Refer to **Drawing 3.17** for locations and operational performance of identified footpaths.
(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath).
(3) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width.
(4) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.

Table 3.7 2024 Observed Queuing Area Level-Of-Service Assessment at Bus Stops

Ref. (1)	2024 Observed Peak Hourly Passenger Flow at Bus Stop (pax/hr)	2024 Observed Maximum Queue at Queuing Area (pax)	Queuing Area (m^2)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	2	1 (i.e. 2/60x25)	5.8	5.8	A
Palm Springs Bus Stop – Sheung Shui Bound (NB)	2	1 (i.e. 2/60x25)	20.3	20.3	A

Remarks: (1) Refer to **Drawing 3.17** for locations of identified queuing area.
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue).
(3) Refer to HCM2000, EXHIBIT 11-9.

3.4.2 As shown in **Table 3.6** and **3.7**, the identified footpaths and queuing area at concerned bus stops are currently operating with adequate spare capacities during the typical weekday morning and evening peak hours.



Rev.	Description	Checked	Date
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-	-	-	-
A	MINOR AMENDMENT	CFC	24DEC24

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

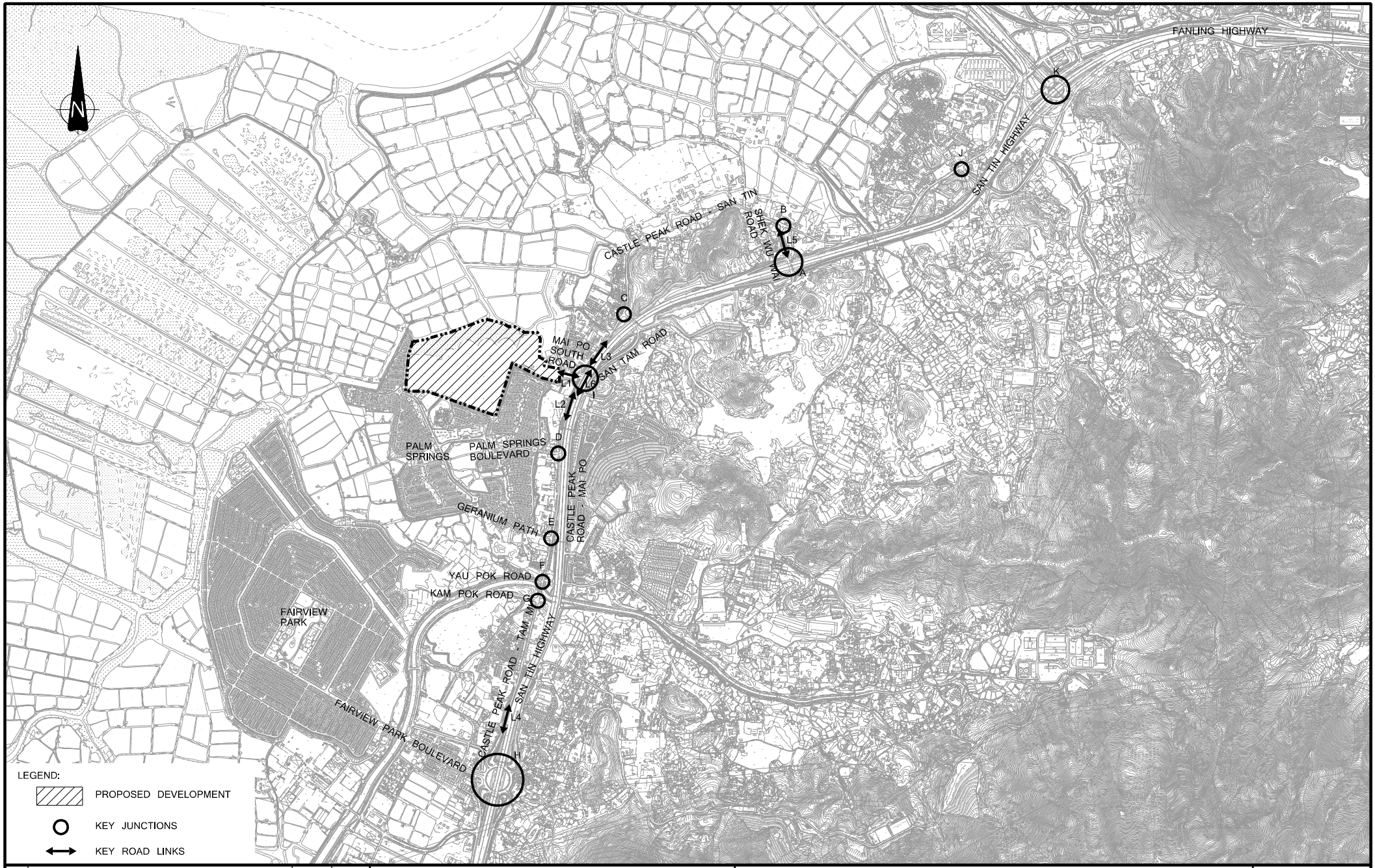
MAJOR INGRESS AND EGRESS ROUTE

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JUN 2024	3.1	A

SYSTRA MVA

CHK50800610/TIA/F31-A.CDR/LLH/24DEC24

Original Size : A3



Rev.	Description	Checked	Date
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A	TD COMMENT INCORPORATED	CFC	22MAY25
A	TD COMMENT INCORPORATED	CFC	02JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

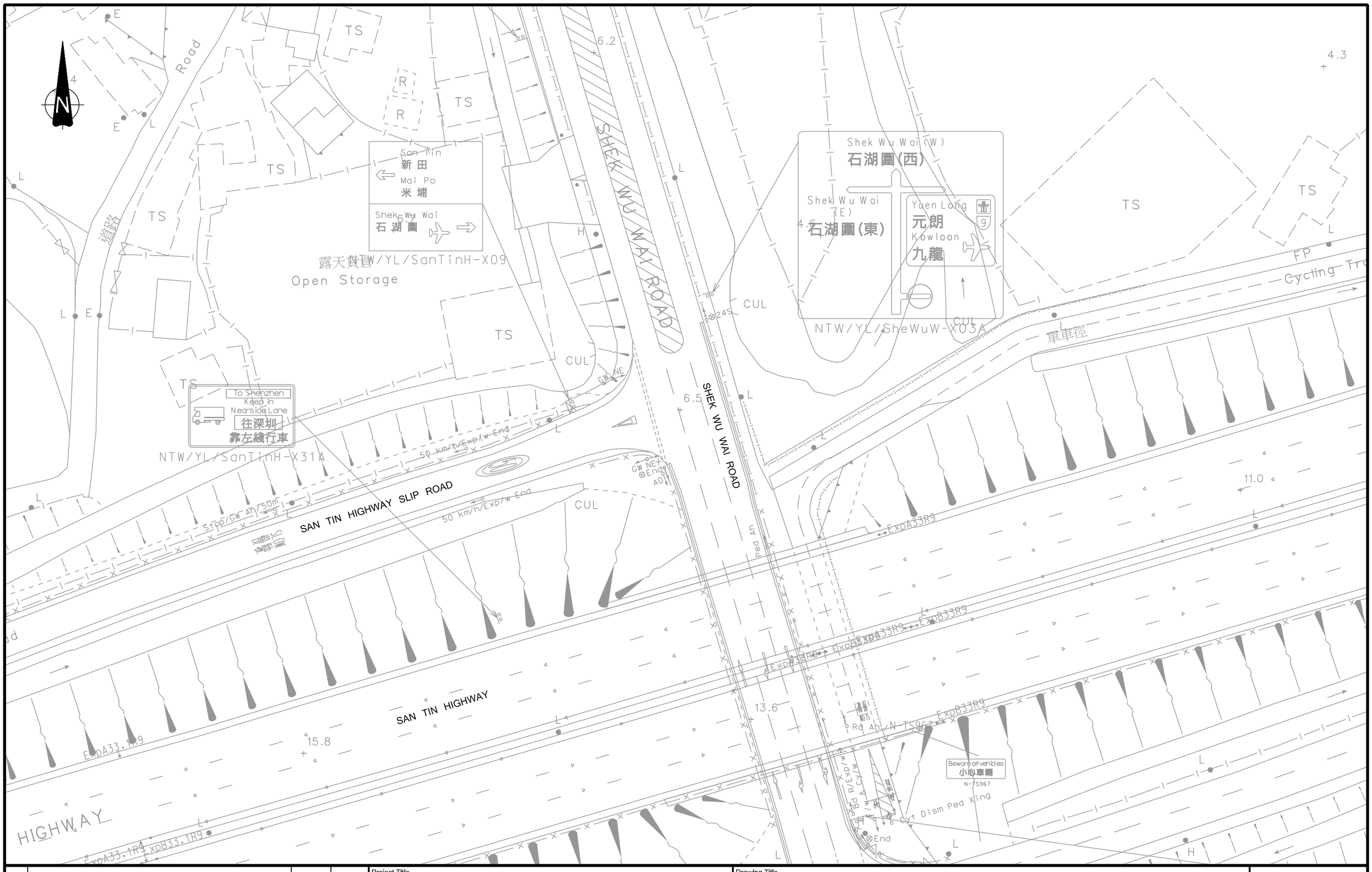
KEY JUNCTIONS AND ROAD LINKS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	3.2	B

SYSTRA MVA

CHK50800610/TIA/F32-B.DGN/LHO/22MAY25

Original Size : A3



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Rev.	Description	Checked	Date

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

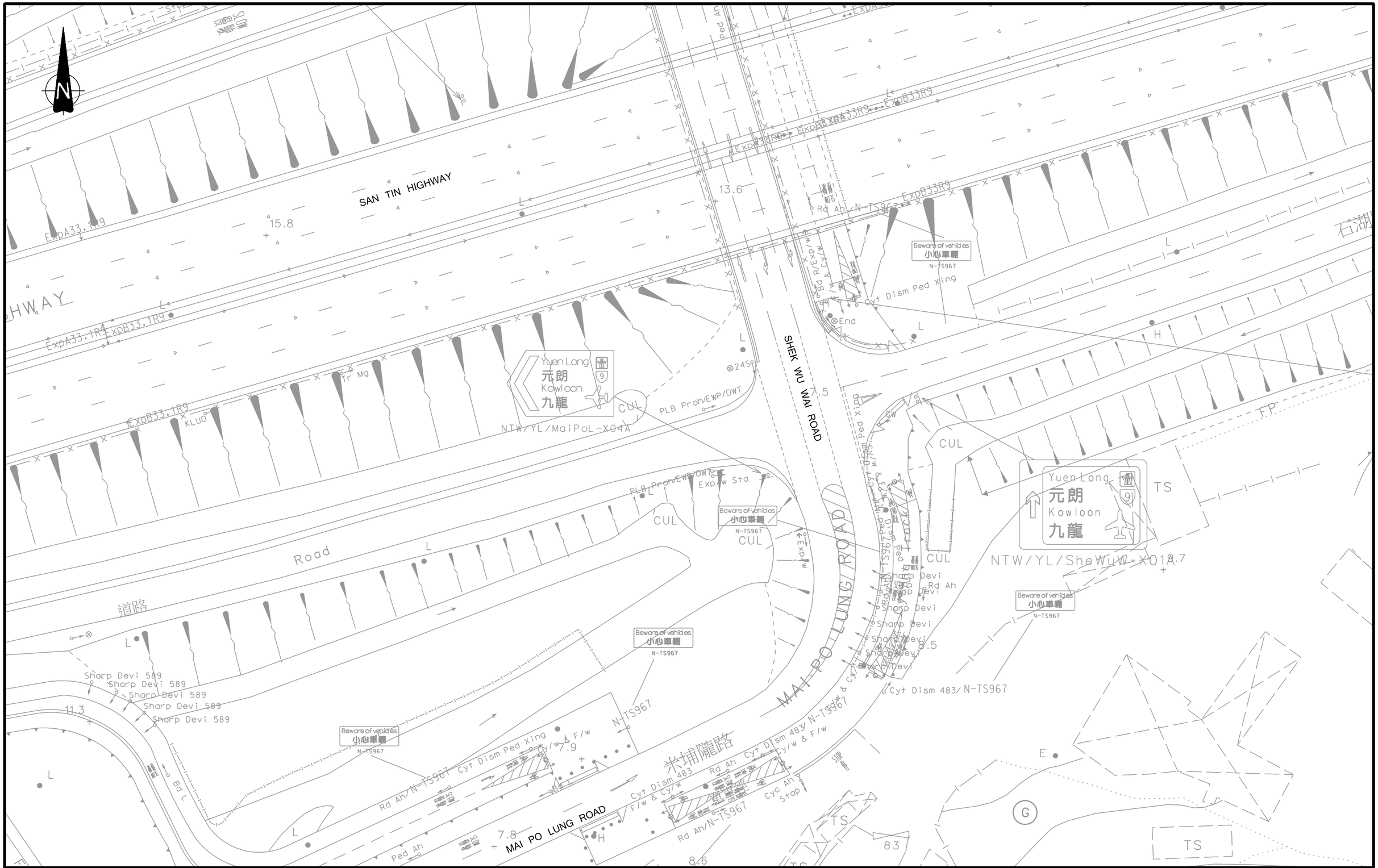
EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A1)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DED 2024	**3.3**	-

SYSTRA MVA

CHK50800610/TIA/F33.DGN/LHO/31DEC24

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

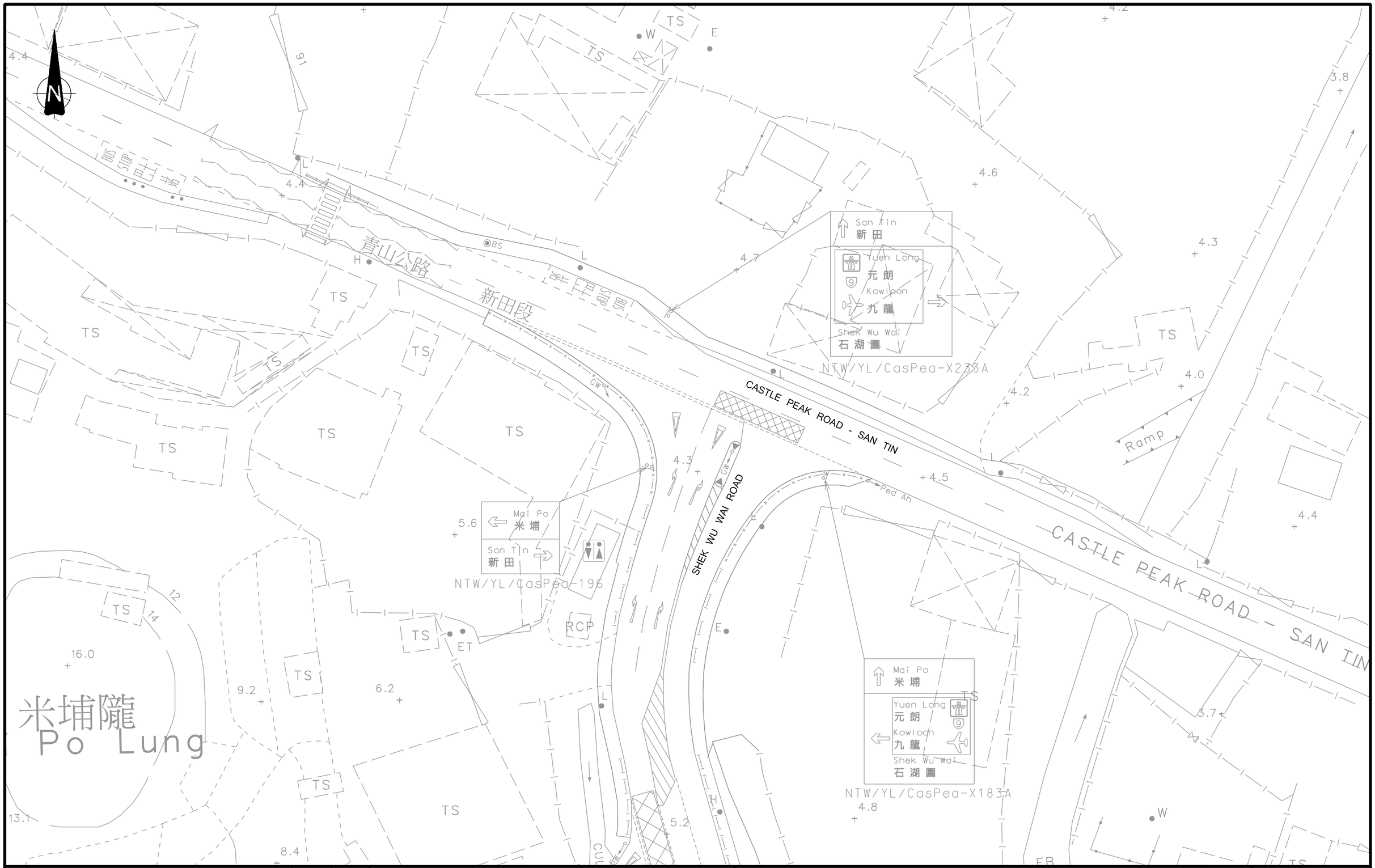
EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / MAI PO LUNG ROAD (A2)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.4**	-

SYSTRA MVA

CHK50800610/TIA/F34.DGN/LHO/03JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD-SAN TIN / SHEK WU WAI ROAD (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.5**	-

SYSTRA MVA

CHK50800610/TIA/F35.DGN/LHO/02JAN25

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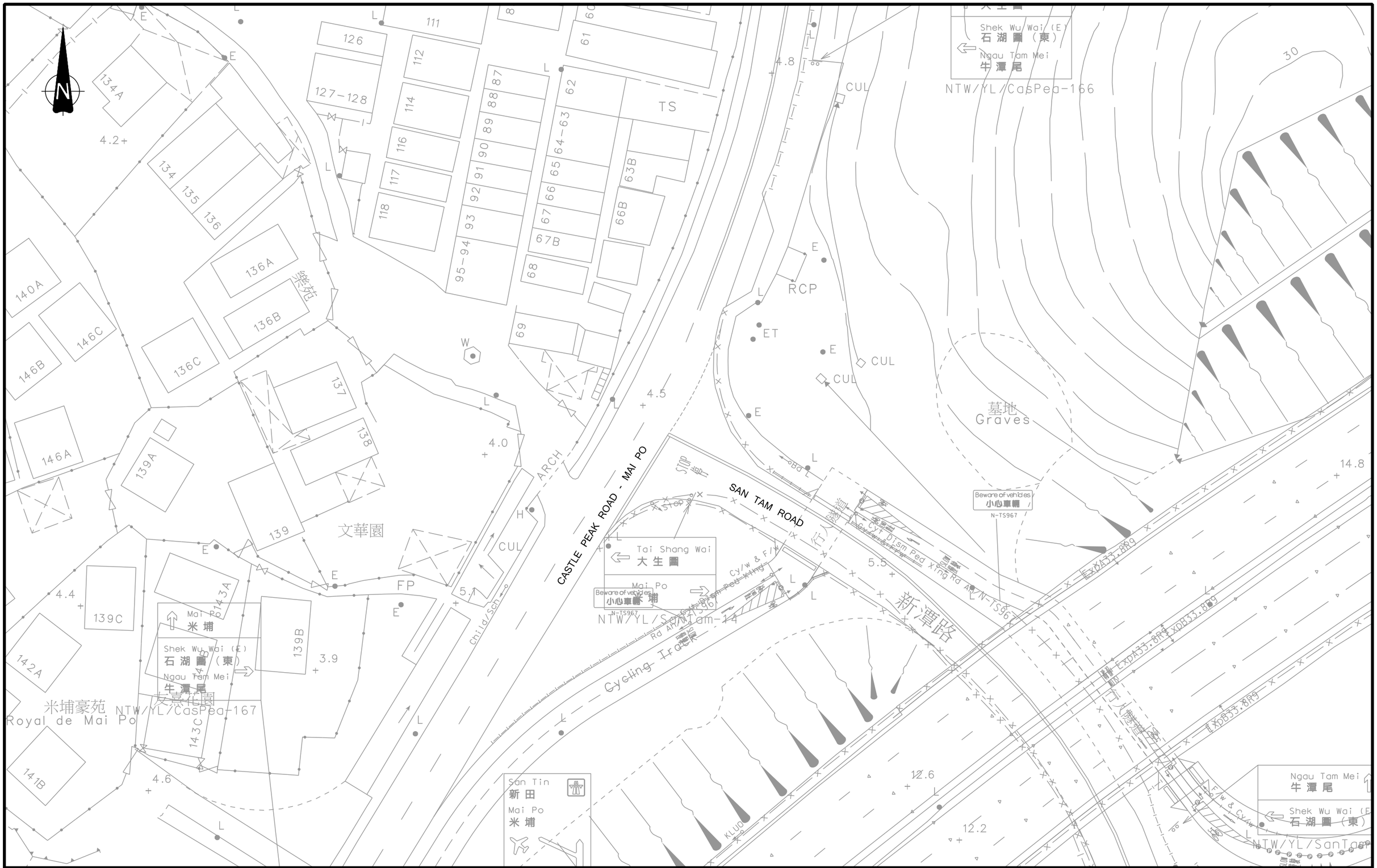

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

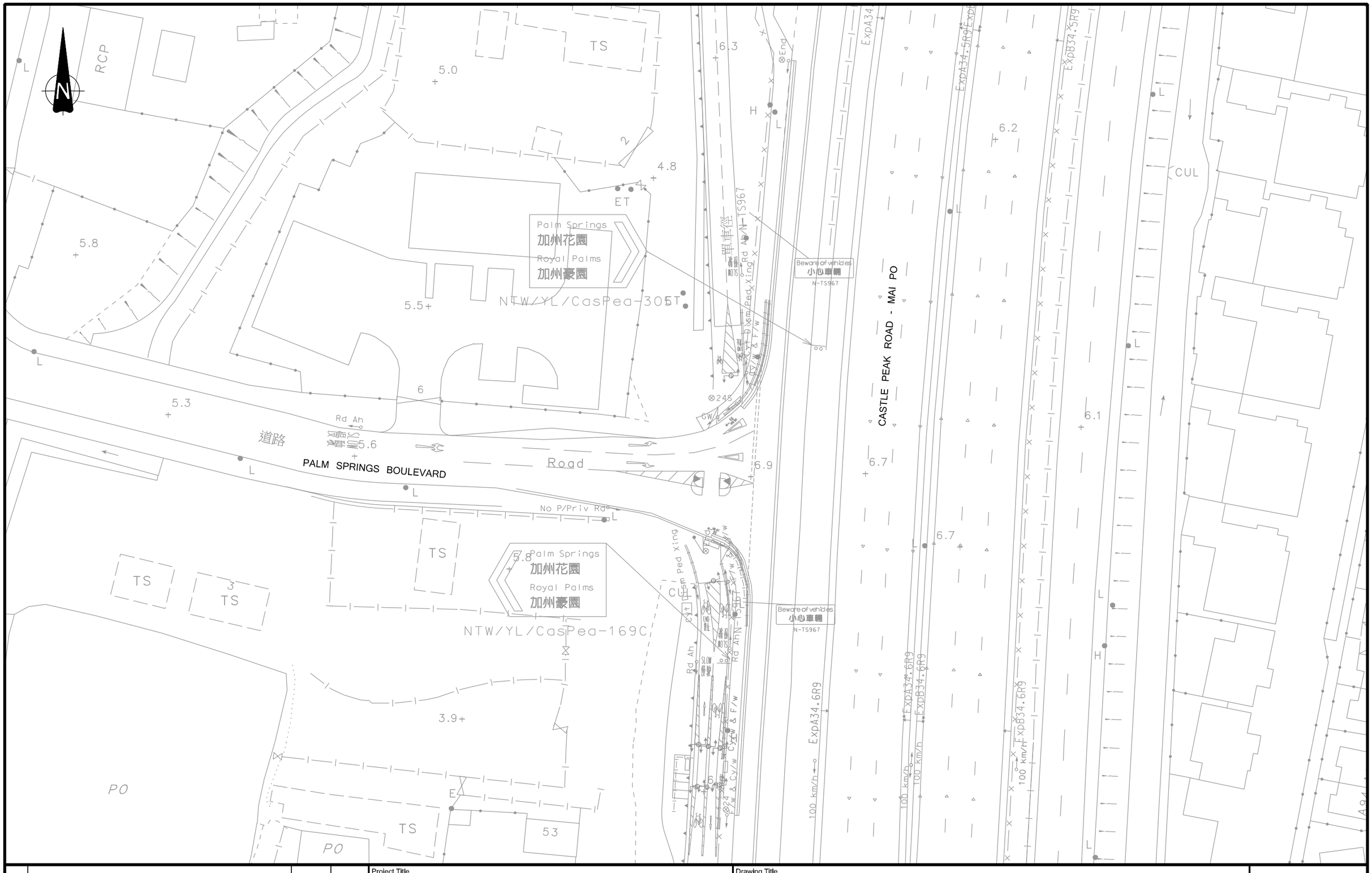
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / SAN TAM ROAD (C)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.6**	-

SYSTRA MVA

CHK50800610/TIA/F36.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

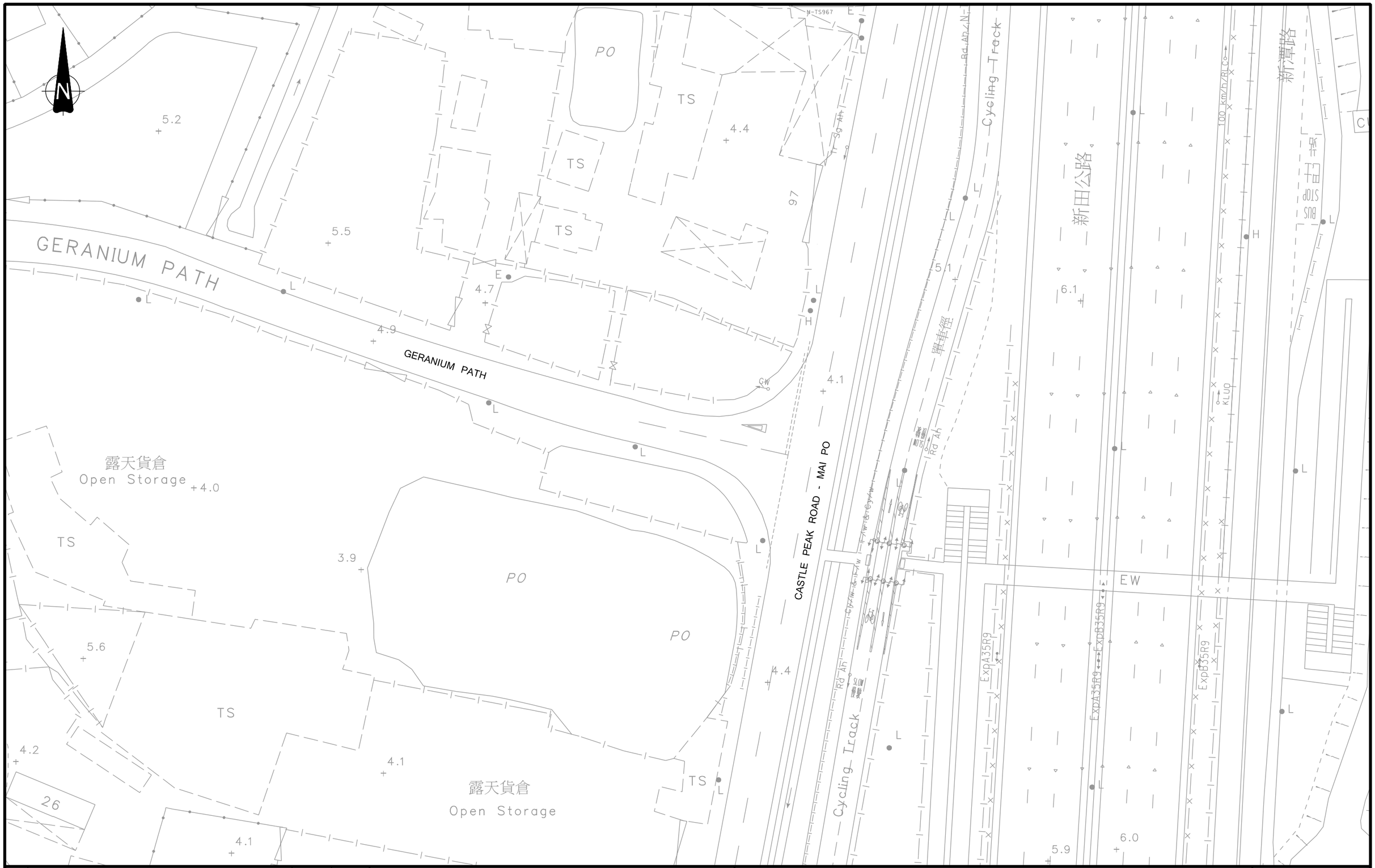
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / PALM SPRINGS BOULEVARD (D)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	3.7	-

SYSTRA MVA

CHK50800610/TIA/F37.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

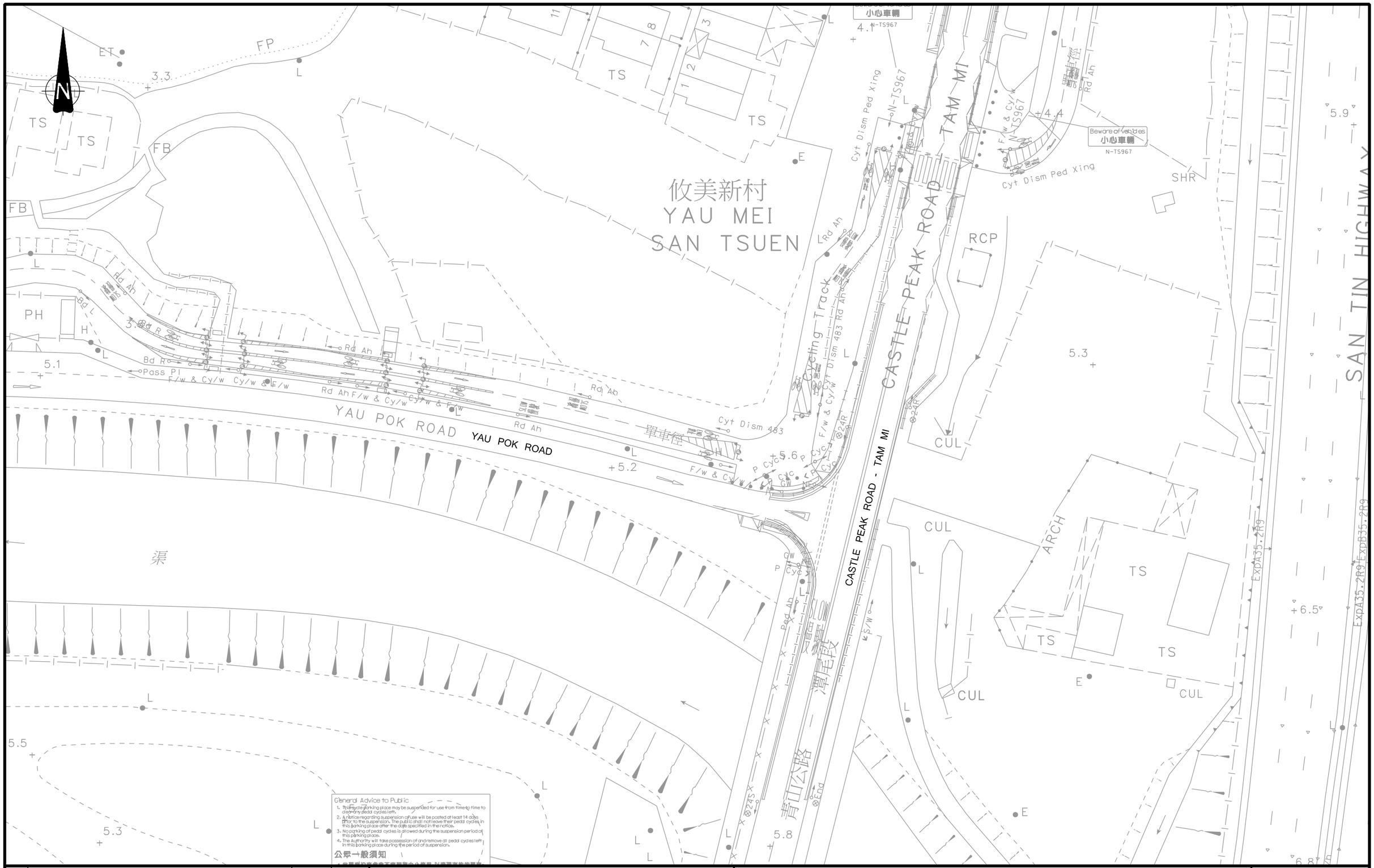
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / GERANIUM PATH (E)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.8**	-

SYSTRA MVA

CHK50800610/TIA/F38.DGN/LHO/02JAN25

Original Size : A3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Cyt Dism Ped Xing
N-TS967
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N-TS967
+4.4
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小心車輛
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TAM MI
CASTLE PEAK ROAD
RCP
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+6.5
EXPA35.2R9
EXPB35.2R9
SAN TIN HIGHWAY
佐美新村
YAU MEI
SAN TSUEN
PH
H
Bd L
Rd Ah
3.8
Bd R
5.1
Pass Pl
F/w & Cy/w
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Rd Ah
F/w & Cy/w
Cy/w & F/w
Rd Ah
Rd Ah
YAU POK ROAD
YAU POK ROAD
+5.2
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單車徑
Cycling Track
Cyt Dism 483
Rd Ah
F/w & Cy/w
Cy/w & F/w
5.6
P Cyc
C Cyc
GW
NE
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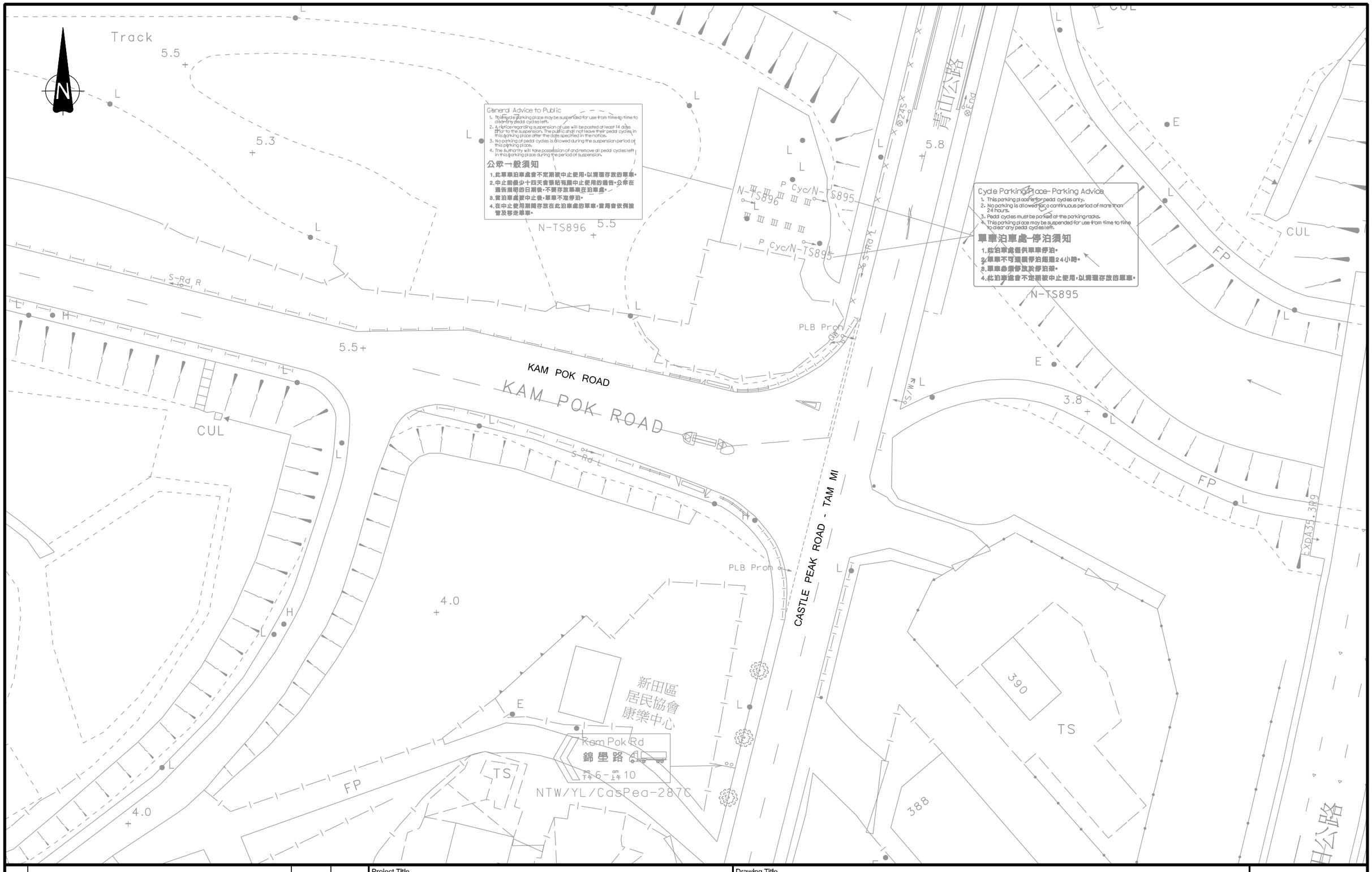

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

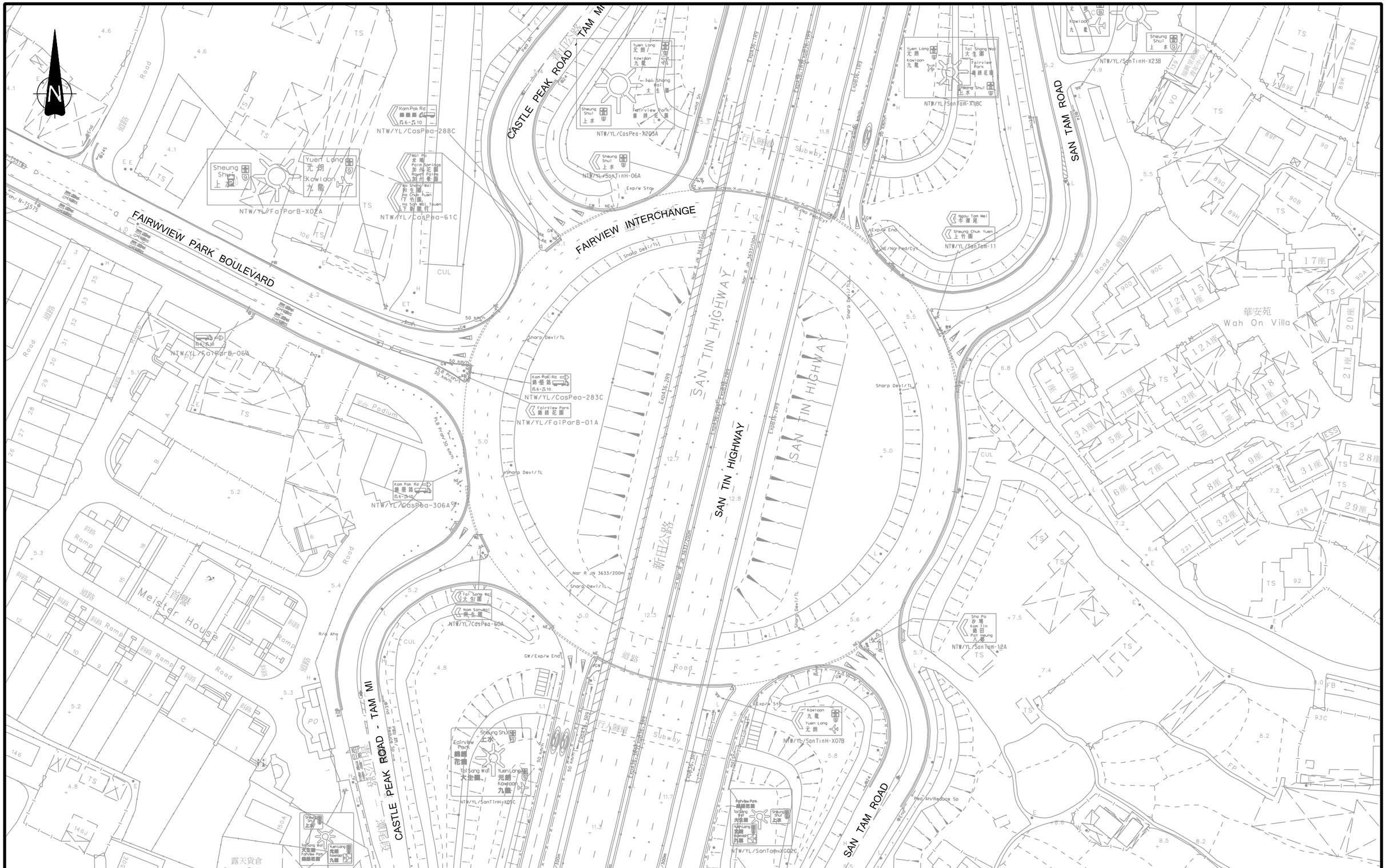
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - TAM MI / KAM POK ROAD (G)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.10**	-

SYSTRA MVA

CHK50800610/TIA/F310.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

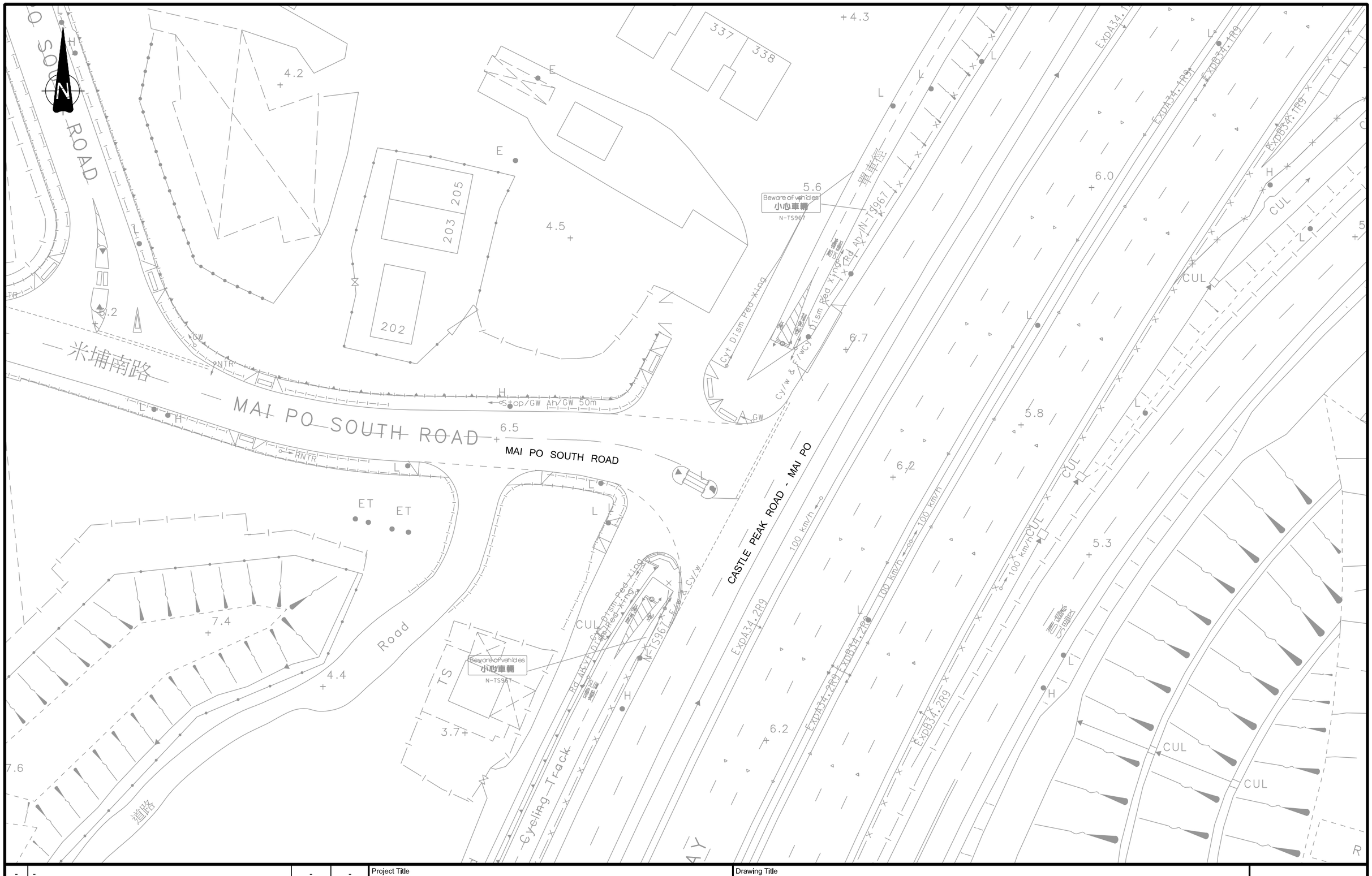
EXISTING JUNCTION LAYOUT OF FAIRVIEW PARK INTERCHANGE (H)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	JUN 2024	3.11	-

SYSTRA MVA

CHK50800610/TIA/F311.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

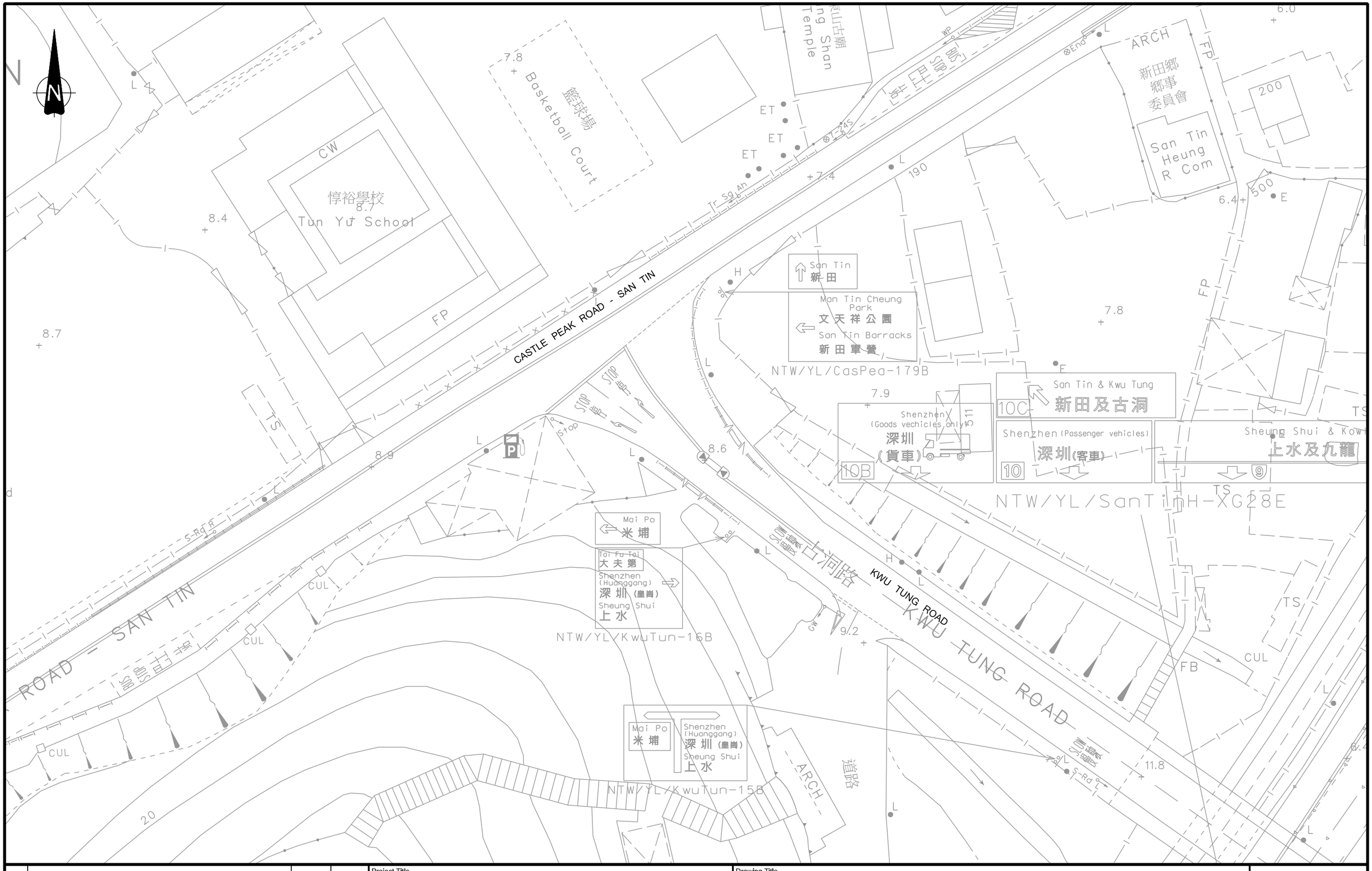
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / MAI PO SOUTH ROAD (I)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.12**	-

SYSTRA MVA

CHK50800610/TIA/F312.DGN/LHO/03JAN25

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

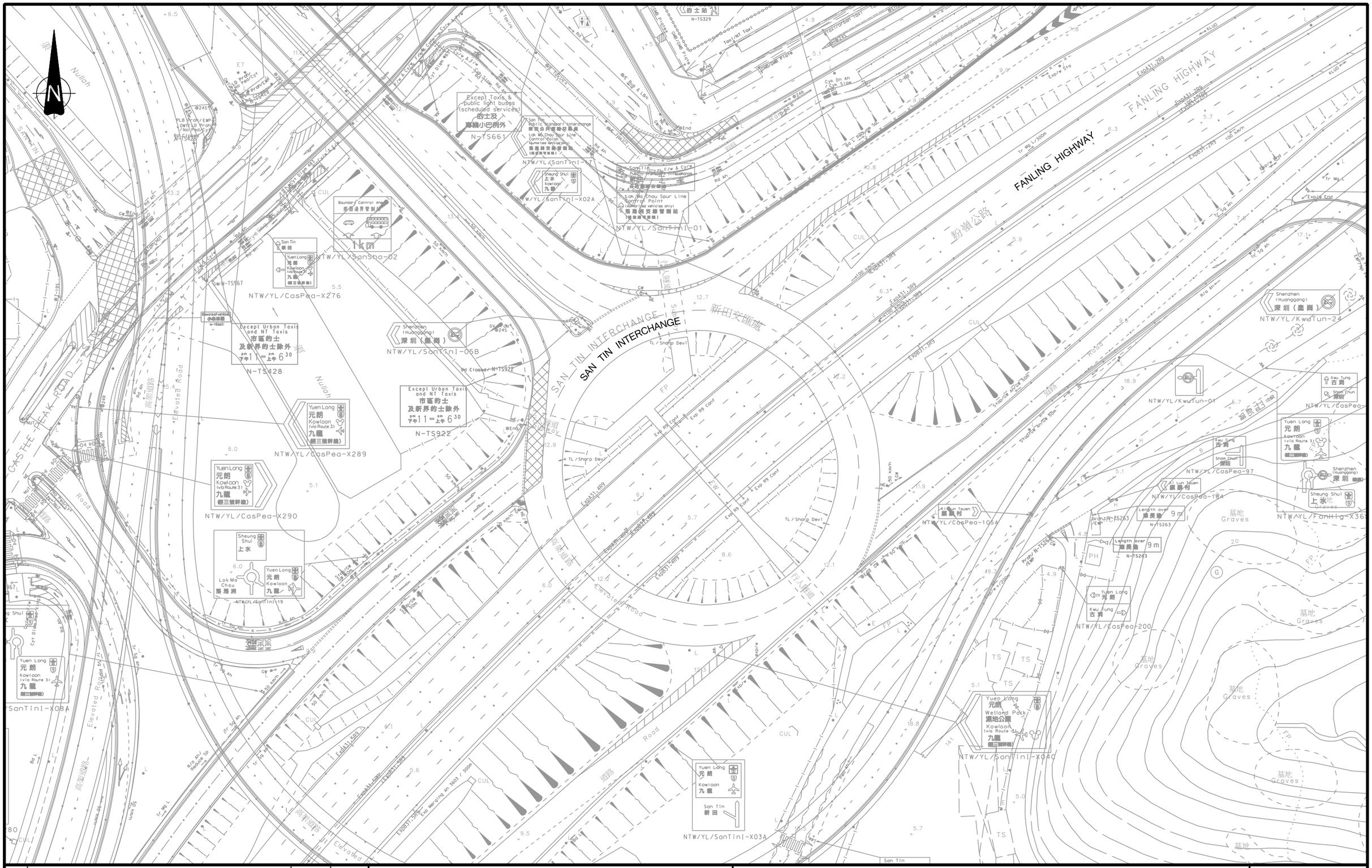
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD-SAN TIN / KWU TUNG ROAD (J)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	MAY 2025	**3.13**	-

SYSTRA MVA

CHK50800610/TIA/F313DGN/LHO/23MAY25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

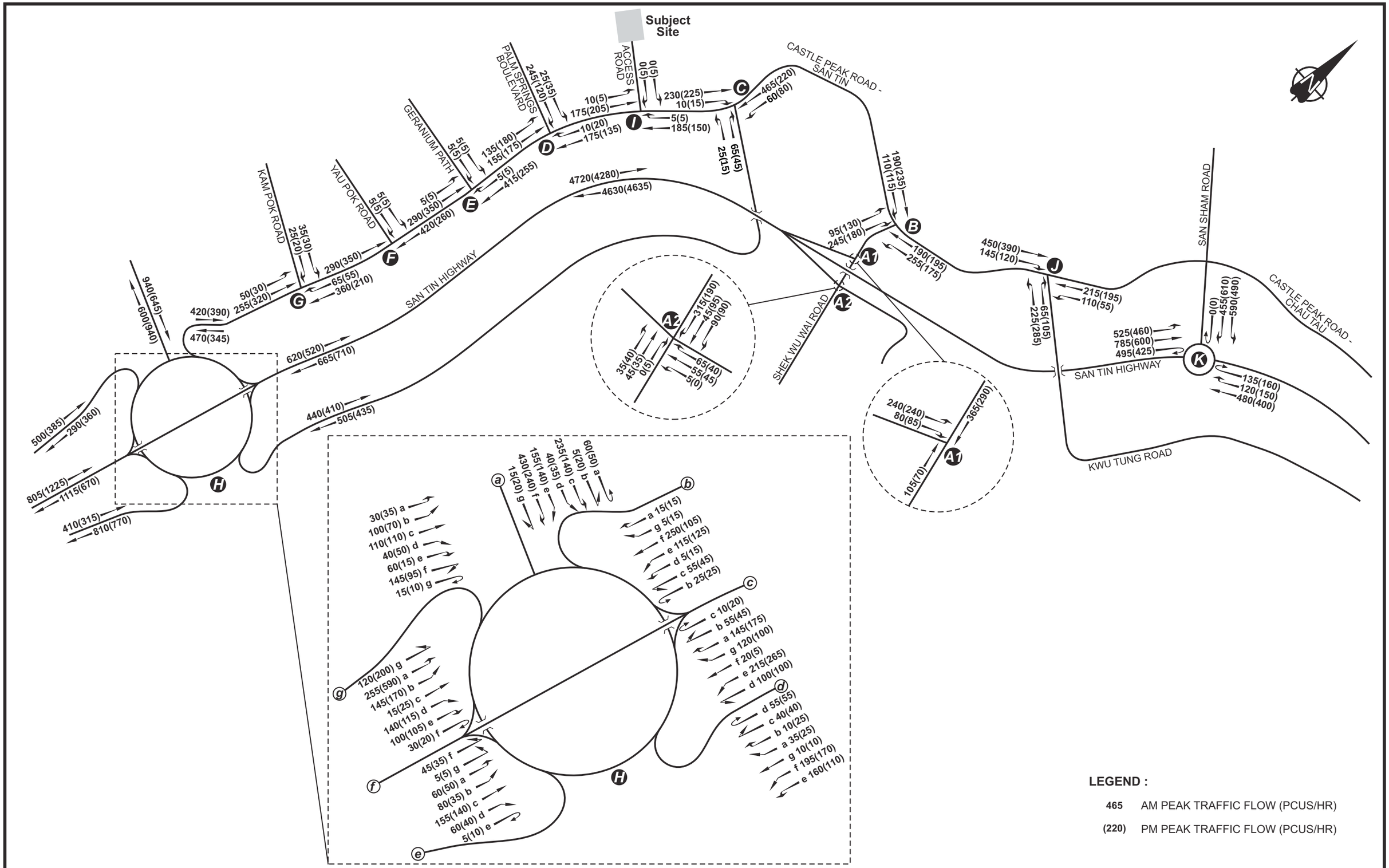
EXISTING JUNCTION LAYOUT OF SAN TIN INTERCHANGE (K)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	MAY 2025	3.14	-

SYSTRA MVA

CHK50800710/TIA/F314.DGN/LHO/22MAY25

Original Size : A3



Rev.	Description	Checked	Date
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A	REVISE FIGURE NO.	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

2024 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	3.15	A

SYSTRA MVA

CHK50800610/TIA/F315-A.CDR/LLH/23MAY25

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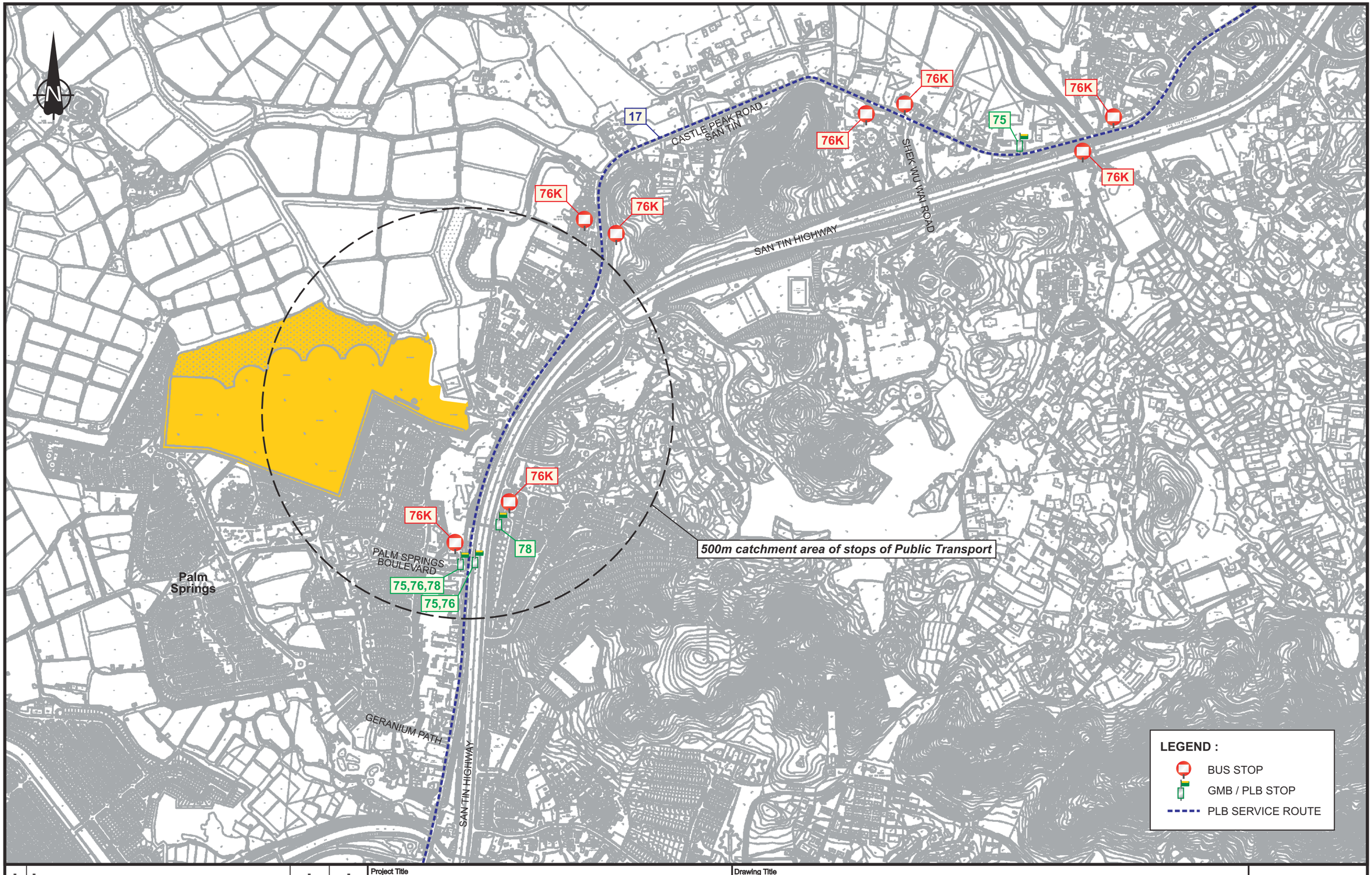

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

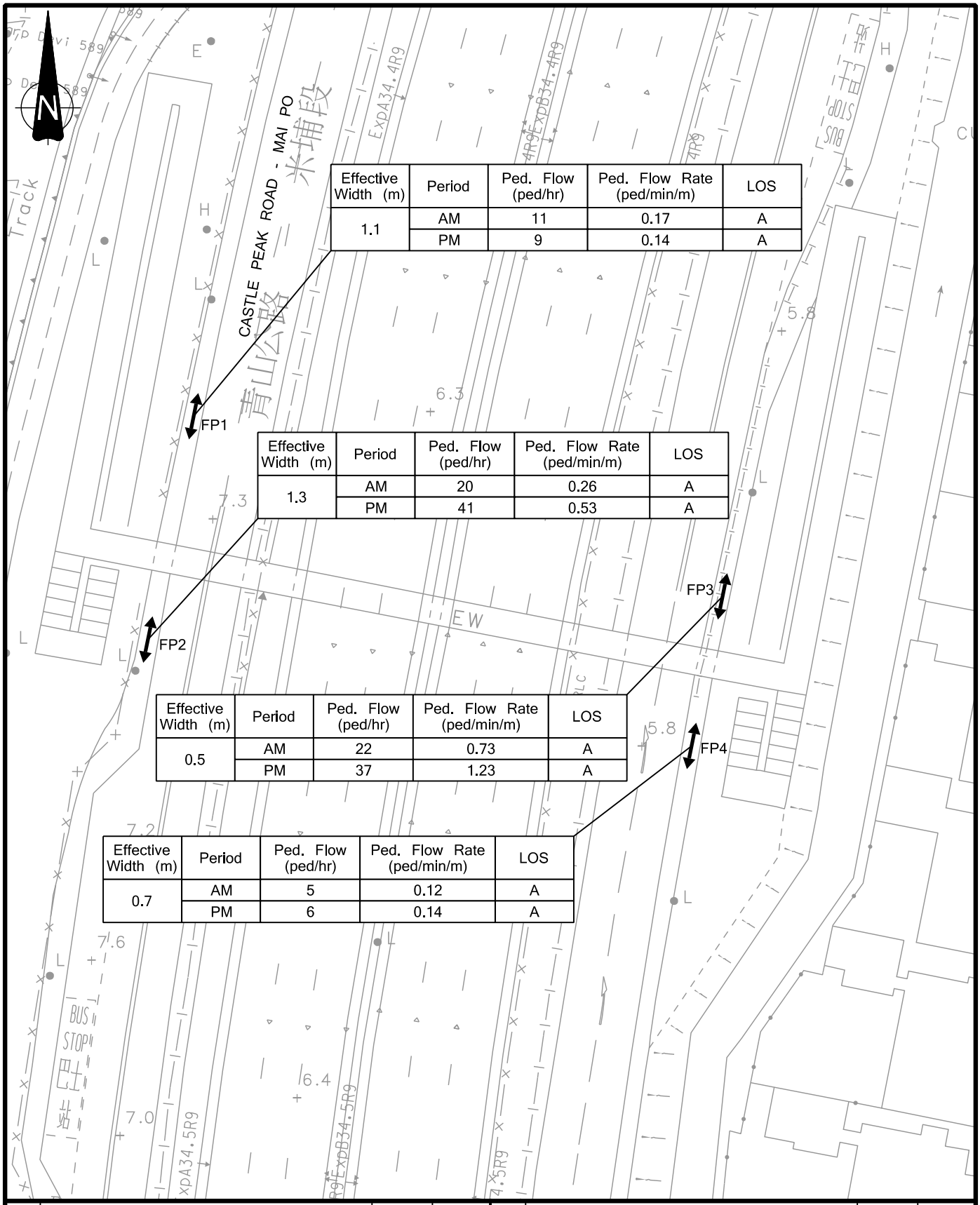
CURRENT PROVISION OF PUBLIC TRANSPORT SERVICES

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	MAY 2025	3.16	-

SYSTRA MVA

CHK50800610/TIA/F316.CDR/LLH/21MAY25

Original Size : A3



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	11	0.17	A
	PM	9	0.14	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	20	0.26	A
	PM	41	0.53	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	22	0.73	A
	PM	37	1.23	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	5	0.12	A
	PM	6	0.14	A

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

YEAR 2024 OBSERVED PEAK HOUR PEDESTRIAN FLOWS

SYSTRA MVA

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	DEC 2024	**3.17**	-

CHK50800610/TIA/F317.DGN/LHO/22MAY25

Original Size : A4

4. TRAFFIC FORECAST

4.1 Design Year

4.1.1 The tentative operation year of the proposed development is by 2031. Hence, the design year of 2034, three years upon operation, has been adopted for traffic forecast and assessment purposes.

4.2 Reference Traffic Forecast

Planning Application of Y/YL-MP/10

4.2.1 In order to produce the traffic forecast for the strategic highway and other local road links at the design year of 2034, reference has been made to the nearby on-going planning application, Y/YL-MP/10 for proposed development in various lots and adjacent Government Land in DD 104, Yuen Long, N.T.. Subject to review of the traffic flow in Year 2034 and the accounted planned development in the TIA report of Y/YL-MP/10, further adjustment has been made to produce the 2034 Reference traffic flow.

San Tin Technopole

4.2.2 The large-scale development of San Tin Technopole (STT) will be constructed and intake by different phases, as illustrated in **Annex B** and **Annex C**. The summary will be as shown in **Table 4.1**.

Table 4.1 Phasing of San Tin Technopole

Phases [(1)]	Proposed Commencement of Works	Proposed Intake Year
Initial Phase	Year 2024	Year 2031
Main Phase	Year 2026	Year 2034
Remaining Phase	Year 2032	Year 2039

Remark: (1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.

4.2.3 The development trips in “Initial Phase” and “Main Phase” would be considered in the assessment of Year 2034. The related development schedules and estimated traffic generations are summarized in below **Table 4.2**. The estimated traffic flows of STT under Year 2034 are shown in **Drawing 4.1**.

Table 4.2 Development Trips of San Tin Technopole Adopted in Assessment

Ref.[1]	Development Schedule	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
San Tin Technopole (Initial Phase and Main Phase)	Information and Technology (I&T) Section	(120,000 Employment)	2,139[2]	3,080[2]	1,976[2]	1,477[2]
	Logistics & Storage and Workshop	(Approximate 758,000 m^2)	702[3]	1,051[3]	1,023[3]	795[3]
	Public Housing	Approximate 25,805 units (Average house/flat size of about 50 m^2)	1,605[4]	1,099[4]	766[4]	1,035[4]
	Private Housing	Approximate 12,200 units (Average house/flat size of about 60 m^2)	876[5]	519[5]	349[5]	451[5]

Remark:
(1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.
(2) Based on 120,000 I&T employment in TPB Land Use Proposal; average daily mechanised home-based work trips per employed person of 1.41 trips, peak hour percentage to daily total trips of 12%, distribution of boardings by transport mode (LRT, tram and ferry excluded) in TCS 2011 (87.4% of PT trips and 12.6% of PC/Taxi trips); and assumed capacity of franchised bus, PLB, shuttle bus and PC.
(3) Based on site area measurement, plot ratio of 2/ 5 in RODP, and traffic generation and attraction rates for industrial building in TPDM.
(4) Based on site area measurement, plot ratio of 6.5 in RODP, assumed average flat size of 50 m^2, consideration of new flat units about 50,000-54,000 in TPB land use proposal, and traffic generation and attraction rates for subsidised housing: HOS/PSPS in TPDM.
(5) Based on site area measurement, plot ratio of 6 in RODP, assumed average flat size of 60 m^2, consideration of new flat units about 50,000 - 54,000 in TPB land use proposal, and traffic generation and attraction rates for private housing: high-density/R(A) in TPDM.

Development Proposal of Ngau Tam Mei

4.2.4 The Government has recently disclosed the broad development proposal of Ngau Tam Mei (NTM) under Legislative Council Paper (No. CB(1)1487/2024(04). It is proposed to reserve land in NTM for use of post-secondary education institutions (self-sustained UniTown) with integrated residential neighbourhood. The first population intake is expected to take place gradually from Year 2034 onwards to tally with the commissioning of NOL Main Line.

4.2.5 According to the broad land use concept plan, NTM is expected to be served by the new Northern Metropolis (NM) Highway, while direct road connections/interchange are proposed to San Tin Highway and STT. Besides, upon NOL opening by Year 2034, MTR Ngau Tam Mei Station is expected to attract and shift some of the existing road traffic into railway, it is anticipated that the traffic conditions along San Tam Road and the existing Fairview Park Boulevard Interchange will be largely improved. As the NTM development proposal is still in the conceptual stage without detailed land use planning and development parameters, it will not be considered in this TIA Study.

Other Planned/Committed Developments

4.2.6 Apart from San Tin Technopole, there are also a number of other planned/committed developments located in the vicinity that are expected to be completed by year 2034. The Proposed temporary light public housing development (in various lots in D.D. 104 and adjoining government land, Yau Pok Road, Yuen Long) is excluded in the assessment due to its anticipated completion year (2024/2025), and the proposed 5-year operation period. Upon the comment received from PlanD, the development schedules of these developments and

estimated traffic generations are summarized in **Table 4.3** and the locations of these developments are indicated in **Drawing 4.2**.

Table 4.3 Other Planned/Committed Developments

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	71 units (average flat size of about 186 m^2)	20	13	12	17
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10[2]	10[2]	10[2]	10[2]
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/8	6,825 units (Average Flat Size 37.5 m^2)	491[3]	291[3]	196[3]	253[3]
		Retail (3,950m^2)	10[3]	10[3]	13[3]	15[3]
		GIC Facilities (2 nos.)	10[3]	10[3]	10[3]	10[3]
		Kindergarten (8 Classrooms)	25[3]	25[3]	1[3]	1[3]
6	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/9	3,115 units (Average Flat Size 37.2 m^2)	224[3]	133[3]	90[3]	116[3]
		Retail (3,900 m^2)	9[3]	10[3]	13[3]	14[3]
		1 School	7[3]	30[3]	1[3]	1[3]
		Kindergarten (8 Classrooms)	25[3]	25[3]	1[3]	1[3]
		Relocated Soy Sauce Factory (13,700 m^2)	0[3]	4[3]	10[3]	2[3]
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	2,811 units (average flat size of about 50 m^2)	202	119	80	104
		Eating place / Shop & Services (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9		1,518 units (average flat size of	109	65	43	56

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	About 46 m^2)				
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[2]	10[2]	10[2]	10[2]
		Special Child Care Centre	10[2]	10[2]	10[2]	10[2]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home 142 Beds	10[2]	10[2]	10[2]	10[2]
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[2]	10[2]	10[2]	10[2]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12
14	Lots 3054 S.A RP (Part), 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (Part), 3250 S.B ss.23 RP (Part), 3250 S.B ss.33 RP (Part) in D.D. 104, and Adjoining Government Land, Yuen Long, Y/YL-MP/3	106 Houses (average house size of about 163 m^2)	30	19	18	26
		Retail 607 m^2	2	2	2	3
15	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m^2)	45	27	18	23
		Retail 1,165 m^2	3	3	4	5
16	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m^2)	7	4	3	4
		5,400 m^2 residential care home for the elderly 127 Beds	10[2]	10[2]	10[2]	10[2]
17	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m^2 residential care home for the elderly 530 Beds	23[3]	27[3]	21[3]	27[3]

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
18	Proposed Comprehensive Development Scheme to include Wetland Restoration Proposal and Proposed Filling of Ponds/Land and Excavation of Land in "OU(CDWRA)" Zone at Various Lots in D.D. 104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories, A/YL-NSW/314	90 units (average flat size of about 227 m^2)	28[3]	21[3]	21[3]	31[3]

Remark: (1) Refer to **Drawing 4.2** for development locations.
(2) Assume Nominal Trips of 10 pcu/hr.
(3) Trips generation from project's TIA report.

4.2.7 Based on the above, the year 2034 reference traffic flows, as shown in **Drawing 4.3** are produced according to the following:

Local Road Links: = Review Year 2034 Reference Traffic Flows + Adjustment of other Planned/Committed Development Trip Generation

4.3 Development Traffic Generations

Trip Generation of Proposed Scheme

4.3.1 The proposed development will provide 3,571 units and the related trip generations of the residential units are estimated in accordance with the relevant trip rates as tabulated in the Transport Planning Design Manual (TPDM). With the provision of 100-bed RCHE, reference is made to the traffic trip rates as surveyed from the existing similar social welfare development. **Table 4.4** summarises the trip rates of the proposed development.

Table 4.4 Estimated Trip Rates of Proposed Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Residential Trip Rate (pcu/hr/flat)				
R(A), Average flat size = 60m^2 per unit, Mean rate, for 1,291 units	0.0718	0.0425	0.0286	0.0370
R(A), Average flat size = 70m^2 per unit, Mean rate, for 1,148 units	0.0888	0.0515	0.0356	0.0480
R(A), Average flat size = 80m^2 per unit, Mean rate, for 948 units	0.1058	0.0605	0.0426	0.0590
R(B), Average flat size = 100m^2 per unit, Mean rate, for 56 units	0.1961	0.1116	0.0955	0.1321
R(C), Average flat size = 180m^2 per unit, Mean rate, for 104 units	0.2772	0.1769	0.1635	0.2394
R(C), Average flat size = 300m^2 per unit, Mean rate, for 24 units	0.3252	0.2609	0.2835	0.4074
Surveyed RCHE Trip Rate (pcu/hr/bed)[1]				
Fung Kai Care and Attention Home for the Elderly, Sheung Shui	0.0297	0.0372	0.0069	0.0069

Hong Kong Sheng Kung Hui John Yuen Home for the Elderly, Tseung Kwan O	0.0286	0.0380	0.0357	0.0207
Adopted RCHE Trip Rate (pcu/hr/bed)	**0.0297**	**0.0380**	**0.0357**	**0.0207**

Remark: (1) Trip rates as derived from the consultant's surveys in mid-Sep 2024.
(2) The surveyed highest trip rates to be adopted for conservative assessments.

4.3.2 The resulting trip generations of the proposed development are summarized in **Table 4.5**.

Table 4.5 Estimated Trip Generation of Proposed Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Residential Trips [1]				
1,291 units with an average flat size of 60m²	94	56	38	49
1,148 units with an average flat size of 70m²	103	60	42	56
948 units with an average flat size of 80m²	101	58	41	56
56 units with an average flat size of 80m²	11	7	6	8
104 units with an average flat size of 180m²	29	19	18	25
24 units with an average flat size of 300m²	8	7	7	10
Total Residential Trips (3,571 units) (pcu/hr)	**346**	**207**	**152**	**204**
RCHE Trips [1]				
RCHE Trips (100-bed) (pcu/hr)	**3**	**4**	**4**	**2**
Induced Mechanized Trips [2]				
Induced Mechanized Trips (pcu/hr)	**26**	**26**	**26**	**26**
Enhancement of Public Transport [3]				
Enhancement of Public Transport (pcu/hr) [4]	**10**	**0**	**0**	**15**
Total (pcu/hr):	**385**	**237**	**182**	**247**

Remark: (1) By referring to **Table 4.4**.
(2) By referring to **Para 4.3.7**.
(3) By referring to **Table 4.8** and **Para 4.3.11**.
(4) Pcu factor 2.5 pcu/veh is adopted for buses.

4.3.3 As indicated in **Table 4.5**, the proposed development would generate a two-way total of 622 pcu/hr and 429 pcu/hr (including induced mechanized trips and enhanced public transport trips) during the weekday morning and evening peak hour periods respectively. The development trip distributions are shown in **Drawing 4.4**.

Public Transport Trips

4.3.4 With reference to TD's Travel Characteristics Survey (TCS) 2011, the public transport demands for the Rezoning Site was estimated with reference to the average daily mechanised trips, the peak hour factor of mechanised trips and public transport modal share, with the assumptions of 90% inbound/outbound trips during AM and PM peak hours respectively. Based on the above assumptions, the public transport demands for the proposed development are estimated in **Table 4.6**.

Table 4.6 Estimated Trip Generation of Approved Development

Index	Parameter	Formula	Result
(a)	Proposed No. of Units	-	3,571
(b)	Average Domestic Household Size [1]	-	2.8
(c)	Estimated Total Population	(a)*(b)	9,999
(d)	Average Daily Mechanised Trips per Person [2]	-	1.83
(e)	Peak Hour Percentage of Daily Total [3]	-	12%
(f)	Assumed Percentage of Major Outbound Trips in Peak Hour	-	90%
(g)	Estimated Peak Hour Trips by Proposed Development	(c)*(d)*(e)*(f)	1,977
(h)	Major Public Transport Modal Share [4]	-	82%
(i)	Estimated Peak Hour Public Transport Demand	(g)*(h)	1,622
(j)	Estimated Passenger using Railway and SPB	(i)*47.4%[5]	769
(k)	No. of induced coach (veh/hr)	(j)/60[6]	13
(l)	Estimated Passenger using Franchised Bus	(i)*52.6%[7]	853
(m)	- Yuen Long Bound Demand [AM Peak (PM peak)]	65% (68%)	554(580)
(n)	- San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]	35% (32%)	299(273)
(o)	No. of Additional Bus Required during Peak Hour[8] - Yuen Long Bound Demand [AM Peak (PM peak)] - San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]		4 (2) 0 (4)

Remarks: (1) For Yuen Long District in 2023 Period from Census and Statistics Department website.
(2) With reference to Table E.2 in TCS 2011.
(3) Peak hour percentage to daily total, with reference to Para. 3.3.7 in TCS 2011.
(4) Refer to Appendix A.3 for all transport modes excluding private car and taxi.
(5) Exclude LRT, tram, ferry, consider MTR trip and SPB trips with reference to Table 3.6 in TCS 2011.
(6) Assumed passenger using Railway and SPB would be served by coach between the subject site and future San Tin Station of Northern Link, while 60 pax/coach adopted as coach capacity.
(7) Exclude LRT, tram, ferry, consider Franchised Bus trip and PLB trips with reference to Table 3.6 in TCS 2011.
(8) Referring to **Table 4.8**.

4.3.5 From **Table 4.6**, it is estimated that there will be one-way of approx. 1,622 pax/hr of public transport demand generated from the proposed residential development during the peak hour.

4.3.6 With reference to HBW trips of Table 3.6 in TCS 2011, the transport mode of PT passengers of Railway and SPB is 47.4%, and the passengers of Franchised Bus and GMB is 52.6%, respectively. Therefore, the induced PT demand will be distributed accordingly, i.e. 769 pax are assumed using shuttle bus to the nearest railway station (future San Tin Station of Northern Link), and the remaining 853 pax are assumed using Franchised Bus, which being adopted in the assessment.

4.3.7 The Railway and SPB demand are proposed to be served by coach (i.e. 60 pax/veh), which is equivalent to 13 veh/hr (26 pcu/hr), running between the subject development and the nearest railway station (future San Tin Station of Northern Link).

4.3.8 The estimated overall public transport demands at Year 2034 are summarized in **Table 4.7**.

Table 4.7 Estimated Year 2034 Public Transport Demands

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Estimated Year 2034 Occupancy (pax)(1)	Additional Passenger Demands (pax)(2)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	532	554	1,086	134%
	San Tin/Sheung Shui	713	409	299	708	99%
PM Peak	Yuen Long	780	656	273	929	119%
	San Tin/Sheung Shui	776	468	580	1,048	135%

Remarks: (1) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand.
(2) Refer to **Table 4.6** and **Para 4.3.6**.

4.3.9 From **Table 4.7**, it can be shown that the demand for public transport service for PM peak periods of Yuen Long bound would be over capacity in Year 2034 upon occupation of the proposed residential development.

4.3.10 It is proposed to enhance the nearby public transport service by increasing the frequency of KMB 76K during PM peak. The estimated overall public transport demands at Year 2034 with proposed PT service enhancement are summarized in **Table 4.8**.

Table 4.8 Estimated Year 2034 Public Transport Demands – With Service Enhancement

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Enhanced Peak Hour Service Capacity (pax)(1)	Estimated Year 2034 Occupancy (pax)(2)	Additional Passenger Demands (pax)(3)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	1,172 (812+90*4)	532	554	1,086	93%
	San Tin/Sheung Shui	713	713	409	299	708	99%
PM Peak	Yuen Long	780	960 (780+90*2)	656	273	929	97%
	San Tin/Sheung Shui	776	1,136 (776+90*4)	468	580	1,048	92%

Remarks: (1) The bus capacity is assumed to be 90 passengers.
(2) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand.
(2) Refer to **Table 4.6** and **Para 4.3.6**.

4.3.11 From **Table 4.8**, it is demonstrated that with the service enhancement (with 4 additional buses and 2 additional buses for Yuen Long bound at both AM and PM peak periods respectively, and 4 additional buses for Sheung Shui bound in PM peak periods), the public transport would operate within capacity in Year 2034.

4.3.12 The detailed arrangement of public transport service enhancement such as frequency improvement of the existing services and shuttle bus service will be subject to actual passenger demand and further review with the corresponding public transport operators and government departments, if necessary.

Trip Generation of Approved Scheme

4.3.13 In the approved scheme, the development will provide 789 houses with an average flat size of approximately 105.1 m^2. The trip generations of the approved development are summarised in **Table 4.9**.

Table 4.9 Estimated Trip Generation of Approved Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Trip Rates (pcu/units/hr) (1)	0.1961	0.1116	0.0955	0.1321
No. of House Unit	789			
Trips (pcu/hr)	155	88	75	104

Remark: (1) Trip Rates extracted from TPDM for private housing: low-density R(B) with average flat sizes of 100m^2.

4.3.14 The net difference of the trip generation between the approved and proposed schemes is summarised in **Table 4.10**. As shown in **Table 4.10**, the trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme.

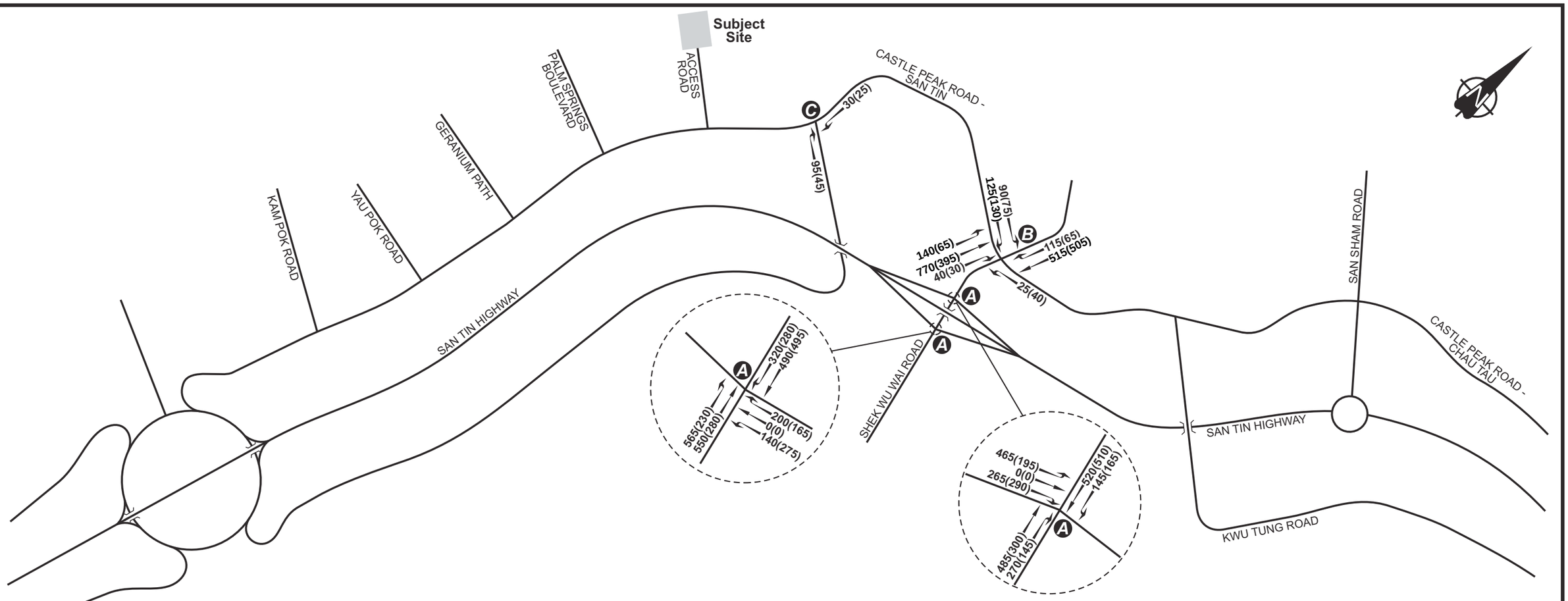
Table 4.10 Net Difference of Trip Generations between the Approved and Proposed Schemes

	Trip Generations (pcu/hr)			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Approved Scheme [A]	155	88	75	104
Proposed Scheme [B]	385	237	182	247
Trip Difference [B] – [A]	+230	+149	+107	+143

4.4 Traffic Forecast Data

4.4.1 Based on the above, the year 2034 design flows, as shown in **Drawing 4.5** are produced according to the following.

Year 2034 Design Case = Year 2034 Reference Case + Proposed Development Trip Generation, induced shuttle bus trips and the additional public transport trips



LEGEND :

30 AM PEAK TRAFFIC FLOW (PCUS/HR)

(25) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CFC	21MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

ESTIMATED TRAFFIC FLOWS OF SAN TIN TECHNOPOLE (STT)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.1	A

SYSTRA MVA

CHK50800610/TIA/F41-A.CDR/LLH/21MAY25

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. RESIDENTIAL DEVELOPMENT R(D) AT KAM POK ROAD (TO THE WEST OF CHUK YUEN TSUEN), A/YL-MP/205.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A AND 1740 S.A RP IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/8.
6. LOTS 1910 RP (PART) AND 1743 S.C RP (PART) IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/9
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A-YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3054 S.A RP (PART), 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (PART), 3250 S.B SS.23 RP (PART), 3250 S.B SS.33 RP (PART) IN D.D. 104, AND ADJOINING GOVERNMENT LAND, YUEN LONG, Y/YL-MP/3.
15. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
16. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
17. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
18. PROPOSED COMPREHENSIVE DEVELOPMENT SCHEME TO INCLUDE WETLAND RESTORATION PROPOSAL AND PROPOSED FILLING OF PONDS/LAND AND EXCAVATION OF LAND IN "OU(CDWRA)" ZONE AT VARIOUS LOTS IN D.D. 104, NORTH OF KAM POK ROAD EAST, POK WAI, YUEN LONG, NEW TERRITORIES, A/YL-NSW/314.
19. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
FAIRVIEW PARK BOULEVARD
KAM POK ROAD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title: PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

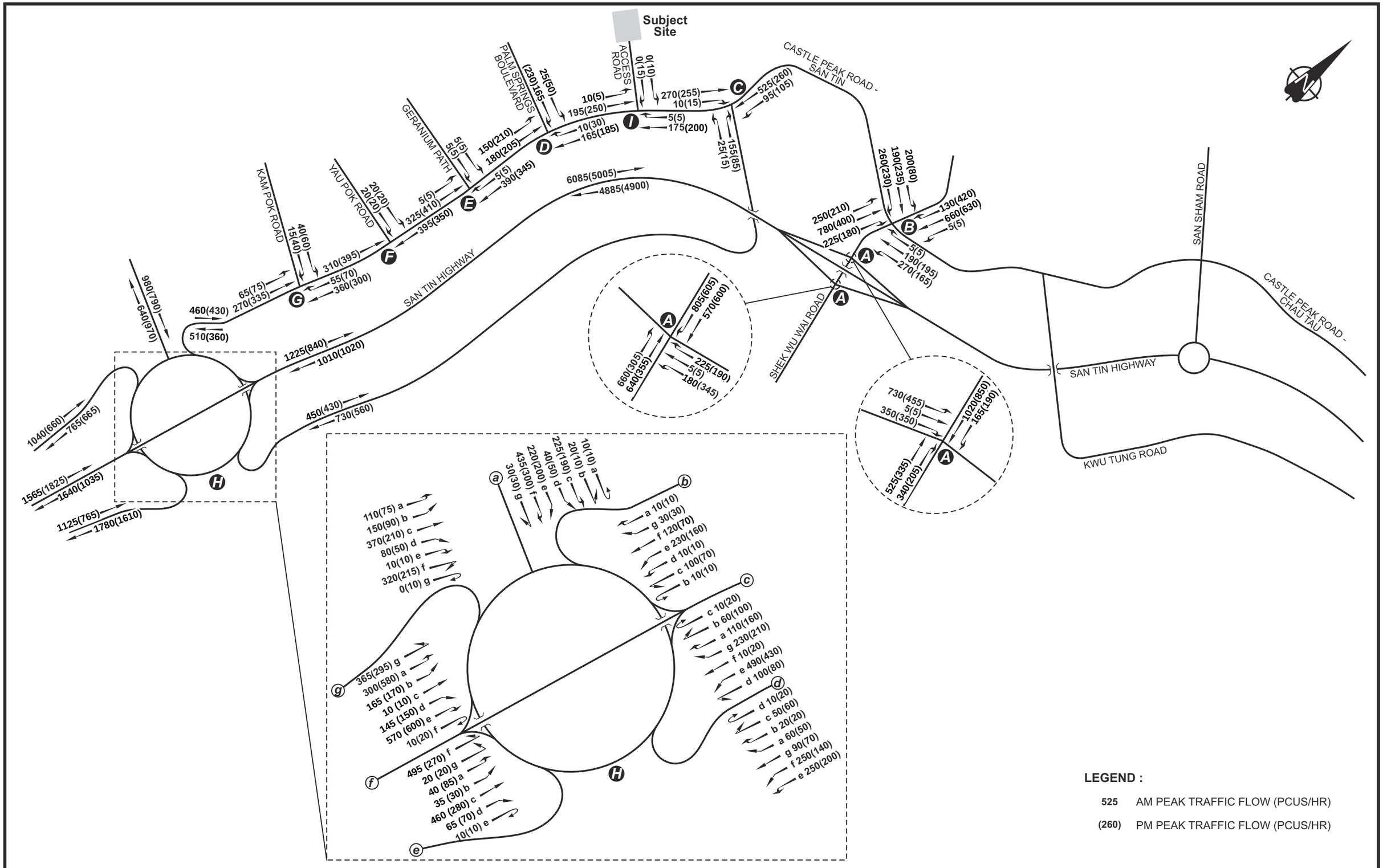
Drawing Title: **LOCAL PLANNED AND COMMITTED DEVELOPMENTS**

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A3)	JUN 2024	**4.2**	-

SYSTRA MVA

CHK50800610/TIA/F42.DGN/LHO/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

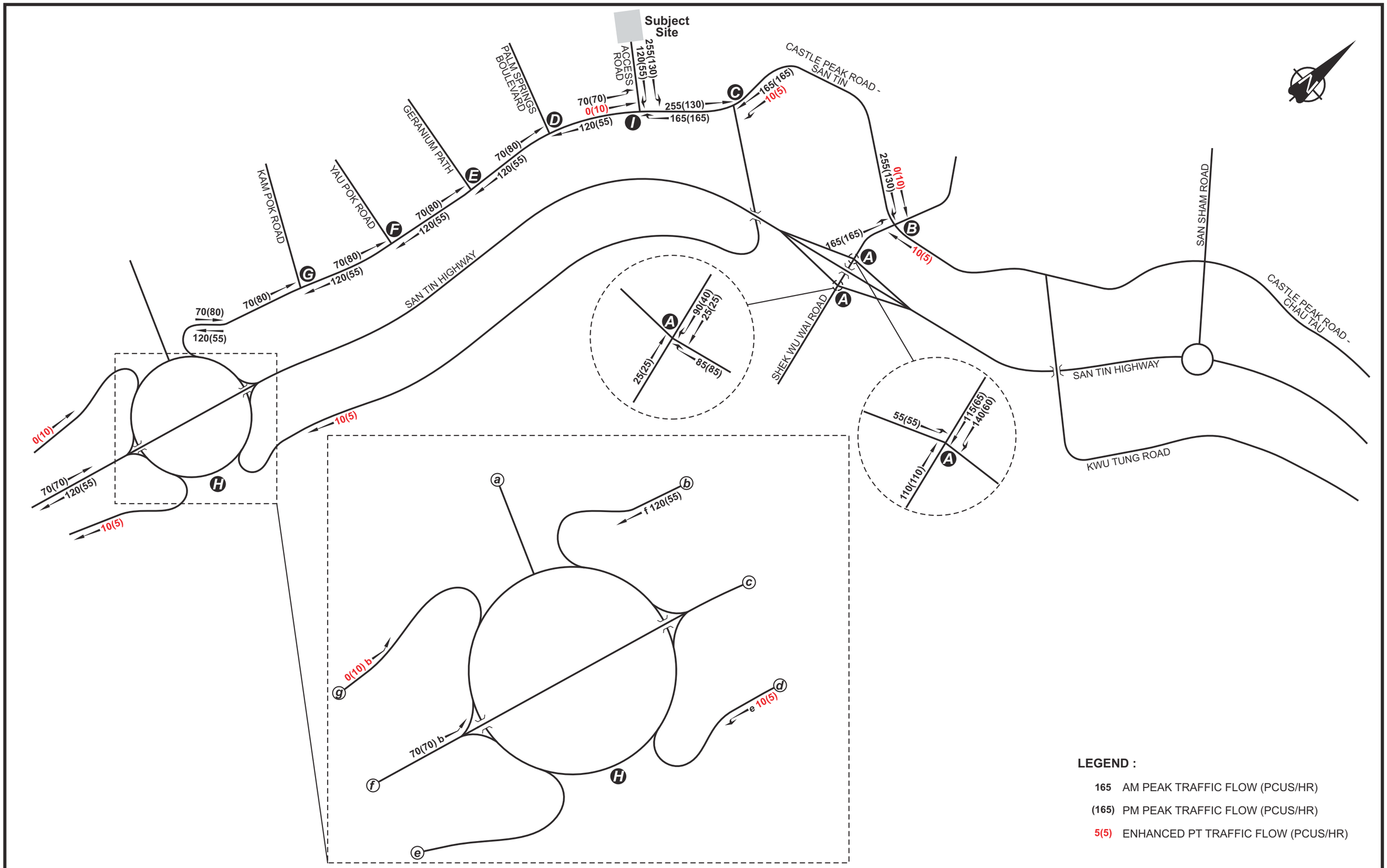
2034 REFERENCE TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.3	A

SYSTRA MVA

CHK50800610/TIA/F43-A.CDR/LLH/23MAY25

Original Size : A3



LEGEND :

165	AM PEAK TRAFFIC FLOW (PCUS/HR)
(165)	PM PEAK TRAFFIC FLOW (PCUS/HR)
5(5)	ENHANCED PT TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	21MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

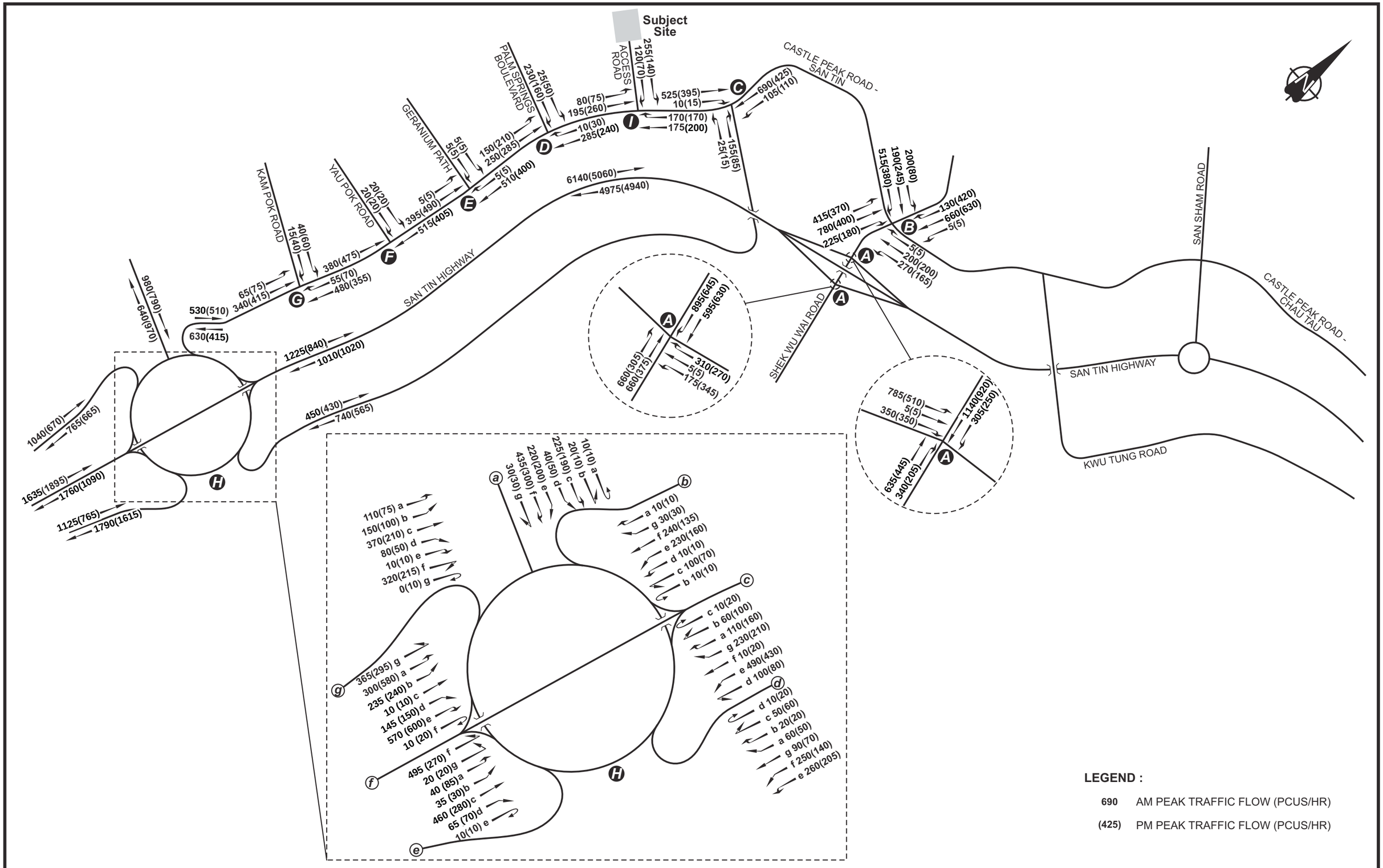
DEVELOPMENT TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.4	A

SYSTRA MVA

CHK50800610/TIA/F44-A.CDR/LLH/21MAY25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

2034 DESIGN TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.5	A

SYSTRA MVA

CHK50800610/TIA/F45-A.CDR/LLH/23MAY25

Original Size : A3

5. TRAFFIC IMPACT ASSESSMENT

5.1 Year 2034 Junction Operational Performance

5.1.1 To investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases. The assessment results for the year 2034 reference and design cases are summarised in **Table 5.1**. The junction calculation sheets are attached in **Annex A**.

Table 5.1 Year 2034 Junction Operational Performance

Ref.(1)	Junction	RC/RFC (2)			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	66%	>100%	46%	84%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	47%	45%	26%	30%
C	Castle Peak Road – Mai Po/San Tam Road	0.47	0.22	0.57	0.26
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	0.53	0.45	0.57	0.48
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.02	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.10	0.10	0.11	0.11
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.10	0.20	0.11	0.22
H	Fairview Park Interchange	1.29	1.07	1.35	1.11
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.05	0.65	0.38

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.

5.1.2 The anticipated trip generations of the current proposed scheme would be larger in both AM peak and PM peak periods, compared with the previous approved scheme. The assessment results in **Table 5.1** indicated that the majority of identified key junctions would operate with ample capacity in year 2034, except for Junction H, which will be operated over capacity.

5.1.3 For Junction H, with reference to the Preliminary Technical Review on Site Formation and Infrastructure Works for Proposed Public Housing Developments at Sha Po, Shap Pat Heung and Tai Kei Leng, Yuen Long – Feasibility Study under Agreement No. CE 10/2020 (CE) and the planning application Y/YL-MP/10, there will be a planned junction improvement scheme for Fairview Park Interchange, as illustrated in **Drawing 5.3**. It is proposed to widen the entry lanes at Fairview Park Boulevard, Castle-Peak Road – Tam Mi, San Tam Road and the slip road from San Tin Highway northbound and southbound. In addition, an additional exclusive left-turn lane is proposed at San Tin Highway northbound for the traffic to Castle Peak Road – Tam Mi southbound. Nonetheless, should there be any delay whatsoever such that the abovementioned junction improvement works at Junction H are not in place, the applicant would take up the responsibility to carry out the related junction improvement works instead.

Table 5.2 Year 2034 Junction Operational Performance (With Improvement)

Ref.	Junction	RC/RFC [2]			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
H	Fairview Park Interchange [1]	0.73	0.78	0.75	0.81

Remarks: (1) Refer to **Drawing 5.3** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.1.4 **Table 5.2** indicates that with the junction improvement schemes, Junction H will be operating within capacity in Year 2034.

5.1.5 The road link performance for identified road links was conducted as summarised in **Table 5.3**.

Table 5.3 Year 2034 Road Links Performance

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[5]	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C [6]		Traffic Flow (pcu/hr)		V/C [6]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	25	0.00	0.03	375	210	0.41	0.23
		WB	700[2]	910	15	10	0.02	0.01	250	245	0.27	0.27
L2	Castle Peak Road – Mai Po	NB	700[2]	910	205	255	0.23	0.28	275	335	0.30	0.37
		SB	700[2]	910	175	215	0.19	0.24	295	270	0.32	0.30
L3	Castle Peak Road – Mai Po	NB	700[2]	910	280	270	0.31	0.30	535	410	0.59	0.45
		SB	700[2]	910	550	275	0.60	0.30	715	440	0.79	0.48
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	460	430	0.51	0.47	530	510	0.58	0.56
		SB	700[2]	910	510	360	0.56	0.40	630	415	0.69	0.46
L5	Shek Wu Wai Road	NB	4,200[3]	5,460	1255	790	0.23	0.14	1420	955	0.26	0.17
		SB	4,200[3]	5,460	1185	1040	0.22	0.19	1445	1170	0.26	0.21
L6	San Tin Highway	NB	4700[4]	6,100	6085	5000	1.00	0.82	6140	5055	1.00	0.83
		SB	4700[4]	6,100	4885	4895	0.80	0.80	4975	4935	0.81	0.81

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction.
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a dual 3-lane single carriageway for PD will be taken as 4200 veh/hr for one-way direction.
(4) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction.
(5) PCU factor of 1.3 adopted.
(6) V/C = volume to capacity ratio.

5.1.6 The assessment results in **Table 5.3** indicate that all identified key road links would operate with ample capacity in year 2034 upon completion of the proposed development.

5.1.7 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

5.2 Year 2034 Pedestrian Flow and Queuing Space Assessment

5.2.1 For the growth rate of pedestrian flow, references have been made to the latest "Projections of Population Distribution 2023-2031" as published by PlanD's Working Group on Population Distribution Projections in March 2024. The available projected population for the local Tertiary Planning Unit (TPU) in the vicinity, as shown in **Drawing 5.4**, are referenced to derive the annual growth rates as summarised in **Table 5.4**.

Table 5.4 Projected Populations of Selected Tertiary Planning Units

Tertiary Planning Unit (TPU)	Projected Population		Growth Rate (p.a.)
	2021	2027	21/27
541	19,100	19,900	+0.7%
542	12,500	11,700	-1.1%
543 & 546	3,300	5,000	+7.2%
544	3,500	3,200	-1.5%
Total	**38,400**	**39,800**	**+0.6%**

5.2.2 As shown in **Table 5.4**, the projected population planning data suggest that the annual growth rate between Year 2021 and Year 2027 is +0.6% when considering the local TPUs. In conservative approach, +1.0% per annum is adopted for the background pedestrian growth of the local pedestrian flow from Year 2024 to Year 2034, and the consideration of the induced pedestrian trips for franchised bus demand of **Table 4.7**.

5.2.3 The peak hour pedestrian flows in Year 2034 under both reference and design scenarios are shown in **Drawing 5.5** and **5.6**, and the results of the operational performance of identified footpaths and concerned queuing area of bus stops are summarized in **Table 5.5** and **5.6.**

Table 5.5 2034 Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2034 Reference Peak Hourly Flow (ped/hr) (3)		2034 Reference Peak Flow Rate (ped/min/m) (4)		LOS (5)		2034 Design Peak Hourly Flow (ped/hr)(6)		2034 Design Peak Flow Rate (ped/min/m) (4)		LOS (5)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	12	10	0.18	0.15	A	A	865	863	13.11	13.08	A	A
Fp2	2.3	1.3	22	45	0.28	0.58	A	A	321	625	4.12	8.01	A	A
Fp3	1.5	0.5	24	41	0.80	1.37	A	A	578	314	19.27	10.47	B	A
Fp4	1.7	0.7	6	7	0.14	0.17	A	A	6	7	0.14	0.17	A	A

Note: (1) Refer to **Drawing 5.5** and **Drawing 5.6** for locations and operational performance of identified footpaths.

(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath).
(3) Reference pedestrian flow = Year 2024 peak hour pedestrian flows*(1+adopted growth rate of 1.0%)^10.
(4) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width.
(5) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.
(6) Design pedestrian flow = Reference pedestrian flow + induced pedestrian trips for franchised bus demand

Table 5.6 2034 Queuing Area Level-Of-Service Assessment for Bus Stops

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)(1)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)(2)	LOS (3)	Passenger Flow at Bus Stop (pax/hr)(4)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	5.8	3	2 (i.e. 3/60x25)	2.9	A	557	87 (i.e. 557/60x9.3)	0.07	F
Palm Springs Bus Stop – Sheung Shui Bound (NB)	20.3	3	2 (i.e. 3/60x25)	10.2	A	302	126 (i.e. 302/60x25)	0.16	F

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9.
(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.4 As shown in **Table 5.5** and **5.6**, the results indicate that the identified footpaths are operating with adequate spare capacities to cater for the future demand during the peak hours under reference and design scenarios. However, the LOS of queuing area at bus stop would be operated with LOS D and F under the Year 2034 design scenario.

5.2.5 Therefore, it is proposed to widen the queuing area at both concerned bus stops to allow the LOS queuing area to reach LOS C, (i.e. the average pedestrian space = 0.6 m^2/p). The queuing area assessment under both 2034 reference and design scenarios are shown in **Table 5.7**, and the propose widening scheme is illustrated in **Drawing 5.7**. The proposed widening works would be undertaken by the applicant.

Table 5.7 2034 Queuing Area Level-Of-Service Assessment for Bus Stops (With Widening)

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)(1)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)(2)	LOS (3)	Passenger Flow at Bus Stop (pax/hr)(4)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	52.2 (5.8+46.4)	3	2 (i.e. 3/60x25)	26.1	A	557	87 (i.e. 557/60x9.3)	0.6	C
Palm Springs Bus Stop – Sheung Shui Bound (NB)	75.6 (20.3+55.3)	3	2 (i.e. 3/60x25)	37.8	A	302	126 (i.e. 302/60x25)	0.6	C

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9
(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.6 **Table 5.7** indicates that with the widening scheme, the LOS of the identified queuing area at bus stops would be operating within capacity in Year 2034.

5.3 Sensitivity Assessment

Assessment 1: Existing Junction Layout for Junction A and Junction B in Design Year 2034

5.3.1 Upon TD's comments on pre-submission of the TIA report, the layout of Junction A (Shek Wu Wai Road / San Tin Highway Slip Road) and Junction B (Shek Wu Wai Road / Road D3 / Road L11 / Road L12) has assumed to be modified as per the proposed road network under San Tin Technopole. In case there is delay on the proposed road work under San Tin Technopole, the junction operational performance for Junction A and Junction B based on the existing junction layout under Design scenario is required to be assessed. However, as the junction improvement works are mostly to accommodate the development of STT, therefore the STT related traffic trips would also be excluded in the sensitivity assessment. The assessment results for the year 2034 reference and design cases based on existing junction layouts of Junctions A and B are summarised in **Table 5.8**. The junction calculation sheets are attached in **Annex D**.

Table 5.8 Year 2034 Junction Operational Performance for Junction A and B

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.43	0.42	0.49	0.48
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.53	0.32	0.67	0.38
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.85	0.73	1.13	0.90

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.2 The assessment results in **Table 5.8** indicated that the Junction A1 and A2 would operate with ample capacity in year 2034, based on the existing junction layout, except for Junction B, which would be operated over capacity.

5.3.3 For Junction B, the existing priority junction is proposed to be upgraded into a roundabout junction with cautionary crossings proposed to the east of the junction. The proposed improved layout of Junction B, which will be constructed subject to further review of San Tin Technopole's project, is illustrated in **Drawing 5.8**. Nonetheless, should there be any delay on the proposed road works under San Tin Technopole, the applicant would take up the responsibility to carry out the related junction improvement works at Junction B.

Table 5.9 Year 2034 Junction Operational Performance for Junction B (With Improvement)

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.40	0.36	0.55	0.47

Remarks: (1) Refer to **Drawing 5.8** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.4 **Table 5.9** indicates that with the junction improvement schemes, Junction B would be operating within capacity in Year 2034. Nevertheless, the junction improvement scheme for Junction B would be assessed based on a hypothetical approach in the sensitivity test, as the proposed road works related to STT should be in place.

Assessment 2: Adjacent Potential Planning Applications

5.3.5 Upon TD's comments on pre-submission of the TIA report, due to the similar population intake year of the residential developments, apart from STT, traffic generations of a number of potential planning applications would be included in the assessment as a sensitivity test in Year 2034. The development schedules of these potential developments and estimated traffic generations are summarized in **Table 5.10** and the locations of these developments are indicated in **Drawing 5.9**.

Table 5.10 Planned/Committed Developments in Sensitivity Test

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Residential Development R(D) at Kam Pok Road (to the west of Chuk Yuen Tsuen), A/YL-MP/205	71 units (average flat size of about 186 m^2)	20	13	12	17
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10(3)	10(3)	10(3)	10(3)
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/8	6,825 units (Average Flat Size 37.5 m^2)	491(4)	291(4)	196(4)	253(4)
		Retail (3,950m^2)	10(4)	10(4)	13(4)	15(4)
		GIC Facilities (2 nos.)	10(4)	10(4)	10(4)	10(4)
		Kindergarten (8 Classrooms)	25(4)	25(4)	1(4)	1(4)

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
6	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/9	3,115 units (Average Flat Size 37.2 m^2)	224[4]	133[4]	90[4]	116[4]
		Retail (3,900 m^2)	9[4]	10[4]	13[4]	14[4]
		1 School	7[4]	30[4]	1[4]	1[4]
		Kindergarten (8 Classrooms)	25[4]	25[4]	1[4]	1[4]
		Relocated Soy Sauce Factory (13,700 m^2)	0[4]	4[4]	10[4]	2[4]
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	2,811 units (average flat size of about 50 m^2)	202	119	80	104
		Eating place / Shop & Services (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	109	65	43	56
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[3]	10[3]	10[3]	10[3]
		Special Child Care Centre	10[3]	10[3]	10[3]	10[3]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home 142 Beds	10[3]	10[3]	10[3]	10[3]
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[3]	10[3]	10[3]	10[3]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
14[2]	Lots 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, 3250 S.B ss.23 RP and 3250 S.B ss.33 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/7	1,228 units (Average Flat Size 43 m^2)	89[4]	53[4]	36[4]	46[4]
		Retail (831m^2)	2[4]	2[4]	3[4]	3[4]
		Kindergarten (6 Classrooms)	32[4]	32[4]	1[4]	1[4]
		Public Transport	15[4]	15[4]	15[4]	15[4]
15[2]	Lots 3054 S.A ss.1, 3156 S.A, 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP and 3205 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/8	1,249 units (Average Flat Size 44 m^2)	90[4]	54[4]	36[4]	47[4]
		Public Transport	15[4]	15[4]	15[4]	15[4]
16	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m^2)	45	27	18	23
		Retail 1,165 m^2	3	3	4	5
17	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m^2)	7	4	3	4
		5,400 m^2 residential care home for the elderly 127 Beds	10[3]	10[3]	10[3]	10[3]
18	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m^2 residential care home for the elderly 530 Beds	23[4]	27[4]	21[4]	27[4]
19	Proposed Comprehensive Development Scheme to include Wetland Restoration Proposal and Proposed Filling of Ponds/Land and Excavation of Land in "OU(CDWRA)" Zone at Various Lots in D.D. 104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories, A/YL-NSW/314	90 units (average flat size of about 227 m^2)	28[4]	21[4]	21[4]	31[4]

Remark: (1) Refer to **Drawing 5.9** for development locations.
(2) Planning Application subject to TD's comment.
(3) Assume Nominal Trips of 10 pcu/hr.
(4) Trips generation from project's TIA report.

5.3.6 The traffic flows of the above potential development are further included into the Year 2034 Design Case and the traffic flows for reference and design cases under Year 2034 Sensitivity Test are shown in **Drawing 5.10** and **5.11**.

Year 2034 Junction Operational Performance under Sensitivity Test (with Potential Planning Applications)

5.3.7 Similarly, to investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases in Sensitivity Test. The assessment results for the year 2034 sensitivity test are summarised in **Table 5.11**. The junction calculation sheets are attached in **Annex D**.

Table 5.11 Year 2034 Junction Operational Performance in Sensitivity Test

Ref.(1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	66%	>100%	46%	84%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	45%	42%	25%	27%
C	Castle Peak Road – Mai Po/San Tam Road	0.48	0.23	0.59	0.26
D	Castle Peak Road – Mai Po/Palm Springs Boulevard	0.54	0.44	0.59	0.47
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.03	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.11	0.11	0.11	0.11
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.21	0.29	0.23	0.30
H	Fairview Park Interchange (with improvement) (5)	0.72	0.81	0.77	0.84
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.05	0.66	0.38

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.
(5) Refer to **Drawing 5.12** for junction reference.

5.3.8 For Junction H, with reference to the proposed junction improvement layout in the planning application of Y/YL-MP/7, further improvement works are proposed, as illustrated in **Drawing 5.12**. It is proposed to further widen the entry lanes at Fairview Park Boulevard. The applicant would take up the responsibility to carry out the related further junction improvement works at Junction H.

5.3.9 The assessment results in **Table 5.11** indicated that the majority of identified key junctions would operate with ample capacity in year 2034 under sensitivity test, except for Junction H. Since the junction is already over capacity in the reference scenario with the potential planned developments, it would expect that further junction improvement would be required in later stage.

5.3.10 The road link performance for identified road links was conducted as summarised in **Table 5.12.**

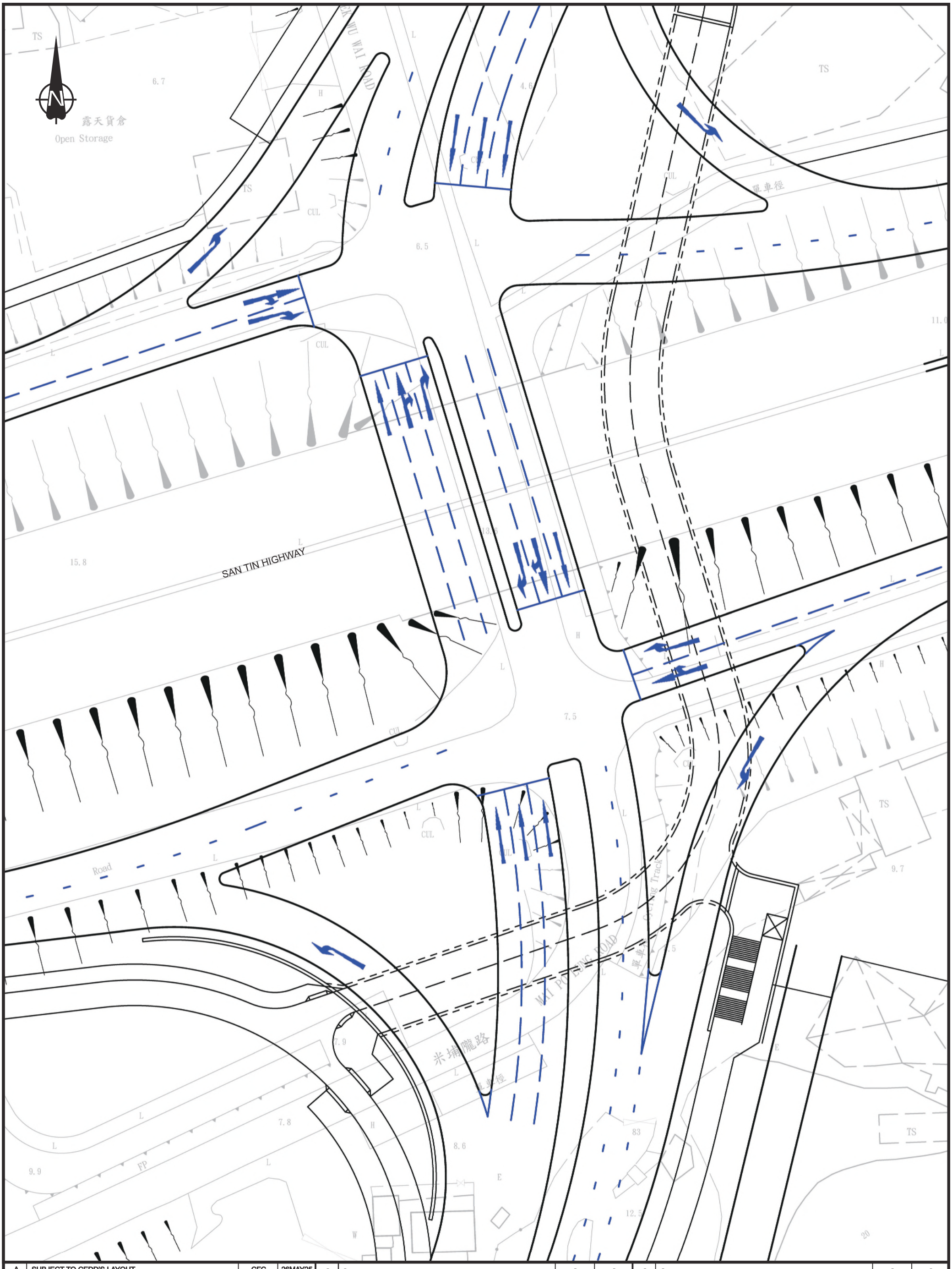
Table 5.12 Year 2034 Road Links Performance in Sensitivity Test

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[5]	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C [6]		Traffic Flow (pcu/hr)		V/C [6]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	25	0.00	0.03	375	210	0.41	0.23
		WB	700[2]	910	15	10	0.02	0.01	250	245	0.27	0.27
L2	Castle Peak Road – Mai Po	NB	700[2]	910	230	265	0.25	0.29	300	345	0.33	0.38
		SB	700[2]	910	205	235	0.23	0.26	325	290	0.36	0.32
L3	Castle Peak Road – Mai Po	NB	700[2]	910	305	280	0.34	0.31	560	415	0.62	0.46
		SB	700[2]	910	580	290	0.64	0.32	745	455	0.82	0.50
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	565	500	0.62	0.55	635	580	0.70	0.64
		SB	700[2]	910	535	375	0.59	0.41	655	430	0.72	0.47
L5	Shek Wu Wai Road	NB	4,200[3]	5,460	1,255	790	0.23	0.14	1,420	955	0.26	0.17
		SB	4,200[3]	5,460	1,185	1,040	0.22	0.19	1,445	1,170	0.26	0.21
L6	San Tin Highway	NB	4,700[4]	6,100	6,130	5,015	1.00	0.82	6,185	5,070	1.01	0.83
		SB	4,700[4]	6,100	4,910	4,915	0.80	0.80	5,000	4,955	0.82	0.81

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a dual 3-lane single carriageway for PD will be taken as 4200 veh/hr for one-way direction
(4) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction
(5) PCU factor of 1.3 adopted
(6) V/C = volume to capacity ratio

5.3.11 The assessment results in **Table 5.12** indicate that all identified key road links would operate with ample capacity in year 2034 sensitivity test.

5.3.12 Therefore, it is anticipated that all identified key junctions and road links would operate with ample capacity in year 2034 sensitivity test.



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
A	SUBJECT TO CEDD'S LAYOUT	CFC	26MAY25	-	-	-	-	-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

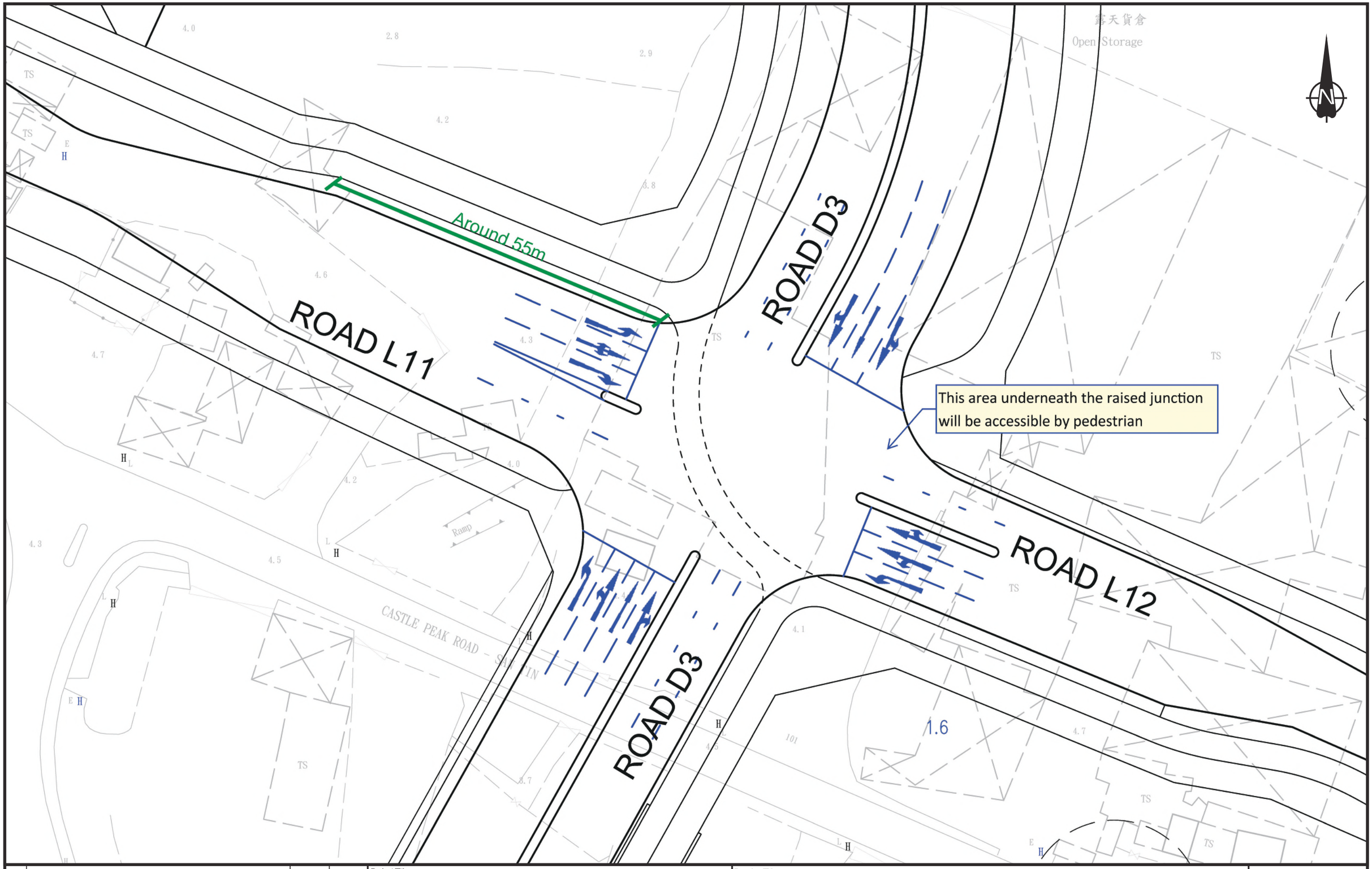
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.1	A

SYSTRA MVA

CHK50800610/TIA/F51-A.CDR/LLH/26MAY25

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
A	SUBJECT TO CEDD'S LAYOUT	CFC	26MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

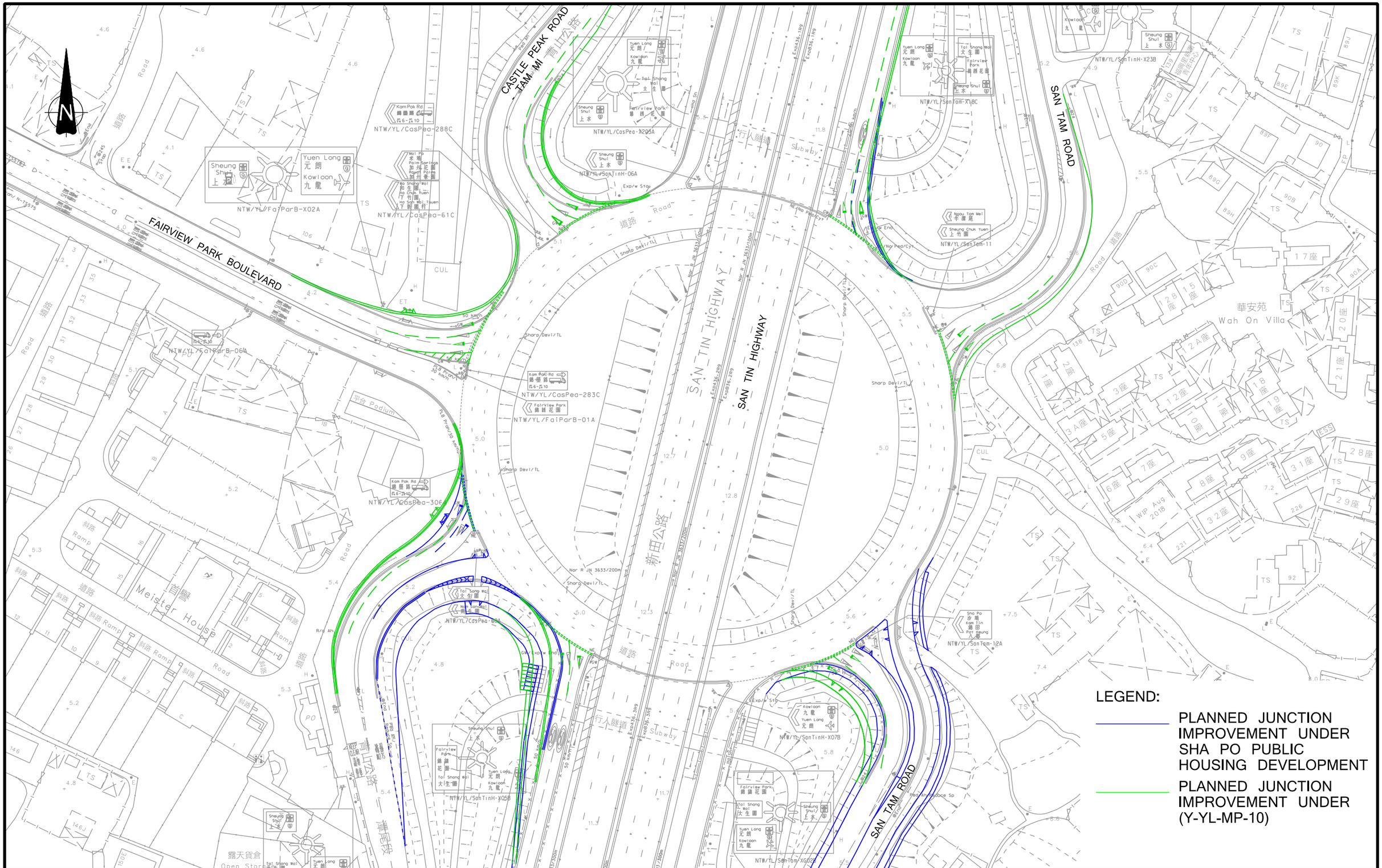
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / ROAD D3 / ROAD L11 / ROAD L12 (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.2	A

SYSTRA MVA

CHK50800610/TIA/F52-A.CDR/LLH/26MAY25

Original Size : A3



LEGEND:

- PLANNED JUNCTION IMPROVEMENT UNDER SHA PO PUBLIC HOUSING DEVELOPMENT
- PLANNED JUNCTION IMPROVEMENT UNDER (Y-YL-MP-10)

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

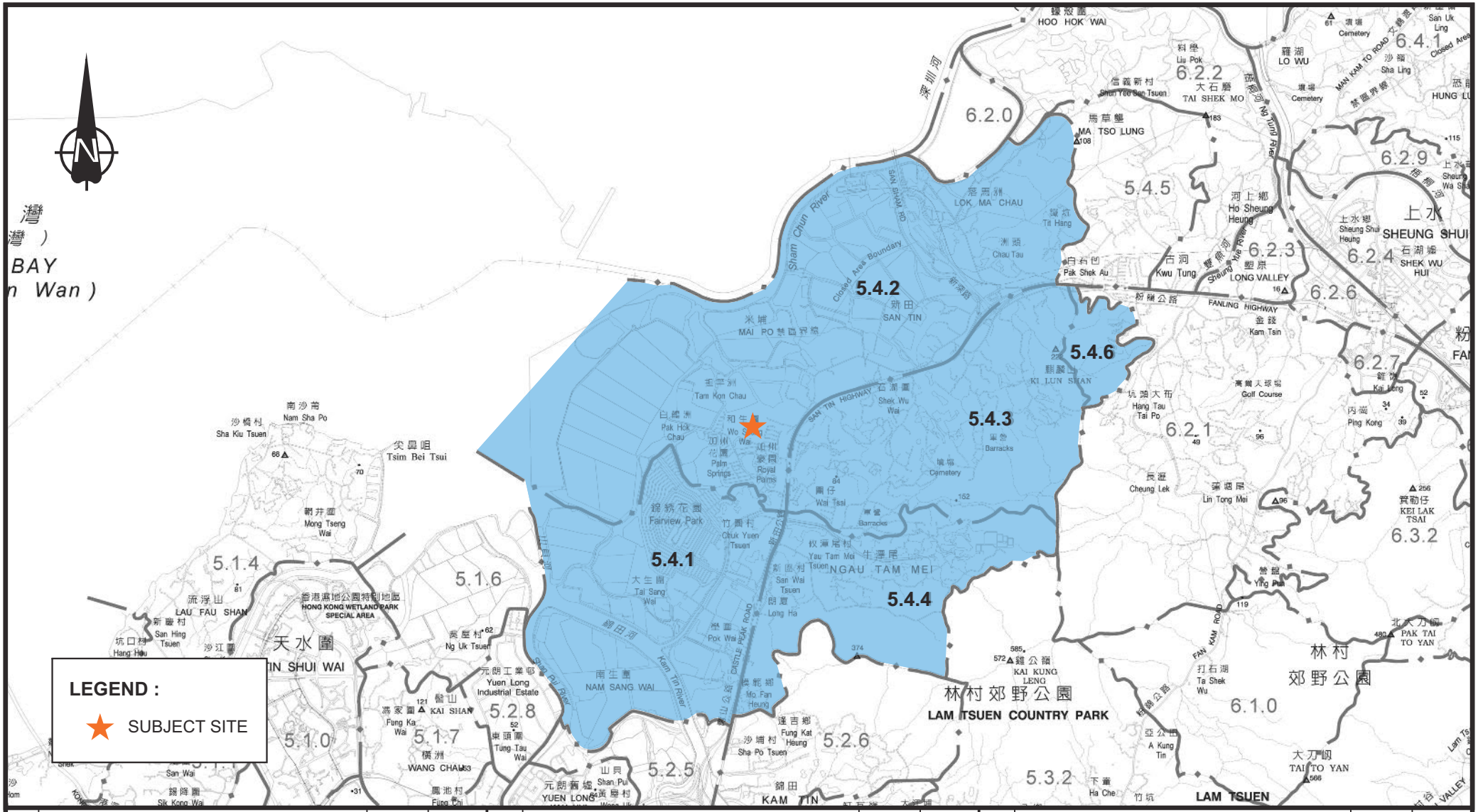
PLANNED JUNCTION IMPROVEMENT LAYOUT OF FAIRVIEW PARK INTERCHANGE (H) IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	DEC 2024	5.3	-

SYSTRA MVA

CHK50800610/TIA/F512.DGN/LHO/22MAY25

Original Size : A3



A	MINOR AMENDMENT	CFC	21MAY25	-	-	-	-	-	-	-
Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

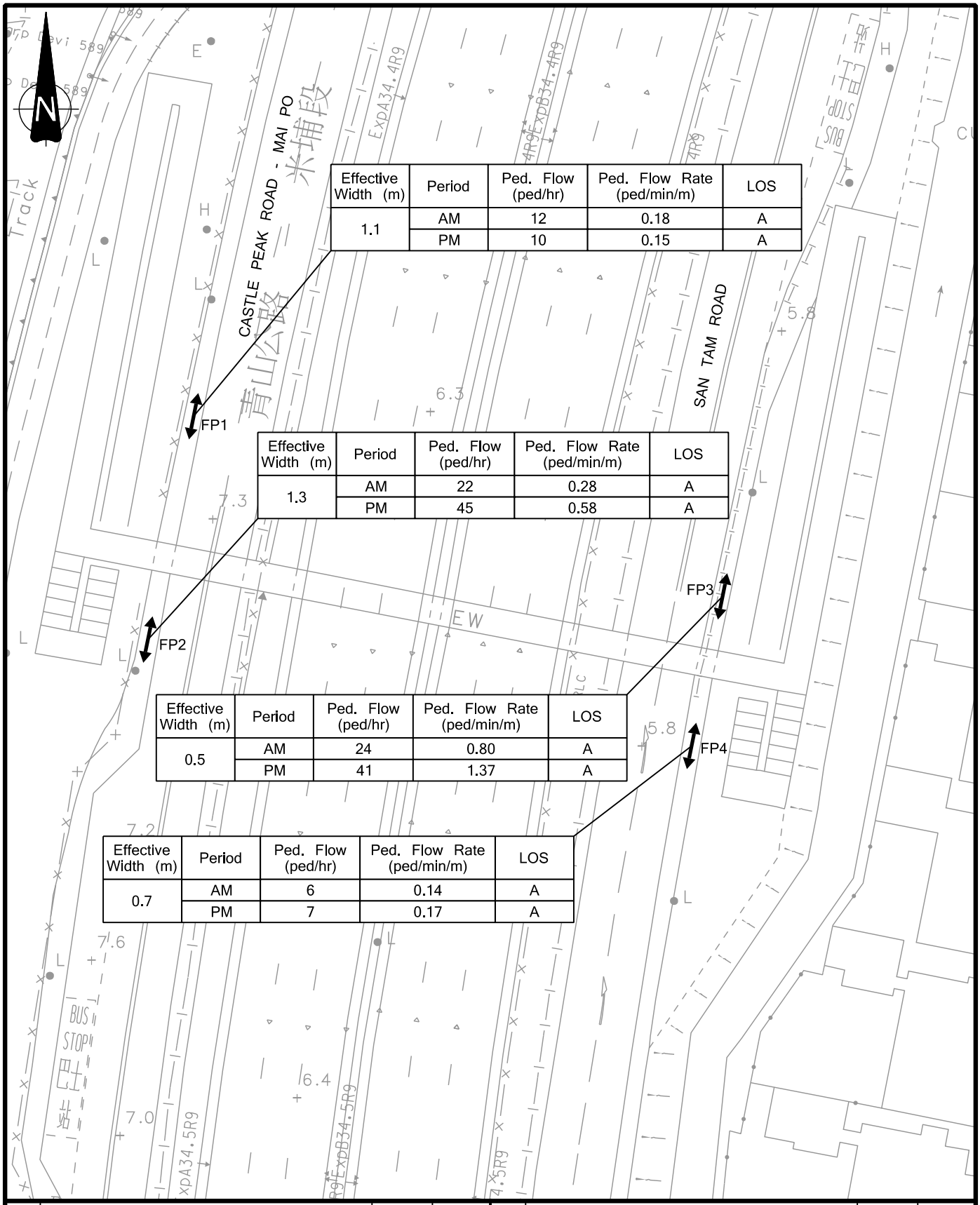
PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

TERTIARY PLANNING UNIT (TPU) BOUNDARIES

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JUN 2024	5.4	A

SYSTRA MVA



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	12	0.18	A
	PM	10	0.15	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	22	0.28	A
	PM	45	0.58	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	24	0.80	A
	PM	41	1.37	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

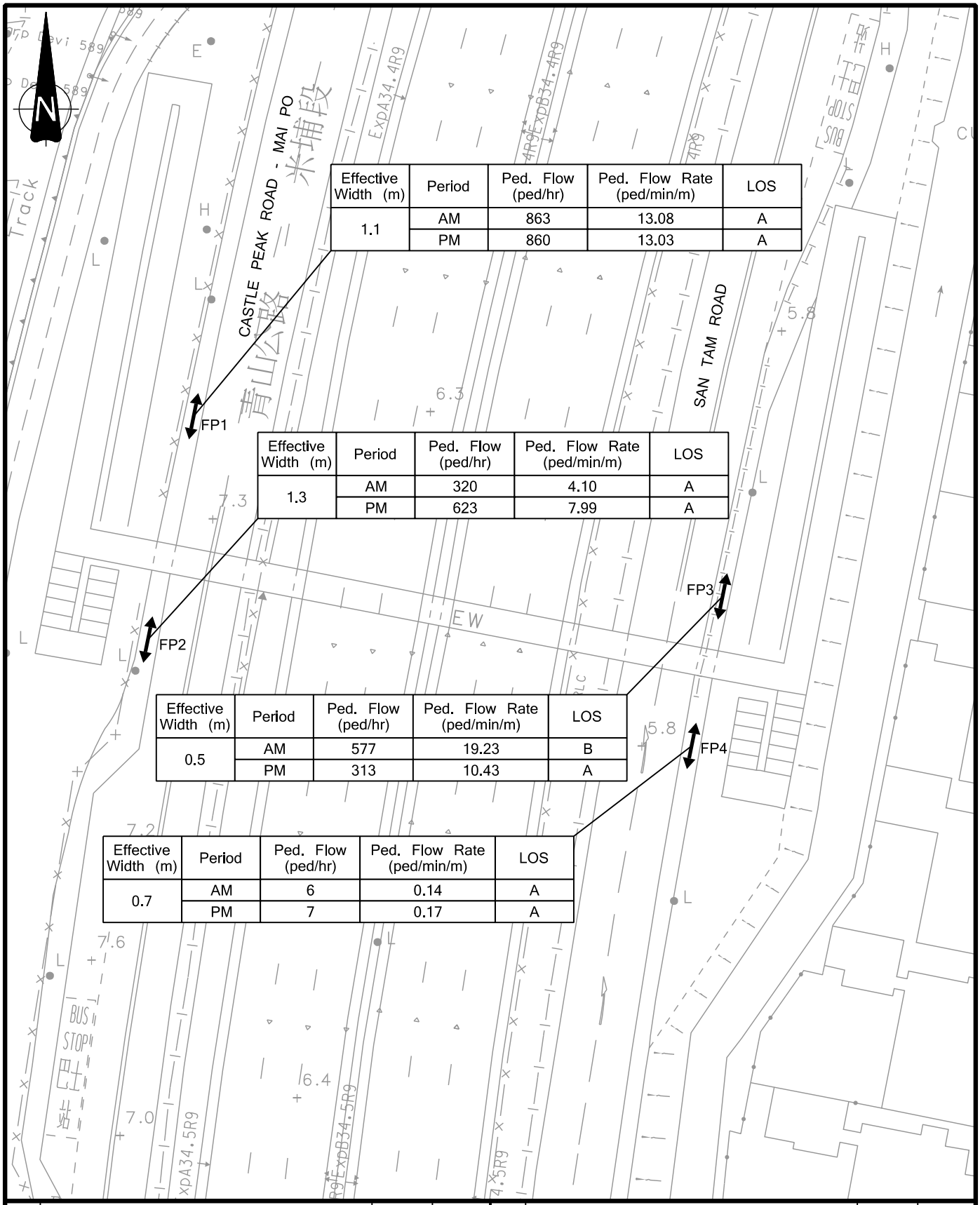
YEAR 2034 REFERENCE PEAK HOUR PEDESTRIAN FLOWS

SYSTRA MVA

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	DEC 2024	**5.5**	-

CHK50800610/TIA/F55.DGN/LHO/22MAY25

Original Size : A4



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	863	13.08	A
	PM	860	13.03	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	320	4.10	A
	PM	623	7.99	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	577	19.23	B
	PM	313	10.43	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

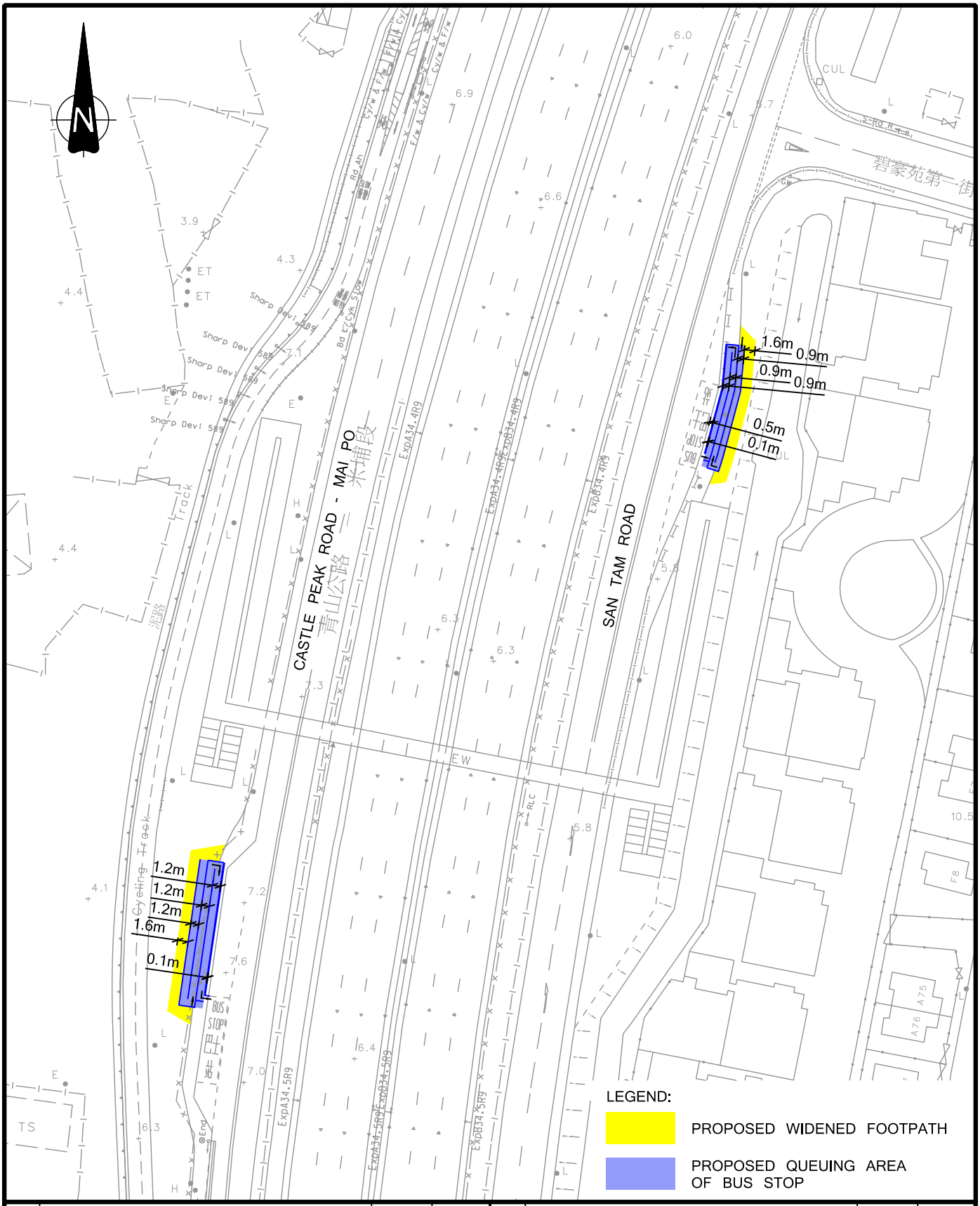
Drawing Title

YEAR 2034 DESIGN PEAK HOUR PEDESTRIAN FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A4)	JAN 2025	**5.6**	-

CHK50800610/TIA/F56.DGN/LHO/22MAY25

Original Size : A4



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED WIDENING OF BUS STOPS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:800(A4)	JAN 2025	5.7	-

CHK50800610/TIA/F57.DGN/LHO/23MAY25

Original Size : A4

青山公路 新田段

CASTLE PEAK ROAD - SAN TIN

SHEK WU WAI ROAD

Ramp

San Tin 新田
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖

NTW/YL/CasPea-X233A

Mai Po 米埔
San Tin 新田

NTW/YL/CasPea-196

Mai Po 米埔
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖

NTW/YL/CasPea-X183A

Po Lung

PROPOSED CONVERSION TO MINI ROUNDABOUT JUNCTION

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

INDICATIVE JUNCTION IMPROVEMENT LAYOUT OF CASTLE PEAK ROAD - SAN TIN / SHEK WU WAI ROAD

Designed	Checked	Scale	Date	Drawing No.	Rev.
LTY	CFC	1:500(A3)	DEC 2024	**5.8**	-

SYSTRA MVA

CHK50800610/TIA/F58.DGN/LHO/23MAY25

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. RESIDENTIAL DEVELOPMENT R(D) AT KAM POK ROAD (TO THE WEST OF CHUK YUEN TSUEN), A/YL-MP/205.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A AND 1740 S.A RP IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/8
6. LOTS 1910 RP (PART) AND 1743 S.C RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/9.
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A/YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, Ó250 S.B SS.23 RP AND 3250 S.B SS.33 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/7.
15. LOTS 3054 S.A SS.1, 3156 S.A, 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP AND 3205 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/8.
16. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
17. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
18. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
19. PROPOSED COMPREHENSIVE DEVELOPMENT SCHEME TO INCLUDE WETLAND RESTORATION PROPOSAL AND PROPOSED FILLING OF PONDS/LAND AND EXCAVATION OF LAND IN "OU(CDWRA)" ZONE AT VARIOUS LOTS IN D.D. 104, NORTH OF KAM POK ROAD EAST, POK WAI, YUEN LONG, NEW TERRITORIES, A/YL-NSW/314.
20. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
KAM POK ROAD
FAIRVIEW PARK BOULEVARD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

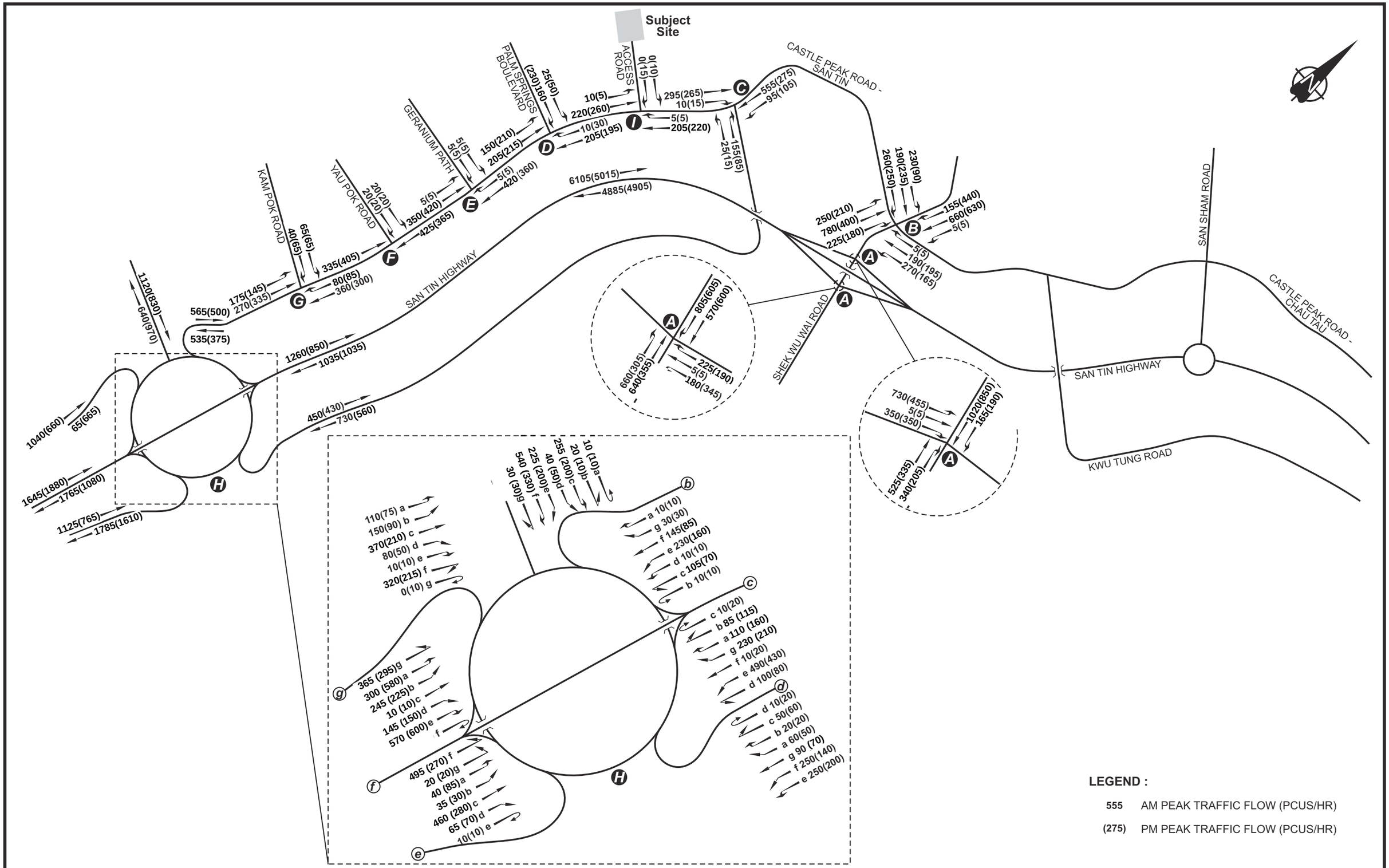
LOCAL PLANNED AND COMMITTED DEVELOPMENTS (SENSITIVITY TEST)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**5.9**	-

SYSTRA MVA

CHK50800610/TIA/F59.DGN/LHO/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

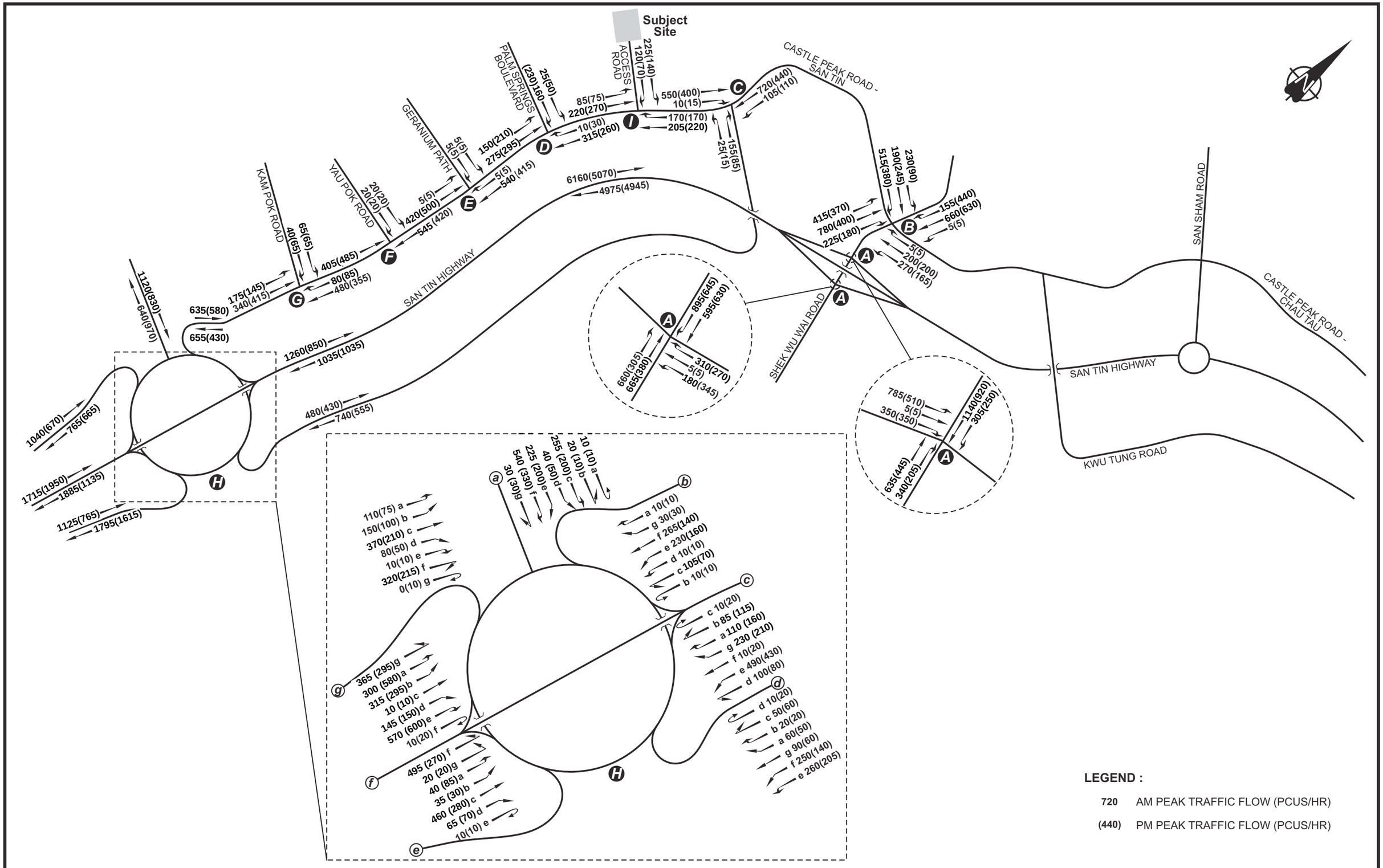
2034 REFERENCE TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.10	A

SYSTRA MVA

CHK50800610/TIA/F510-A.CDR/LLH/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
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A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

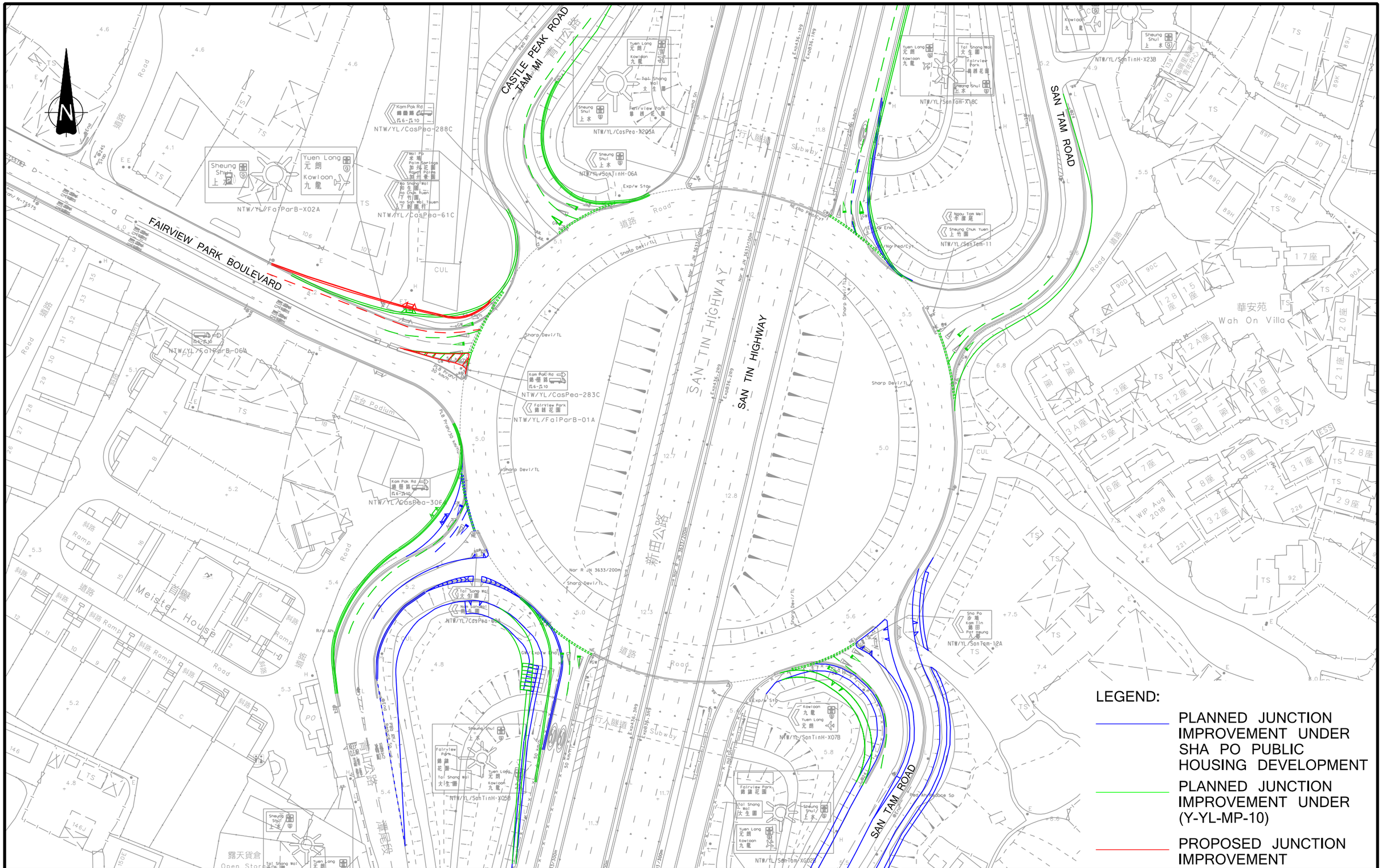
2034 DESIGN TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	5.11	A

SYSTRA MVA

CHK50800610/TIA/F511-A.CDR/LLH/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PLANNED JUNCTION IMPROVEMENT LAYOUT OF FAIRVIEW PARK INTERCHANGE (H) IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	DEC 2024	5.12	-

SYSTRA MVA

CHK50800610/TIA/F512.DGN/LHO/22MAY25

Original Size : A3

6. CONCLUSION

6.1 Summary

6.1.1 The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses. A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site.

6.1.2 Same to the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po.

6.1.3 The provision of the internal transport facilities in the current proposed MLP is determined in accordance with the latest updated HKPSG requirements and TD's further comment.

6.1.4 Traffic surveys have been conducted to establish the current traffic condition, the public transport utilization and footpath condition in the vicinity of the subject site.

6.1.5 The tentative operation year of proposed development is 2031. Thus, the design year of 2034 is adopted for traffic forecast and assessment purposes.

6.1.6 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway.

6.1.7 Public transport service capacity has also been assessed upon the completion of the proposed development. The assessment results suggest that with appropriate bus service enhancements, the public transport service capacity in the vicinity could serve the additional passenger demands. The public transport service enhancement and shuttle bus service provision will be subject to further review in later stage, if necessary.

6.1.8 Operational performance of the identified local junctions and road link capacity have been assessed based on the anticipated year 2034 traffic flows and the upgrade road junctions of San Tin Technopole project. The anticipated trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme. The assessment results as shown in **Table 5.1** revealed that the majority of key junctions will operate with ample capacity upon completion of the proposed development. With the planned junction improvement at Fairview Park Interchange (Junction H), the results indicate that all the identified junctions and road links would be operated within capacity in Year 2034.

6.1.9 Operational performance of pedestrian flows and queuing space assessment have been assessed based on the anticipated year 2034 pedestrian flows, subject to the induced pedestrian trips for additional franchised bus demand. With the proposed widening of existing

queuing area at concerned bus stops, the LOS of the identified road link and queuing area at bus stops would be operating within capacity in Year 2034.

6.1.10 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

6.1.11 Subject to TD comment, two sensitivity tests are also included in the assessment. In conservative hypothetical approach, with certain proposed junction improvements, the assessed junctions and road links would be operated within capacity in Year 2034.

6.2 Conclusion

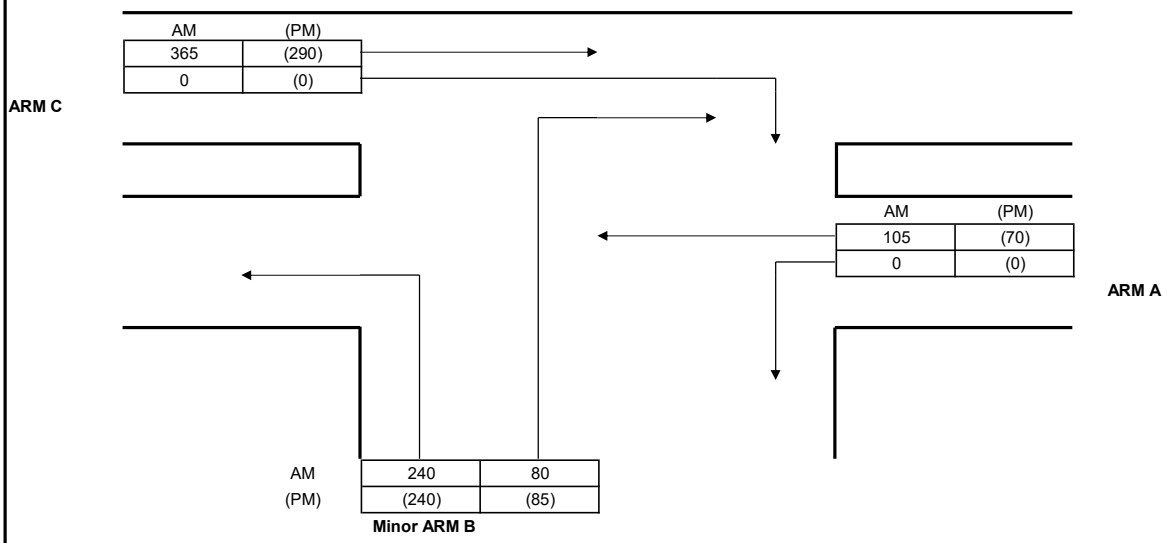
6.2.1 In conclusion, the traffic impact assessment has demonstrated that the traffic generated by the proposed development can be absorbed by the nearby road network. Hence, it can be concluded that the proposed development is considered acceptable in traffic terms.

ANNEX A –
DETAIL OF JUNCTION CALCULATION SHEETS

Calculation Spreadsheets
for
2024 Observed Scenario

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY

Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		365	290
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		105	70
	q(b-a)		80	85
	q(b-c)		240	240
	f		0.75	0.74
CAPACITIES	Q(b-a)	1	646	673
	Q(b-c)	1	937	949
	Q(c-b)	1	420	425
	Q(b-ac)	1	842	857
RFC's	b-a		0.124	0.126
	b-c		0.256	0.253
	c-b		0.000	0.000
	b-ac		0.380	0.379
Worst RFC			**0.380**	**0.379**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

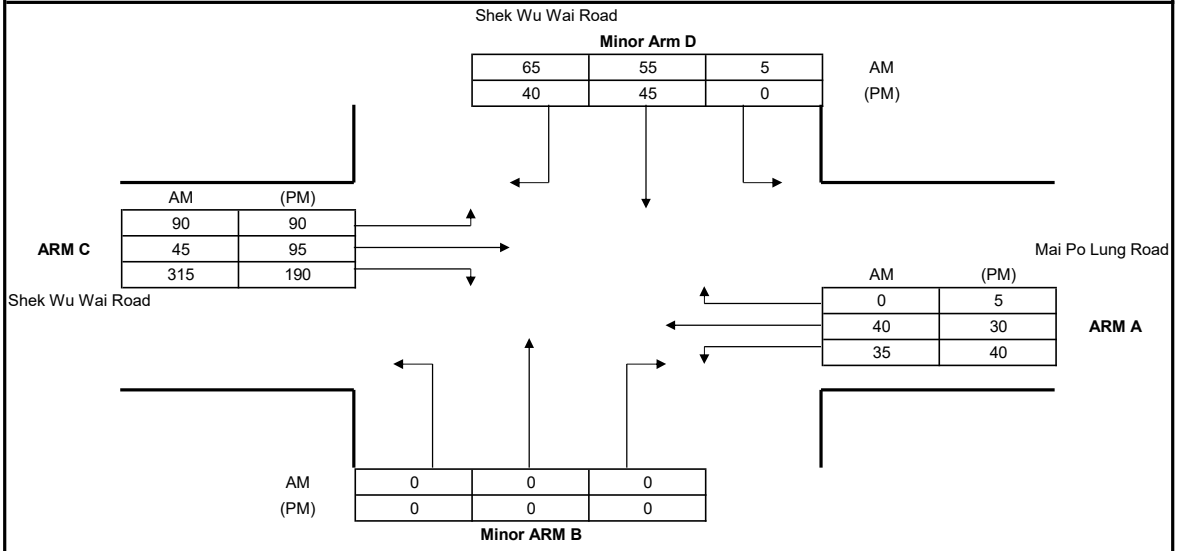
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	95	q(a-c)	40	30
	q(c-b)	315	190	q(a-d)	0	5
	q(a-b)	35	40	q(c-d)	90	90
	q(a-c)	105	70	q(c-a)	45	95
	q(b-a)	0	0	q(d-c)	120	85
	q(b-c)	0	0	q(d-a)	5	0
	f	0.00	0.00	f	0.04	0.00
CAPACITIES	Q(b-a)	259	282	Q(d-c)	598	586
	Q(b-c)	420	425	Q(d-a)	773	761
	Q(c-b)	652	658	Q(a-d)	634	624
	Q(b-ac)	259	282	Q(d-ca)	604	586
	Q(c-a)	930	1280	Q(a-c)	1800	1786
RFC's	b-a	0.000	0.000	d-c	0.201	0.145
	b-c	0.000	0.000	d-a	0.006	0.000
	c-b	0.483	0.289	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.207	0.145
	c-a	0.054	0.074	a-c	0.022	0.017

	AM	(PM)
Worst RFC	**0.483**	**0.289**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

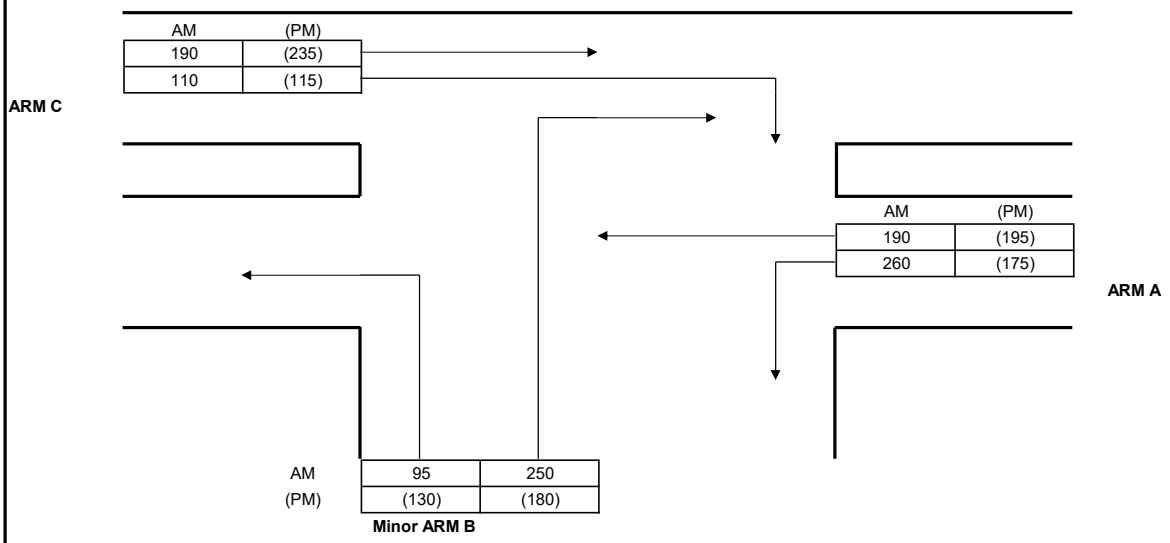
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road/ Mai Po Lung Road			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		190	235
	q(c-b)		110	115
	q(a-b)		260	175
	q(a-c)		190	195
	q(b-a)		250	180
	q(b-c)		95	130
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	418	416
	Q(b-c)	1	646	654
	Q(c-b)	1	565	586
	Q(b-ac)	1	463	491
RFC's	b-a		0.598	0.433
	b-c		0.147	0.199
	c-b		0.195	0.196
	b-ac		0.745	0.631
Worst RFC			**0.745**	**0.631**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

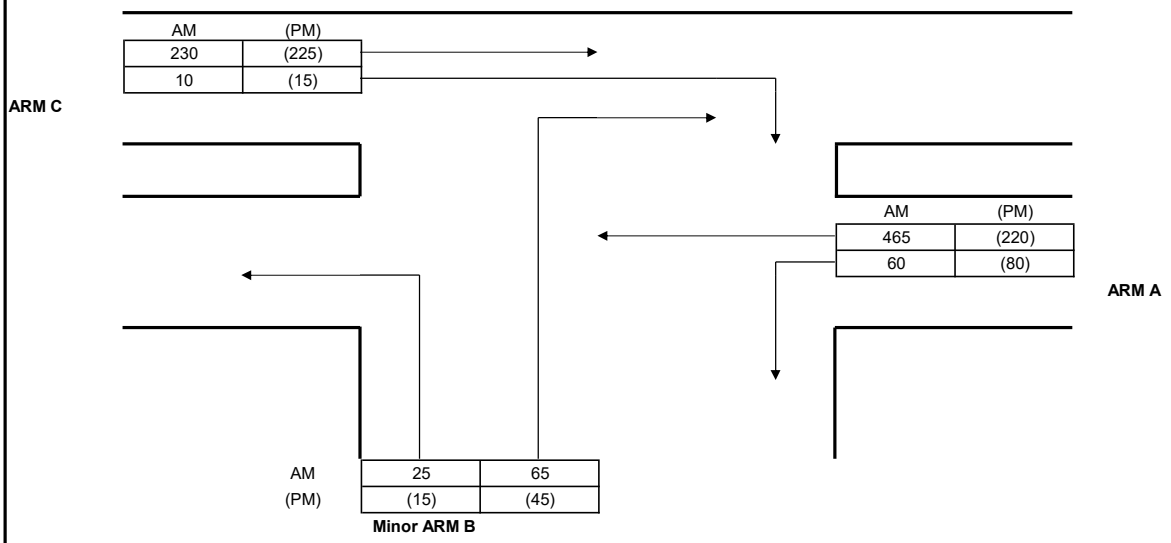
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		230	225
	q(c-b)		10	15
	q(a-b)		60	80
	q(a-c)		465	220
	q(b-a)		65	45
	q(b-c)		25	15
	f		0.28	0.25
		Factor		
CAPACITIES	Q(b-a)	1	392	444
	Q(b-c)	1	555	610
	Q(c-b)	1	594	651
	Q(b-ac)	1	427	476
RFC's	b-a		0.166	0.101
	b-c		0.045	0.025
	c-b		0.017	0.023
	b-ac		0.211	0.126
Worst RFC			**0.211**	**0.126**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

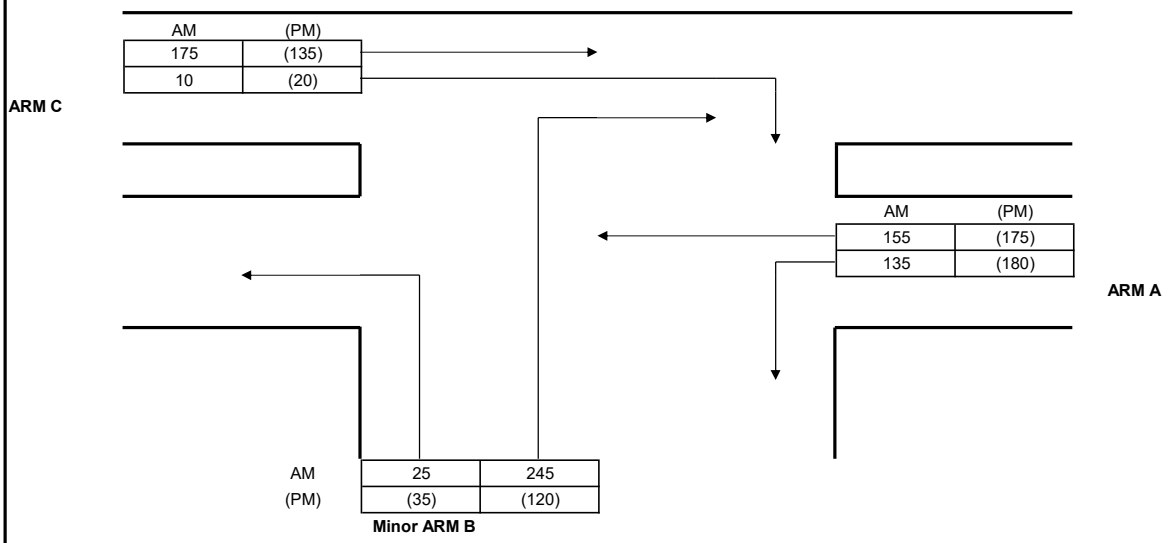
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		175	135
	q(c-b)		10	20
	q(a-b)		135	180
	q(a-c)		155	175
	q(b-a)		245	120
	q(b-c)		25	35
	f		0.09	0.23
		Factor		
CAPACITIES	Q(b-a)	1	471	465
	Q(b-c)	1	653	643
	Q(c-b)	1	574	558
	Q(b-ac)	1	483	496
RFC's	b-a		0.520	0.258
	b-c		0.038	0.054
	c-b		0.017	0.036
	b-ac		0.559	0.313
Worst RFC			**0.559**	**0.313**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

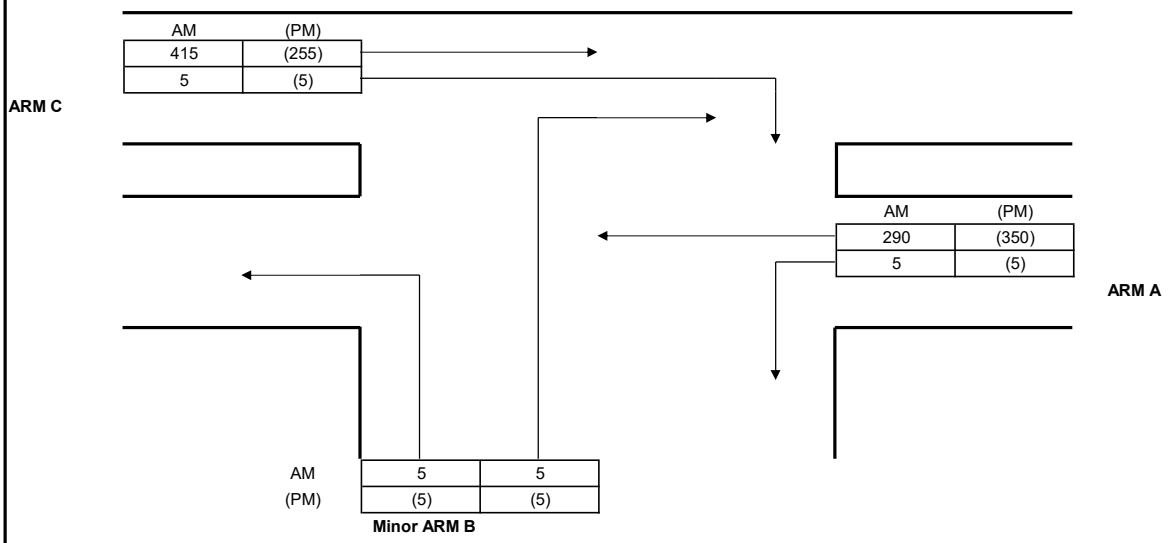
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		415	255
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	386	395
	Q(b-c)	1	584	570
	Q(c-b)	1	619	603
	Q(b-ac)	1	465	467
RFC's	b-a		0.013	0.013
	b-c		0.009	0.009
	c-b		0.008	0.008
	b-ac		0.022	0.021
Worst RFC			**0.022**	**0.021**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

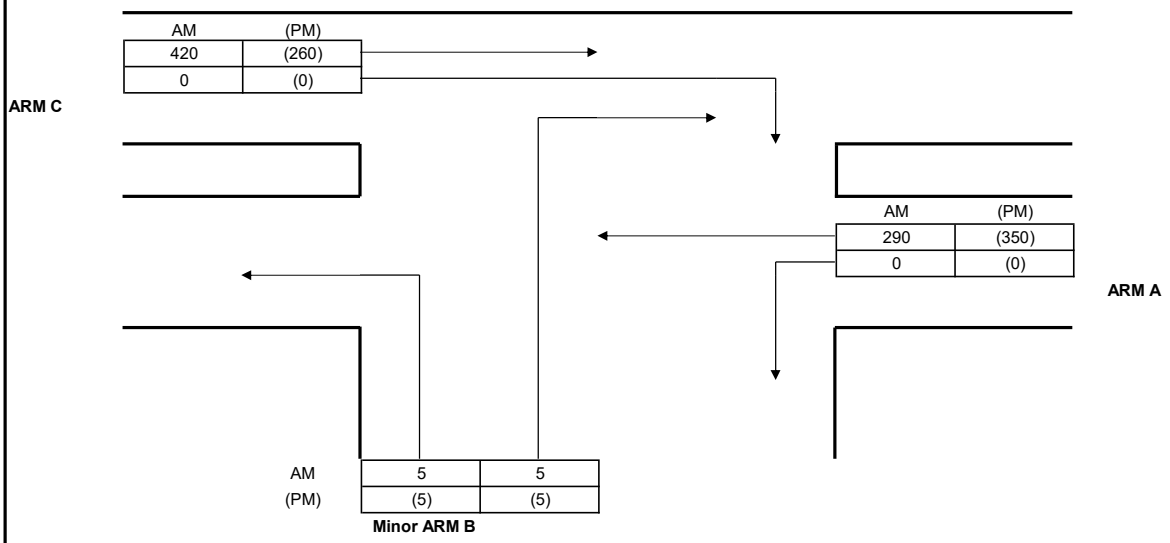
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		420	260
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	330	338
	Q(b-c)	1	501	488
	Q(c-b)	1	389	379
	Q(b-ac)	1	398	400
RFC's	b-a		0.015	0.015
	b-c		0.010	0.010
	c-b		0.000	0.000
	b-ac		0.025	0.025
Worst RFC			**0.025**	**0.025**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

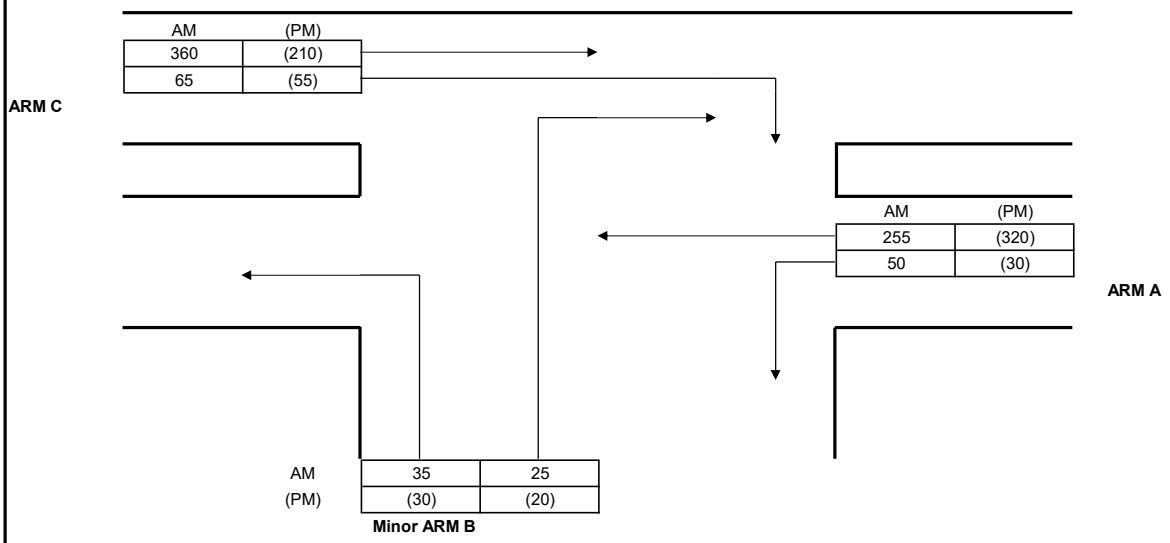
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	210
	q(c-b)		65	55
	q(a-b)		50	30
	q(a-c)		255	320
	q(b-a)		25	20
	q(b-c)		35	30
	f		0.58	0.60
		Factor		
CAPACITIES	Q(b-a)	1	398	410
	Q(b-c)	1	618	604
	Q(c-b)	1	610	599
	Q(b-ac)	1	502	508
RFC's	b-a		0.063	0.049
	b-c		0.057	0.050
	c-b		0.107	0.092
	b-ac		0.120	0.098
Worst RFC			**0.120**	**0.098**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

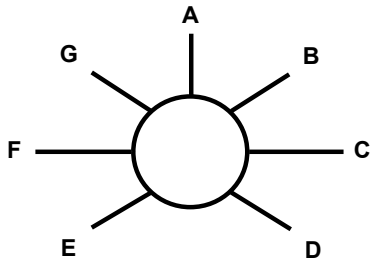
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	5	235	40	155	430	15	1395	940	600
B	15	25	55	5	115	250	5	1915	470	420
C	145	55	10	100	215	20	120	1765	665	620
D	35	10	40	55	160	195	10	1990	505	440
E	60	80	155	60	5	45	5	1685	410	810
F	255	145	15	140	100	30	120	980	805	1115
G	30	100	110	40	60	145	15	1495	500	290

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	50	20	140	35	140	240	20	1220	645	940
B	15	25	45	15	125	105	15	1475	345	390
C	175	45	20	100	265	5	100	1300	710	520
D	25	25	40	55	110	170	10	1600	435	410
E	50	35	140	40	10	35	5	1265	315	770
F	590	170	25	115	105	20	200	910	1225	670
G	35	70	110	50	15	95	10	1775	385	360

CALCULATIONS

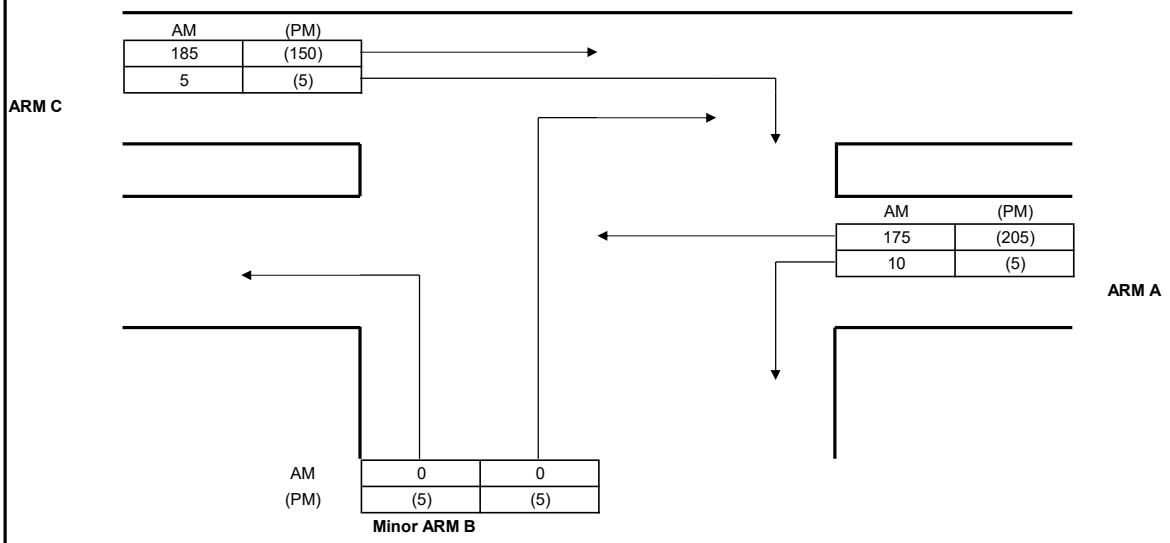
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1904	2006	0.49	0.32
B	0.98	7.92	3640.95	2400	1.00	0.54	1337	1571	0.35	0.22
C	1.01	6.82	3640.95	2065	1.00	0.50	1197	1429	0.56	0.50
D	1.02	7.87	3640.95	2385	1.00	0.54	1332	1546	0.38	0.28
E	0.98	7.19	3640.95	2180	1.00	0.51	1294	1505	0.32	0.21
F	0.98	8.13	3640.95	2464	1.00	0.55	1875	1913	0.43	0.64
G	1.00	5.91	3640.95	1790	1.00	0.46	1110	981	0.45	0.39
								Crtical Arm:	**C**	**F**
								RFC:	**0.56**	**0.64**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		185	150
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		175	205
	q(b-a)		0	5
	q(b-c)		0	5
	f		0.00	0.50
		Factor		
CAPACITIES	Q(b-a)	1	502	500
	Q(b-c)	1	689	681
	Q(c-b)	1	687	681
	Q(b-ac)	1	502	577
RFC's	b-a		0.000	0.010
	b-c		0.000	0.007
	c-b		0.007	0.007
	b-ac		0.000	0.017
Worst RFC			**0.007**	**0.017**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

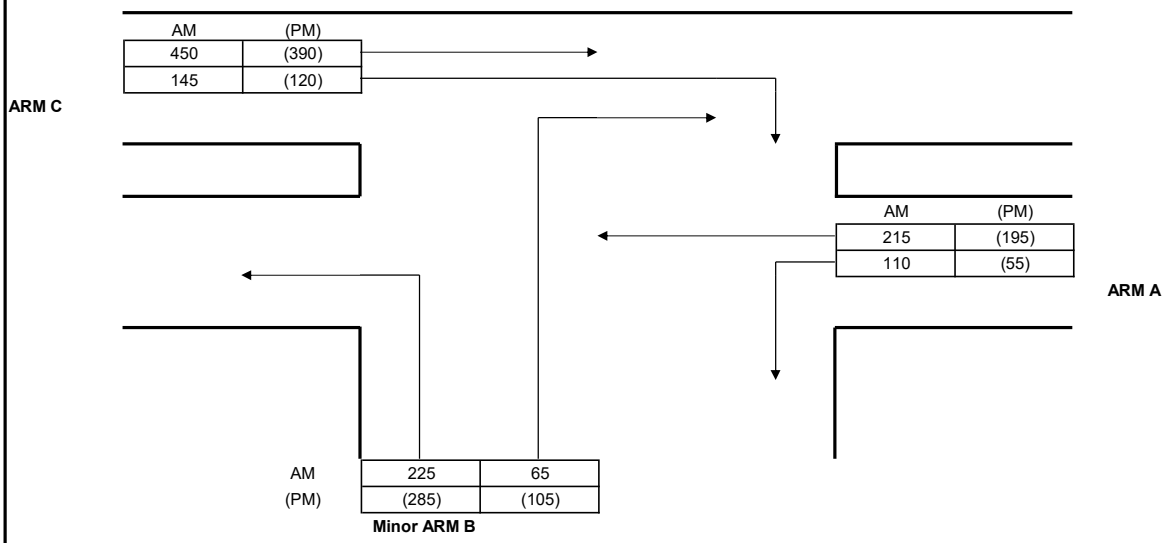
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		450	390
	q(c-b)		145	120
	q(a-b)		110	55
	q(a-c)		215	195
	q(b-a)		65	105
	q(b-c)		225	285
	f		0.78	0.73
		Factor		
CAPACITIES	Q(b-a)	1	371	397
	Q(b-c)	1	622	632
	Q(c-b)	1	589	607
	Q(b-ac)	1	540	545
RFC's	b-a		0.175	0.264
	b-c		0.362	0.451
	c-b		0.246	0.198
	b-ac		0.537	0.716
Worst RFC			**0.537**	**0.716**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LTY	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

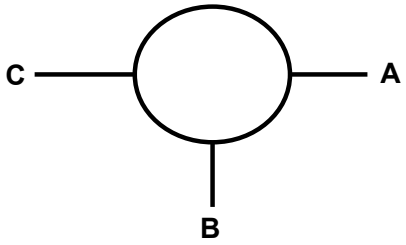
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	San Tin Interchange (K)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	495	525	785	255	1805
B	455	0	0	1415	455
C	480	120	135	950	735

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	425	460	600	310	1485
B	610	0	0	1185	610
C	400	150	160	1035	710

CALCULATIONS

							Q_E		RFC	
ARM	K	X_2	M	F	t_D	f_c	AM	PM	AM	PM
A	0.98	12.91	73.70	3912	1.01	0.76	3650	3609	0.49	0.41
B	0.98	11.38	73.70	3448	1.01	0.69	2423	2579	0.19	0.24
C	1.04	11.35	73.70	3438	1.01	0.69	2891	2830	0.25	0.25

Crtical Arm:	**A**	**A**
RFC:	**0.49**	**0.41**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	LTY	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Reference Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

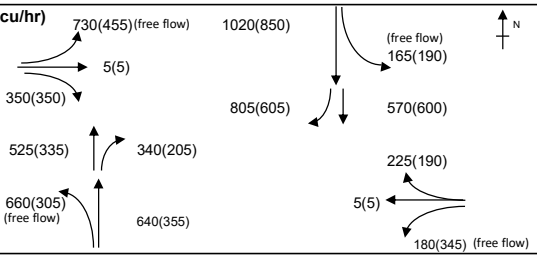
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		97%	97%	1775	1775	174	0.098		174	0.098	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	181	0.098		181	0.098	
San Tin highway		B	1	3.900		10				1865	1865	117	0.063		99	0.053	
Slip Road (WB)		B	1	3.900		12.5		96%	95%	1800	1800	113	0.063	0.063	96	0.053	0.053
Shek Wu Wai		C	2,3	3.500						1965	1965	466	0.237		405	0.206	
Road (SB)		C	2,3	3.500		15		78%	53%	1955	2000	463	0.237		412	0.206	
		C	2,3	3.500		12.5				1880	1880	446	0.237	0.237	388	0.206	0.206
Shek Wu Wai		D	4	3.500						1965	1965	288	0.147		179	0.091	
Road (NB)		D	4	3.500		15		22%	17%	2060	2070	302	0.147	0.147	189	0.091	
		D	4	3.500		12.5				1880	1880	275	0.146		172	0.091	0.091
Shek Wu Wai		E	3	3.500						2105	2105	348	0.165		290	0.138	
Road (SB)		E	3	3.500						2105	2105	347	0.165		290	0.138	
		E	3	3.500						1965	1965	325	0.165		270	0.137	
Shek Wu Wai		F	4	3.500						1965	1965	204	0.104		113	0.058	
Road (NB)		F	4	3.500						2105	2105	218	0.104		121	0.057	
		F	4	3.500						2105	2105	218	0.104		121	0.057	

Notes:

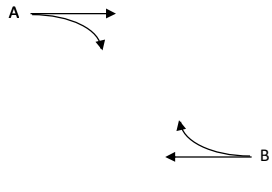
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	A,E,D	B,C,D
y	0.404	0.447	y	0.327	0.351
L (sec)	16	16	L (sec)	14	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.760	0.740
R.C. (%)	83%	66%	R.C. (%)	132%	111%

Stage / Phase Diagrams

1.



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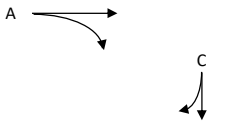

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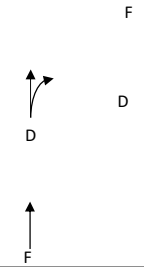


5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: MAY, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

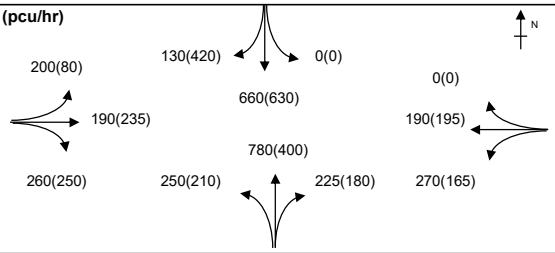
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	200	0.109		80	0.044	
		A	1	4.000	17.5	20		0% / 18%	0% / 7%	2125	2145	233	0.110	0.110	252	0.117	0.117
		A	1	4.000		17.5				1985	1985	217	0.109		233	0.117	
Road D2 NB		B	2	3.200	15					1760	1760	250	0.142		179	0.102	
		B	2	3.200	17.5			0%	15%	2075	2050	344	0.166		209	0.102	
		B	2	3.200						2075	2075	344	0.166		212	0.102	0.102
		B	2	3.200		12.5		71%	95%	1910	1865	317	0.166	0.166	190	0.102	
Road L11 WB		C	3	3.300	12.5					1735	1735	139	0.080		107	0.062	
		C	3	3.300	15			85%	47%	1920	1990	154	0.080	0.080	124	0.062	0.062
		C	3	3.300		20		0%	0%	2085	2085	167	0.080		129	0.062	
Road D3 SB		D	4	4.000	12.5			0%	0%	2015	2015	255	0.127	0.127	304	0.151	
		D	4	4.000						2155	2155	272	0.126		326	0.151	
		D	4	4.000		20		49%	100%	2080	2005	263	0.126		420	0.209	0.209

Notes:

Flow: (pcu/hr)



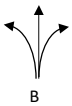
Group		A,B,C,D	Group		A,B,C,D
y		0.482	y		0.491
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		47%	R.C. (%)		45%

Stage / Phase Diagrams

1.



2.



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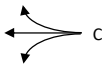


4.



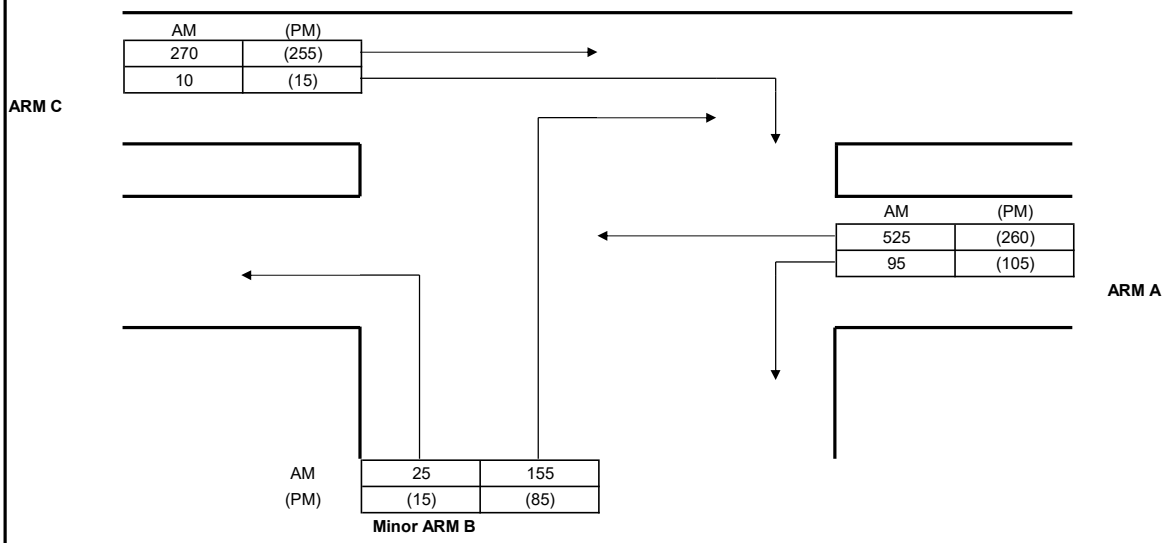
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: MAY, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		270	255
	q(c-b)		10	15
	q(a-b)		95	105
	q(a-c)		525	260
	q(b-a)		155	85
	q(b-c)		25	15
	f		0.14	0.15
		Factor		
CAPACITIES	Q(b-a)	1	370	428
	Q(b-c)	1	537	598
	Q(c-b)	1	570	635
	Q(b-ac)	1	387	447
RFC's	b-a		0.419	0.199
	b-c		0.047	0.025
	c-b		0.018	0.024
	b-ac		0.465	0.224
Worst RFC			**0.465**	**0.224**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

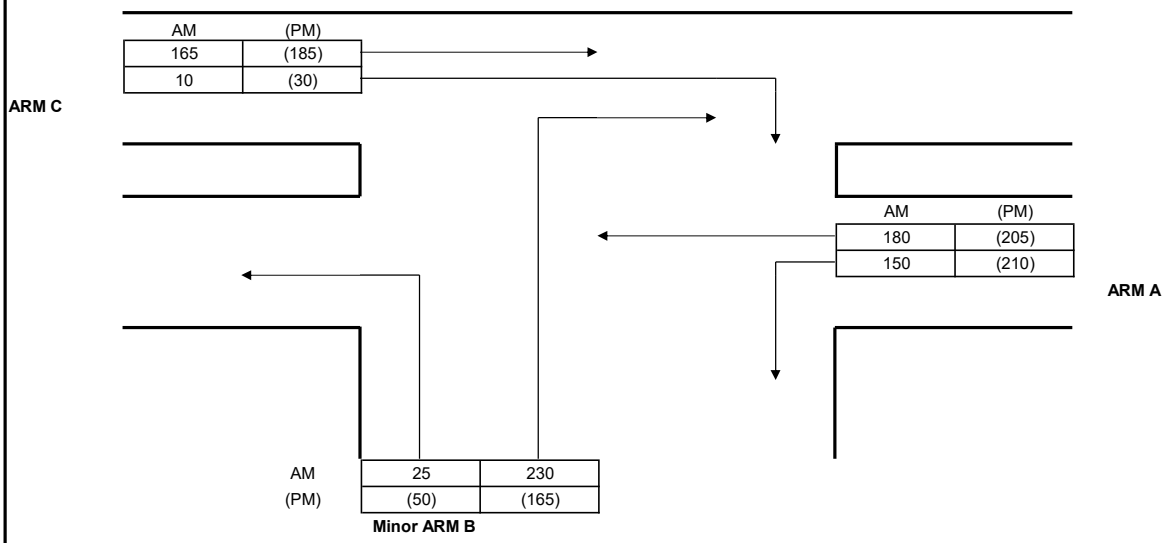
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		165	185
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		180	205
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	465	444
	Q(b-c)	1	644	632
	Q(c-b)	1	564	544
	Q(b-ac)	1	478	477
RFC's	b-a		0.495	0.372
	b-c		0.039	0.079
	c-b		0.018	0.055
	b-ac		0.533	0.451
Worst RFC			**0.533**	**0.451**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

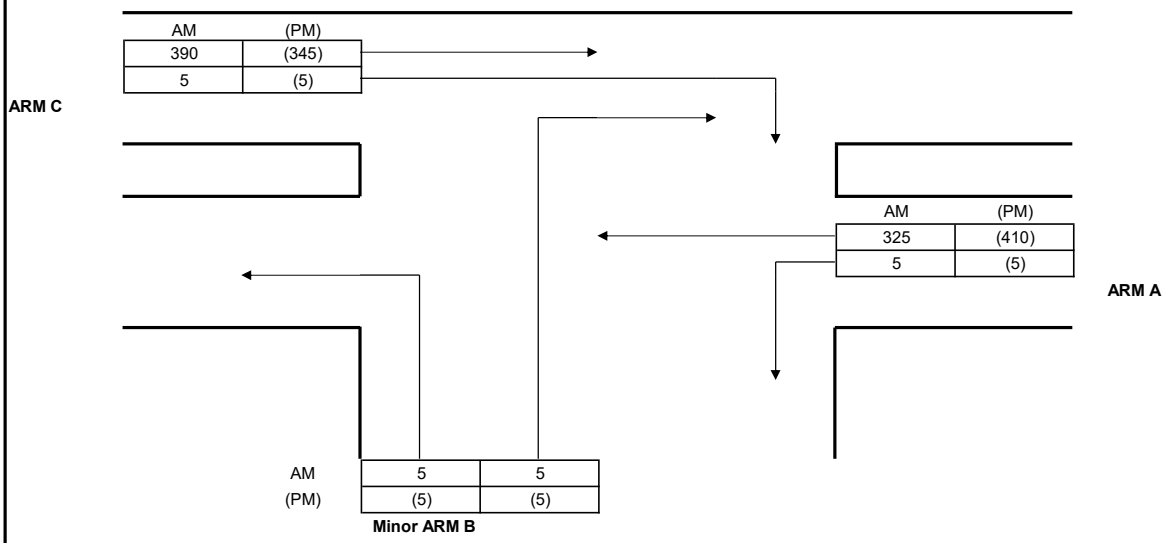
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		390	345
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		325	410
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	381	368
	Q(b-c)	1	576	555
	Q(c-b)	1	610	588
	Q(b-ac)	1	459	443
RFC's	b-a		0.013	0.014
	b-c		0.009	0.009
	c-b		0.008	0.009
	b-ac		0.022	0.023
Worst RFC			**0.022**	**0.023**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

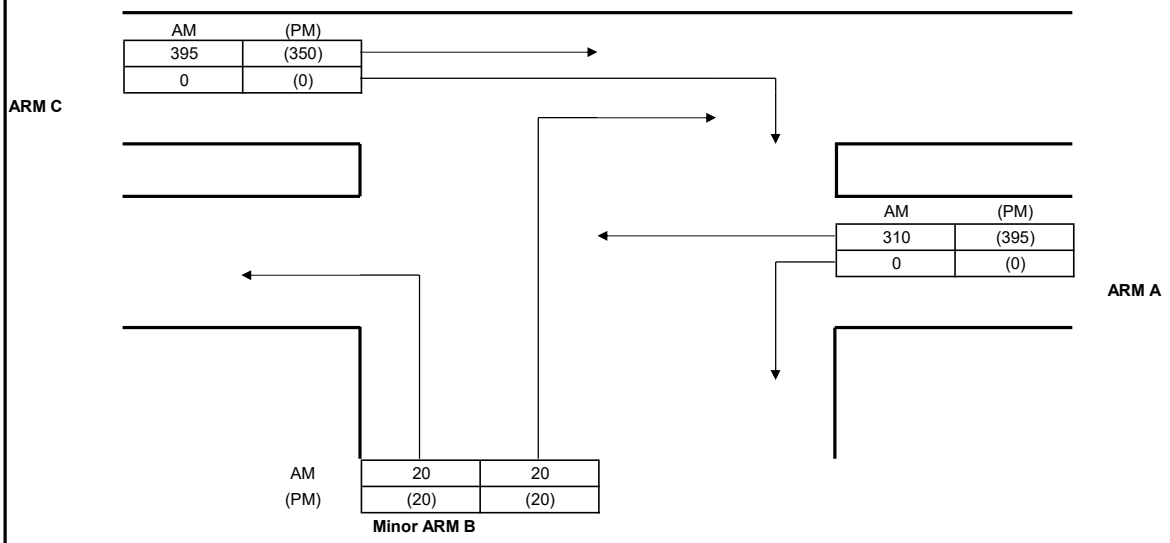
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		395	350
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		310	395
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	329	318
	Q(b-c)	1	497	479
	Q(c-b)	1	385	371
	Q(b-ac)	1	396	382
RFC's	b-a		0.061	0.063
	b-c		0.040	0.042
	c-b		0.000	0.000
	b-ac		0.101	0.105
Worst RFC			**0.101**	**0.105**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

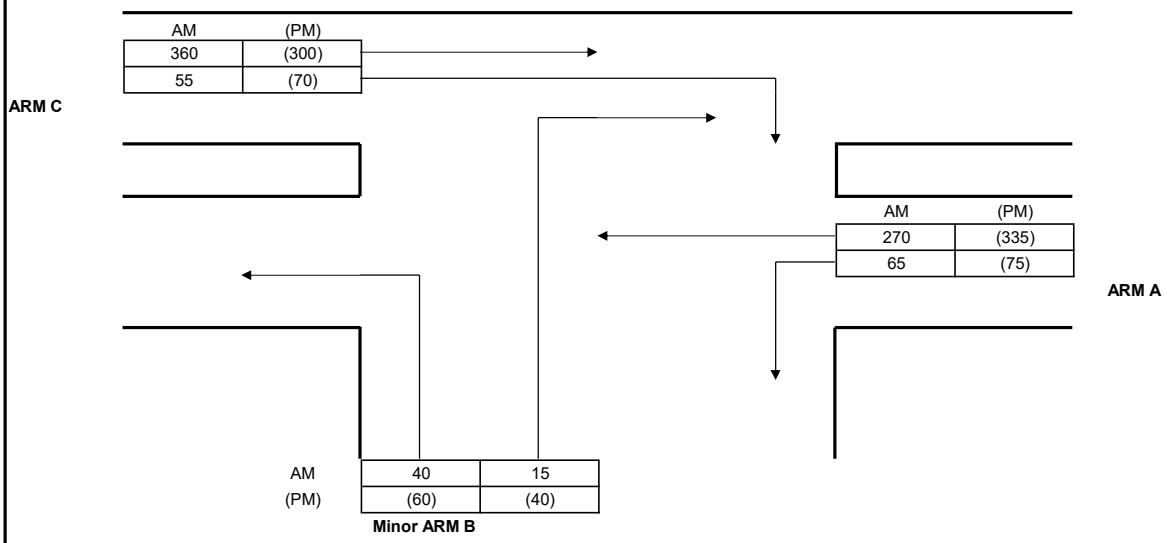
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	300
	q(c-b)		55	70
	q(a-b)		65	75
	q(a-c)		270	335
	q(b-a)		15	40
	q(b-c)		40	60
	f		0.73	0.60
		Factor		
CAPACITIES	Q(b-a)	1	397	384
	Q(b-c)	1	613	595
	Q(c-b)	1	603	584
	Q(b-ac)	1	534	488
RFC's	b-a		0.038	0.104
	b-c		0.065	0.101
	c-b		0.091	0.120
	b-ac		0.103	0.205
Worst RFC			**0.103**	**0.205**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

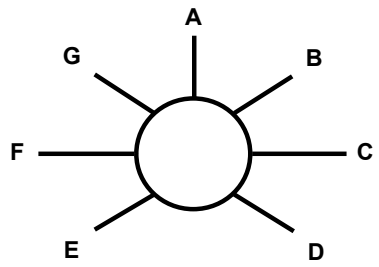
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	220	435	30	2560	980	640
B	10	10	100	10	230	120	30	3080	510	460
C	110	60	10	100	490	10	230	2365	1010	1225
D	60	20	50	10	250	250	90	2925	730	450
E	40	35	460	65	10	495	20	1875	1125	1780
F	300	165	10	145	570	10	365	1360	1565	1640
G	110	150	370	80	10	320	0	2160	1040	765

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	190	50	200	300	30	2155	790	970
B	10	10	70	10	160	70	30	2515	360	430
C	160	100	20	80	430	20	210	2035	1020	840
D	50	20	60	20	200	140	70	2625	560	430
E	85	30	280	70	10	270	20	1575	765	1610
F	580	170	10	150	600	20	295	1305	1825	1035
G	75	90	210	50	10	215	10	2465	660	665

CALCULATIONS

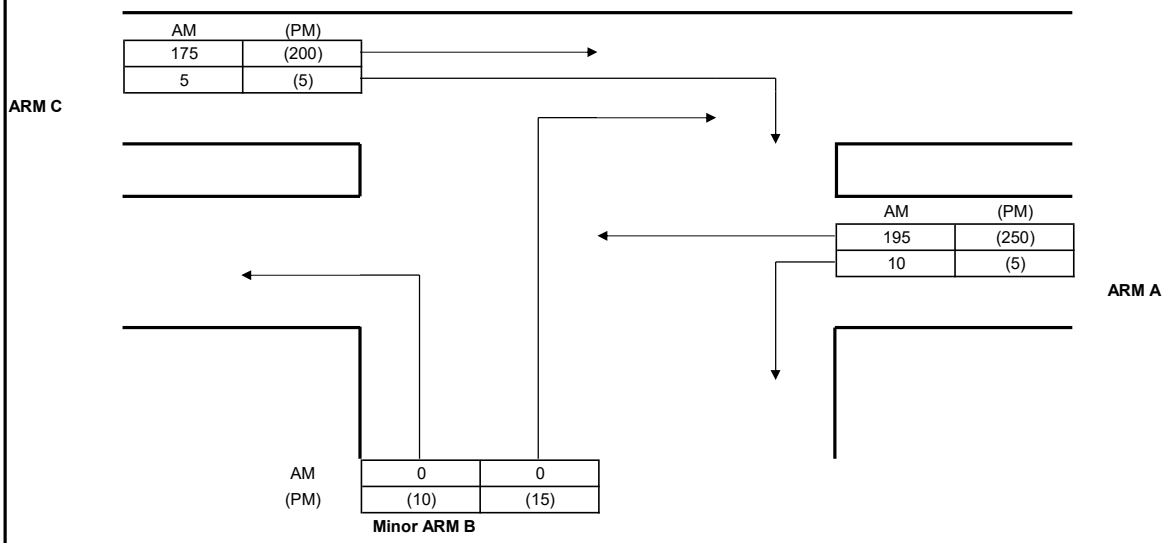
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1223	1460	0.80	0.54
B	0.98	7.92	3640.95	2400	1.00	0.54	715	1017	0.71	0.35
C	1.01	6.82	3640.95	2065	1.00	0.50	897	1062	1.13	0.96
D	1.02	7.87	3640.95	2385	1.00	0.54	818	983	0.89	0.57
E	0.98	7.19	3640.95	2180	1.00	0.51	1198	1349	0.94	0.57
F	0.98	8.13	3640.95	2464	1.00	0.55	1671	1700	0.94	1.07
G	1.00	5.91	3640.95	1790	1.00	0.46	804	663	1.29	0.99
								Crtical Arm:	**G**	**F**
								RFC:	**1.29**	**1.07**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		175	200
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		195	250
	q(b-a)		0	15
	q(b-c)		0	10
	f		0.00	0.40
		Factor		
CAPACITIES	Q(b-a)	1	499	482
	Q(b-c)	1	683	670
	Q(c-b)	1	682	669
	Q(b-ac)	1	499	543
RFC's	b-a		0.000	0.031
	b-c		0.000	0.015
	c-b		0.007	0.007
	b-ac		0.000	0.046
Worst RFC			**0.007**	**0.046**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

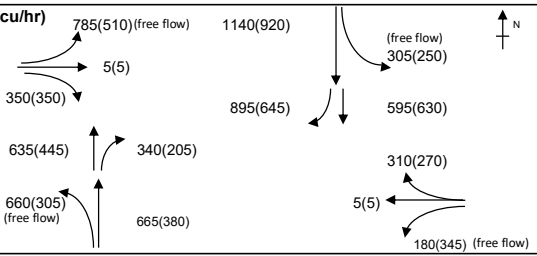
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway	→	A	1,2	3.650		12.5		97%	97%	1775	1775	174	0.098		174	0.098	
Slip Road (EB)	↓	A	1,2	3.650		10				1845	1845	181	0.098		181	0.098	
San Tin highway	↑	B	1	3.900		10				1865	1865	160	0.086		140	0.075	
Slip Road (WB)	←	B	1	3.900		12.5		97%	96%	1795	1795	155	0.086	0.086	135	0.075	0.075
Shek Wu Wai	↓	C	2,3	3.500						1965	1965	506	0.258	0.258	429	0.218	
Road (SB)	↓	C	2,3	3.500		15		82%	54%	1945	1995	500	0.257		436	0.219	0.219
	↓	C	2,3	3.500		12.5				1880	1880	484	0.257		410	0.218	
Shek Wu Wai	↑	D	4	3.500						1965	1965	323	0.164		215	0.109	0.109
Road (NB)	↑	D	4	3.500		15		9%	0%	2085	2105	343	0.165	0.165	230	0.109	
	↑	D	4	3.500		12.5				1880	1880	309	0.164		205	0.109	
Shek Wu Wai	↓	E	3	3.500						2105	2105	389	0.185		314	0.149	
Road (SB)	↓	E	3	3.500						2105	2105	388	0.184		313	0.149	
	↓	E	3	3.500						1965	1965	363	0.185		293	0.149	
Shek Wu Wai	↑	F	4	3.500						1965	1965	212	0.108		121	0.062	
Road (NB)	↑	F	4	3.500						2105	2105	226	0.107		129	0.061	
	↑	F	4	3.500						2105	2105	227	0.108		130	0.062	

Notes:

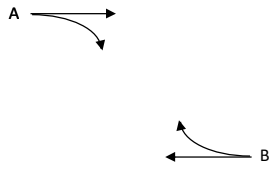
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.452	0.508	y	0.356	0.403
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	64%	46%	R.C. (%)	108%	84%

Stage / Phase Diagrams

1.



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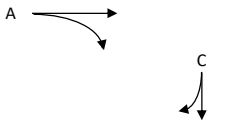
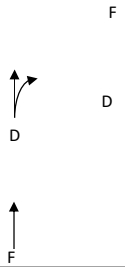


3.



4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: MAY, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

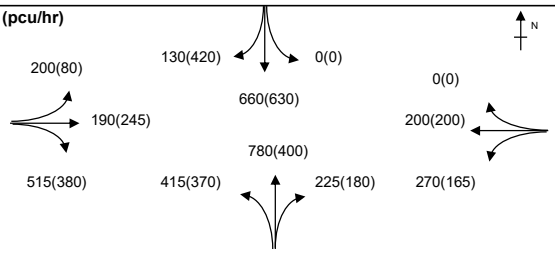
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	200	0.109		80	0.044	
		A	1	4.000	17.5	20		0% / 47%	0% / 24%	2080	2115	361	0.174	0.174	323	0.153	0.153
		A	1	4.000		17.5				1985	1985	344	0.173		302	0.152	
Road D2 NB		B	2	3.200	15					1760	1760	321	0.182	0.182	217	0.123	
		B	2	3.200	17.5			25%	63%	2030	1970	370	0.182		243	0.123	
		B	2	3.200						2075	2075	378	0.182		256	0.123	0.123
		B	2	3.200		12.5		64%	77%	1925	1900	351	0.182		234	0.123	
Road L11 WB		C	3	3.300	12.5					1735	1735	142	0.082		109	0.063	
		C	3	3.300	15			81%	45%	1930	1995	158	0.082	0.082	125	0.063	
		C	3	3.300		20		0%	0%	2085	2085	170	0.082		131	0.063	0.063
Road D3 SB		D	4	4.000	12.5			0%	0%	2015	2015	255	0.127	0.127	304	0.151	
		D	4	4.000						2155	2155	272	0.126		326	0.151	
		D	4	4.000		20		49%	100%	2080	2005	263	0.126		420	0.209	0.209

Notes:

Flow: (pcu/hr)



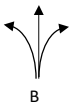
Group		A,B,C,D	Group		A,B,C,D
y		0.564	y		0.548
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		26%	R.C. (%)		30%

Stage / Phase Diagrams

1.



2.



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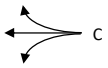


4.



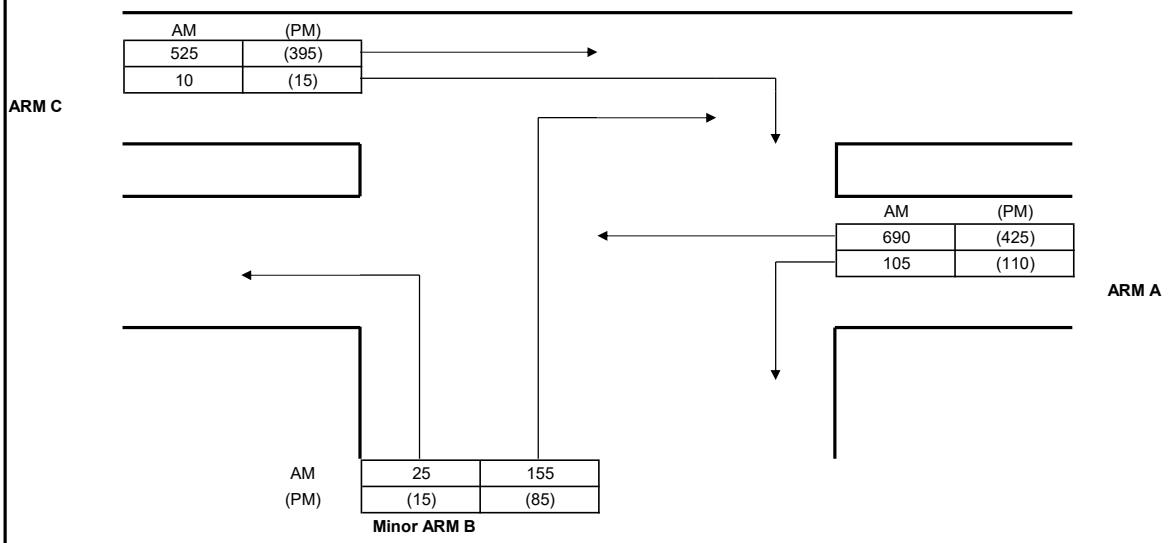
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: MAY, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		525	395
	q(c-b)		10	15
	q(a-b)		105	110
	q(a-c)		690	425
	q(b-a)		155	85
	q(b-c)		25	15
	f		0.14	0.15
		Factor		
CAPACITIES	Q(b-a)	1	297	372
	Q(b-c)	1	498	559
	Q(c-b)	1	526	592
	Q(b-ac)	1	315	392
RFC's	b-a		0.522	0.228
	b-c		0.050	0.027
	c-b		0.019	0.025
	b-ac		0.571	0.255
Worst RFC			**0.571**	**0.255**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

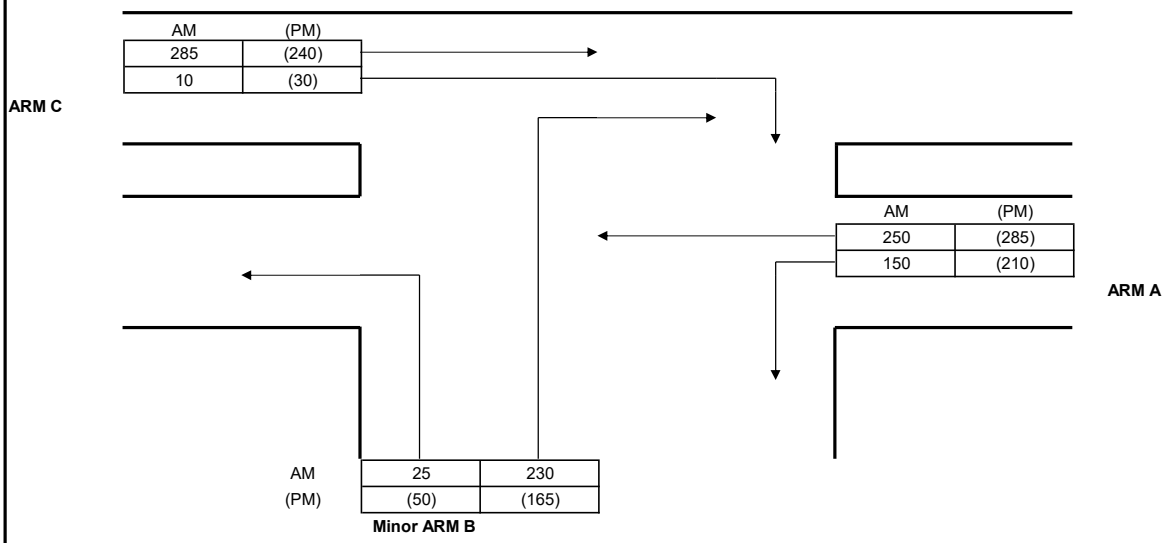
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		285	240
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		250	285
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	430	416
	Q(b-c)	1	626	611
	Q(c-b)	1	548	525
	Q(b-ac)	1	444	449
RFC's	b-a		0.535	0.397
	b-c		0.040	0.082
	c-b		0.018	0.057
	b-ac		0.574	0.479
Worst RFC			**0.574**	**0.479**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

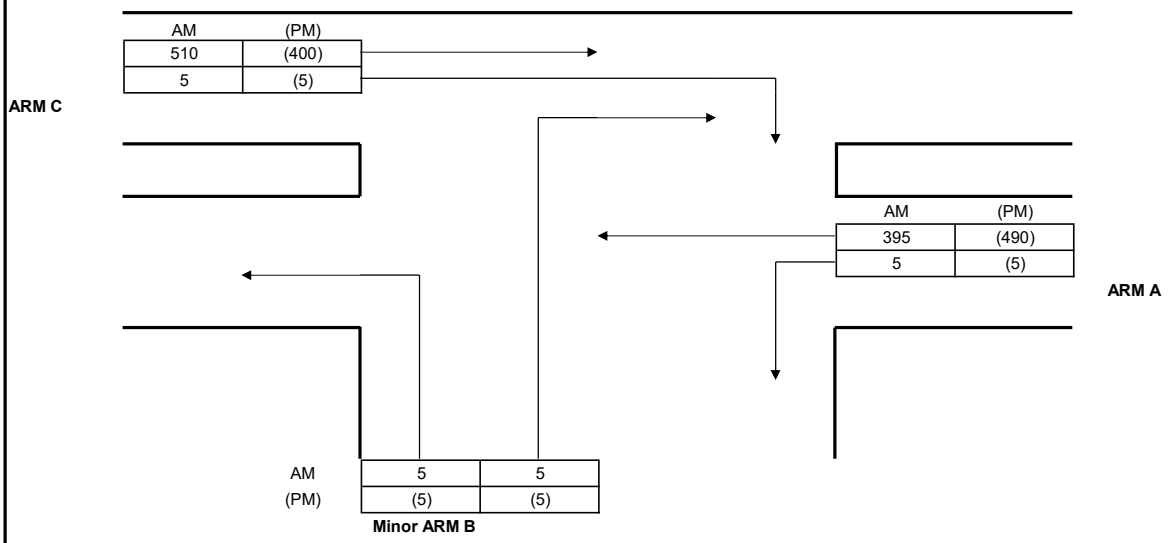
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		510	400
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		395	490
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	348	343
	Q(b-c)	1	559	536
	Q(c-b)	1	592	567
	Q(b-ac)	1	429	418
RFC's	b-a		0.014	0.015
	b-c		0.009	0.009
	c-b		0.008	0.009
	b-ac		0.023	0.024
Worst RFC			**0.023**	**0.024**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

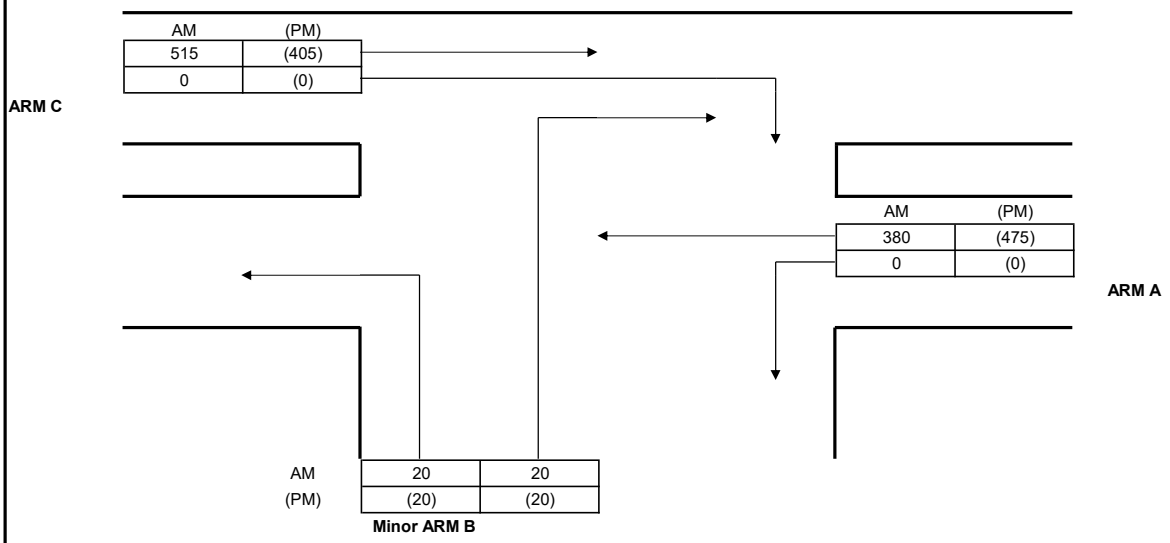
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		515	405
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		380	475
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	300	295
	Q(b-c)	1	482	462
	Q(c-b)	1	374	358
	Q(b-ac)	1	370	360
RFC's	b-a		0.067	0.068
	b-c		0.041	0.043
	c-b		0.000	0.000
	b-ac		0.108	0.111
Worst RFC			**0.108**	**0.111**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

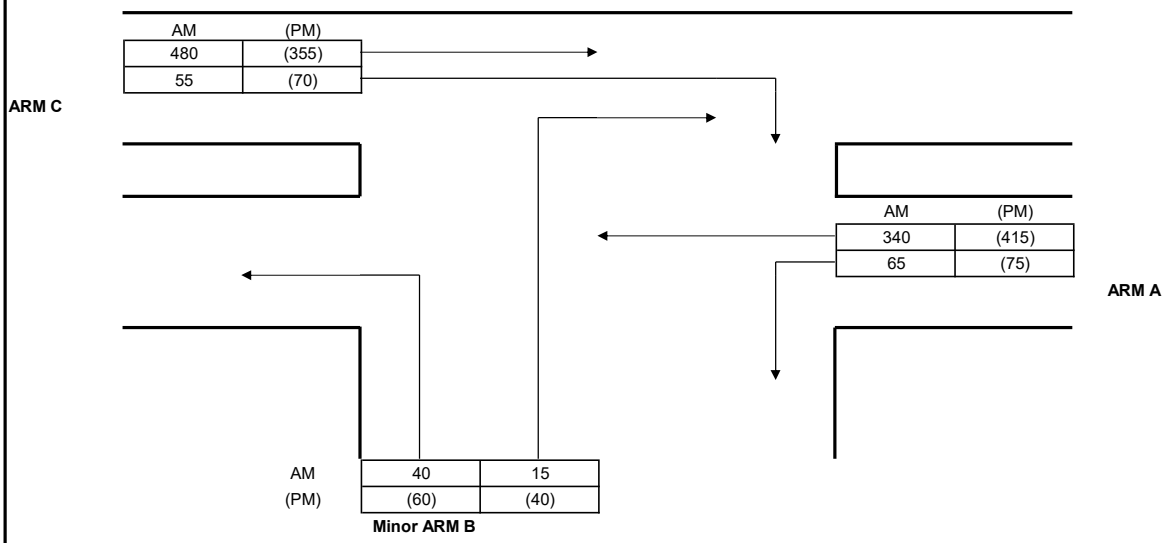
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		480	355
	q(c-b)		55	70
	q(a-b)		65	75
	q(a-c)		340	415
	q(b-a)		15	40
	q(b-c)		40	60
	f		0.73	0.60
		Factor		
CAPACITIES	Q(b-a)	1	362	357
	Q(b-c)	1	595	575
	Q(c-b)	1	585	563
	Q(b-ac)	1	506	462
RFC's	b-a		0.041	0.112
	b-c		0.067	0.104
	c-b		0.094	0.124
	b-ac		0.109	0.216
Worst RFC			**0.109**	**0.216**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

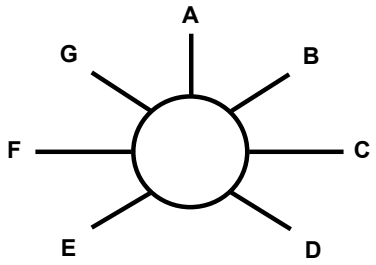
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	220	435	30	2630	980	640
B	10	10	100	10	230	240	30	3080	630	530
C	110	60	10	100	490	10	230	2485	1010	1225
D	60	20	50	10	260	250	90	3045	740	450
E	40	35	460	65	10	495	20	1995	1125	1790
F	300	235	10	145	570	10	365	1360	1635	1760
G	110	150	370	80	10	320	0	2230	1040	765

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	190	50	200	300	30	2235	790	970
B	10	10	70	10	160	125	30	2515	415	510
C	160	100	20	80	430	20	210	2090	1020	840
D	50	20	60	20	205	140	70	2680	565	430
E	85	30	280	70	10	270	20	1630	765	1615
F	580	240	10	150	600	20	295	1305	1895	1090
G	75	100	210	50	10	215	10	2535	670	665

CALCULATIONS

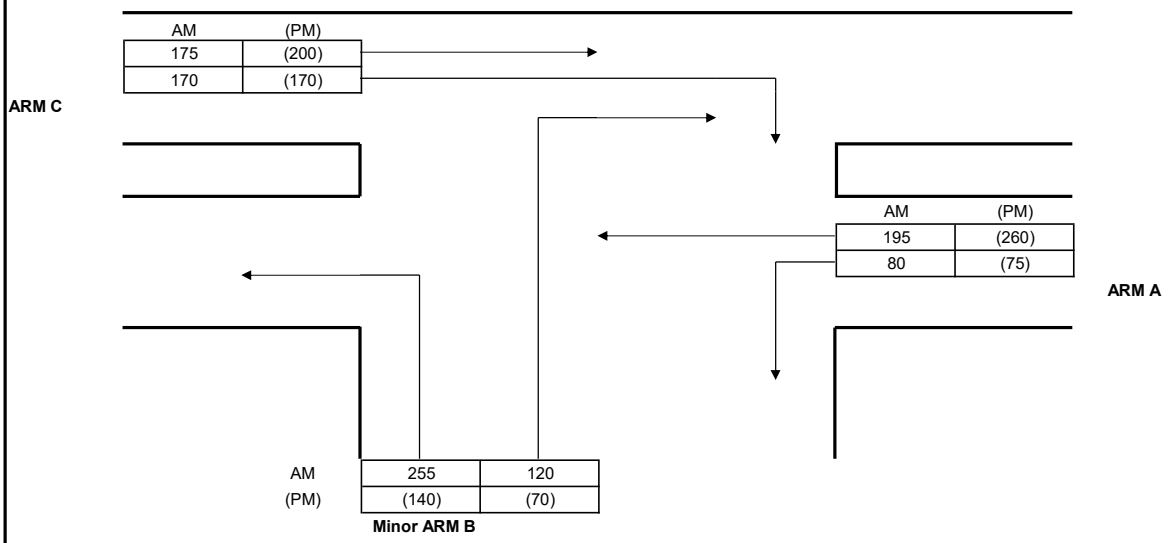
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1182	1413	0.83	0.56
B	0.98	7.92	3640.95	2400	1.00	0.54	715	1017	0.88	0.41
C	1.01	6.82	3640.95	2065	1.00	0.50	837	1034	1.21	0.99
D	1.02	7.87	3640.95	2385	1.00	0.54	752	952	0.98	0.59
E	0.98	7.19	3640.95	2180	1.00	0.51	1138	1322	0.99	0.58
F	0.98	8.13	3640.95	2464	1.00	0.55	1671	1700	0.98	1.11
G	1.00	5.91	3640.95	1790	1.00	0.46	772	631	1.35	1.06
								Crtical Arm:	**G**	**F**
								RFC:	**1.35**	**1.11**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		175	200
	q(c-b)		170	170
	q(a-b)		80	75
	q(a-c)		195	260
	q(b-a)		120	70
	q(b-c)		255	140
	f		0.68	0.67
		Factor		
CAPACITIES	Q(b-a)	1	436	418
	Q(b-c)	1	676	660
	Q(c-b)	1	664	649
	Q(b-ac)	1	575	554
RFC's	b-a		0.275	0.167
	b-c		0.377	0.212
	c-b		0.256	0.262
	b-ac		0.652	0.379
Worst RFC			**0.652**	**0.379**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

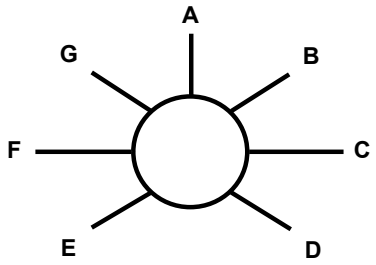
Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference Scenario (With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	12.00	18	45	140	30	0.42
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	11.00	30	25	140	40	0.27
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	220	435	30	2560	980	640
B	10	10	100	10	230	120	30	3080	510	460
C	110	60	10	0	490	10	230	2365	910	1225
D	60	20	50	10	250	250	90	2925	730	350
E	40	35	460	65	10	495	20	1875	1125	1780
F	300	165	10	145	570	10	0	1360	1200	1640
G	110	150	370	80	10	320	0	2160	1040	400

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	190	50	200	300	30	2155	790	970
B	10	10	70	10	160	70	30	2515	360	430
C	160	100	20	0	430	20	210	2035	940	840
D	50	20	60	20	200	140	70	2625	560	350
E	85	30	280	70	10	270	20	1575	765	1610
F	580	170	10	150	600	20	0	1305	1530	1035
G	75	90	210	50	10	215	10	2465	660	370

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.71	2980.96	2944	1.00	0.62	1351	1599	0.73	0.49
B	1.03	10.62	2980.96	3216	1.00	0.66	1236	1619	0.41	0.22
C	1.03	9.86	2980.96	2988	1.00	0.62	1552	1764	0.59	0.53
D	0.99	9.74	2980.96	2952	1.00	0.62	1132	1316	0.64	0.43
E	0.96	10.32	2980.96	3127	1.00	0.64	1839	2024	0.61	0.38
F	0.98	9.26	2980.96	2806	1.00	0.60	1942	1974	0.62	0.78
G	0.99	9.29	2980.96	2815	1.00	0.60	1507	1325	0.69	0.50
								Crtical Arm:	**A**	**F**
								RFC:	**0.73**	**0.78**
									AM	**PM**

- In accordance with TPDM V2.4

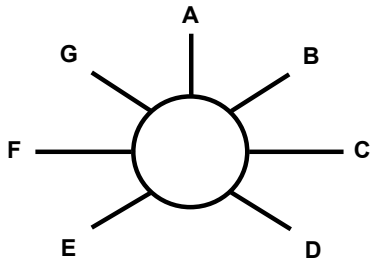
Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario
(With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM	PM	
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	12.00	18	45	140	30	0.42
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	11.00	30	25	140	40	0.27
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	220	435	30	2630	980	640
B	10	10	100	10	230	240	30	3080	630	530
C	110	60	10	0	490	10	230	2485	910	1225
D	60	20	50	10	260	250	90	3045	740	350
E	40	35	460	65	10	495	20	1995	1125	1790
F	300	235	10	145	570	10	0	1360	1270	1760
G	110	150	370	80	10	320	0	2230	1040	400

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	190	50	200	300	30	2235	790	970
B	10	10	70	10	160	125	30	2515	415	510
C	160	100	20	0	430	20	210	2090	940	840
D	50	20	60	20	205	140	70	2680	565	350
E	85	30	280	70	10	270	20	1630	765	1615
F	580	240	10	150	600	20	0	1305	1600	1090
G	75	100	210	50	10	215	10	2535	670	370

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.71	2980.96	2944	1.00	0.62	1308	1550	0.75	0.51
B	1.03	10.62	2980.96	3216	1.00	0.66	1236	1619	0.51	0.26
C	1.03	9.86	2980.96	2988	1.00	0.62	1476	1729	0.62	0.54
D	0.99	9.74	2980.96	2952	1.00	0.62	1058	1283	0.70	0.44
E	0.96	10.32	2980.96	3127	1.00	0.64	1765	1990	0.64	0.38
F	0.98	9.26	2980.96	2806	1.00	0.60	1942	1974	0.65	0.81
G	0.99	9.29	2980.96	2815	1.00	0.60	1465	1284	0.71	0.52
								Crtical Arm:	**A**	**F**
								RFC:	**0.75**	**0.81**
									AM	**PM**

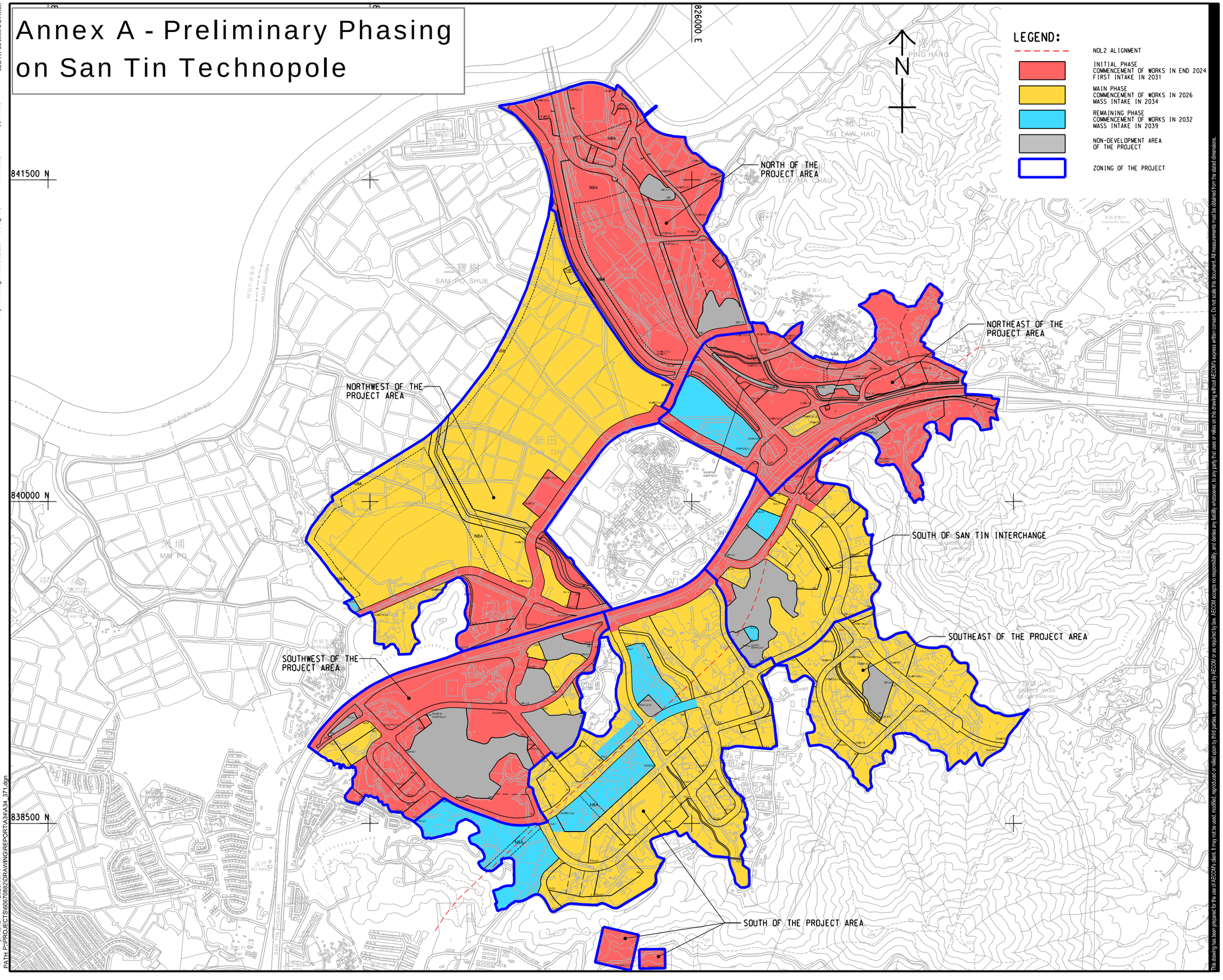
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

ANNEX B –

PRELIMINARY PHASING ON SAN TIN TECHNOPOLE

Annex A - Preliminary Phasing on San Tin Technopole



ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Plot File by: RenS
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_371.dgn
2023/11/14

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AECOM

PROJECT
項目

FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

規劃署
Planning Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
階段

SCALE 比例
A3 1 : 16000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60670882

AGREEMENT NO. 協議編號
CE 20/2021

SHEET TITLE
圖紙名稱

PRELIMINARY CONSTRUCTION AND POPULATION INTAKE SCHEDULE

SHEET NUMBER
圖紙編號

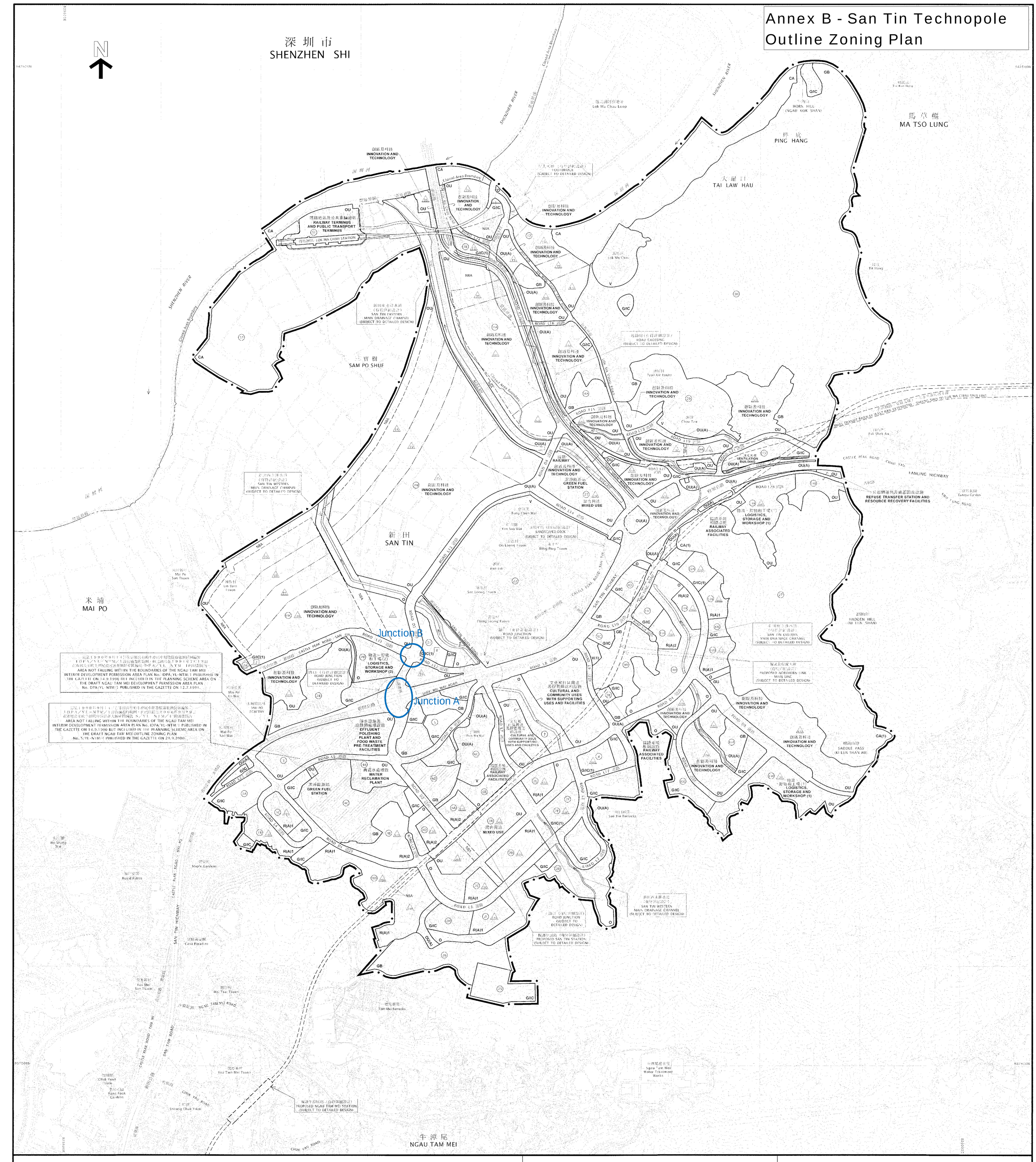
60670882/A34/APPENDIX 2.1

ANNEX C –

SAN TIN TECHNOPOLE –

OUTLINE ZONING PLAN

Annex B - San Tin Technopole Outline Zoning Plan



圖例 NOTATION

ZONES 地帶

RESIDENTIAL (GROUP A)	R(A)	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	V	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	G/IC	政府、機構或社區
OPEN SPACE	O	休憩用地
OTHER SPECIFIED USES	OU	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	OU(A)	其他指定用途（美化市容地帶）
GREEN BELT	GB	綠化地帶
CONSERVATION AREA	CA	自然保育區

COMMUNICATIONS 交通

RAILWAY AND STATION	鐵路及車站
RAILWAY AND STATION (UNDERGROUND)	鐵路及車站（地下）
RAILWAY AND STATION (ELEVATED)	鐵路及車站（高架）
MAJOR ROAD AND JUNCTION	主要道路及路口
ELEVATED ROAD	高架道路

MISCELLANEOUS 其他

BOUNDARY OF PLANNING SCHEME	規劃範圍界線
PLANNING AREA NUMBER	規劃區編號
BUILDING HEIGHT CONTROL ZONE BOUNDARY	建築物高度管制區界線
MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM)	最高建築物高度（在主水平基準上若干米）
MAXIMUM BUILDING HEIGHT (IN NUMBER OF STOREYS)	最高建築物高度（樓層數目）
NON-BUILDING AREA	非建築用地

土地用途及面積一覽表 SCHEDULE OF USES AND AREAS

USES	大約面積及百分率 APPROXIMATE AREA & % 公頃 HECTARES	% 百分率	用途
RESIDENTIAL (GROUP A)	44.78	4.46	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	78.46	7.82	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	56.52	5.63	政府、機構或社區
OPEN SPACE	55.88	5.57	休憩用地
OTHER SPECIFIED USES	284.63	28.35	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	28.61	2.85	其他指定用途（美化市容地帶）
GREEN BELT	207.29	20.65	綠化地帶
CONSERVATION AREA	139.36	13.88	自然保育區
MAJOR ROAD ETC.	108.45	10.79	主要道路等
TOTAL PLANNING SCHEME AREA	1004.00	100.00	規劃範圍總面積

夾附的《註釋》屬這份圖則的一部分，
THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2024年3月8日 按照城市規劃條例第5條展示的草圖
DRAFT PLAN EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 8 MARCH 2024

C K YIP 葉子季
SECRETARY 城市規劃委員會秘書
TOWN PLANNING BOARD

香港城市規劃委員會依據城市規劃條例擬備的新田科技城分區計劃大綱圖
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD
SAN TIN TECHNOPOLE - OUTLINE ZONING PLAN

SCALE 1:7500 比例尺

0 METRES 200 米 400 600 800 1,000 METRES

規劃署遵照城市規劃委員會指示擬備
PREPARED BY THE PLANNING DEPARTMENT UNDER THE DIRECTION OF THE TOWN PLANNING BOARD

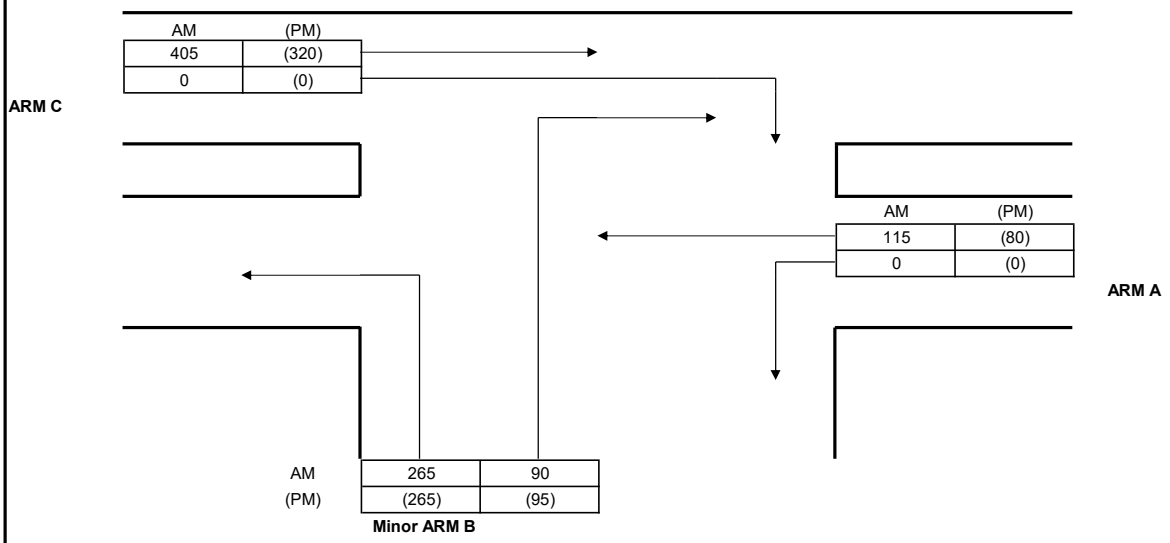
圖則編號 PLAN No. S/STT/1

ANNEX D –
DETAIL OF JUNCTION CALCULATION SHEETS (SENSITIVITY TEST)

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		405	320
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		115	80
	q(b-a)		90	95
	q(b-c)		265	265
	f		0.75	0.74
		Factor		
CAPACITIES	Q(b-a)	1	634	663
	Q(b-c)	1	933	946
	Q(c-b)	1	418	424
	Q(b-ac)	1	833	850
RFC's	b-a		0.142	0.143
	b-c		0.284	0.280
	c-b		0.000	0.000
	b-ac		0.426	0.424
Worst RFC			**0.426**	**0.424**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

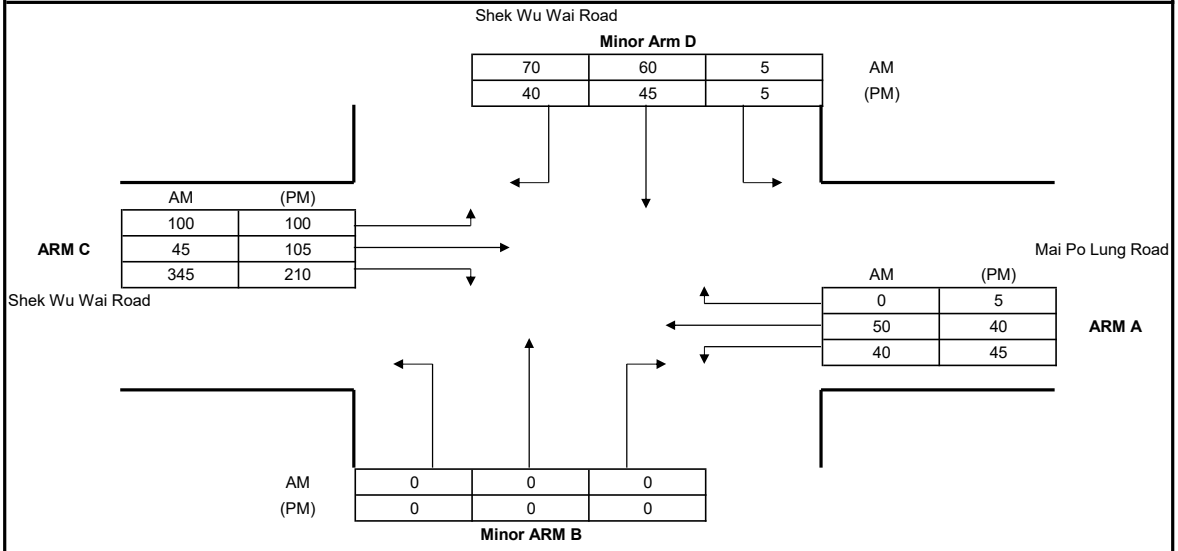
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	110	q(a-c)	50	40
	q(c-b)	345	210	q(a-d)	0	5
	q(a-b)	40	45	q(c-d)	100	100
	q(a-c)	120	80	q(c-a)	45	105
	q(b-a)	0	0	q(d-c)	130	85
	q(b-c)	0	0	q(d-a)	5	5
	f	0.00	0.00	f	0.04	0.06
CAPACITIES	Q(b-a)	252	276	Q(d-c)	596	581
	Q(b-c)	418	423	Q(d-a)	772	757
	Q(c-b)	647	655	Q(a-d)	632	619
	Q(b-ac)	252	276	Q(d-ca)	601	589
	Q(c-a)	840	1223	Q(a-c)	1800	1785
RFC's	b-a	0.000	0.000	d-c	0.218	0.146
	b-c	0.000	0.000	d-a	0.006	0.007
	c-b	0.533	0.321	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.225	0.153
	c-a	0.060	0.090	a-c	0.028	0.022

	AM	(PM)
Worst RFC	**0.533**	**0.321**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

Capacity of combined streams

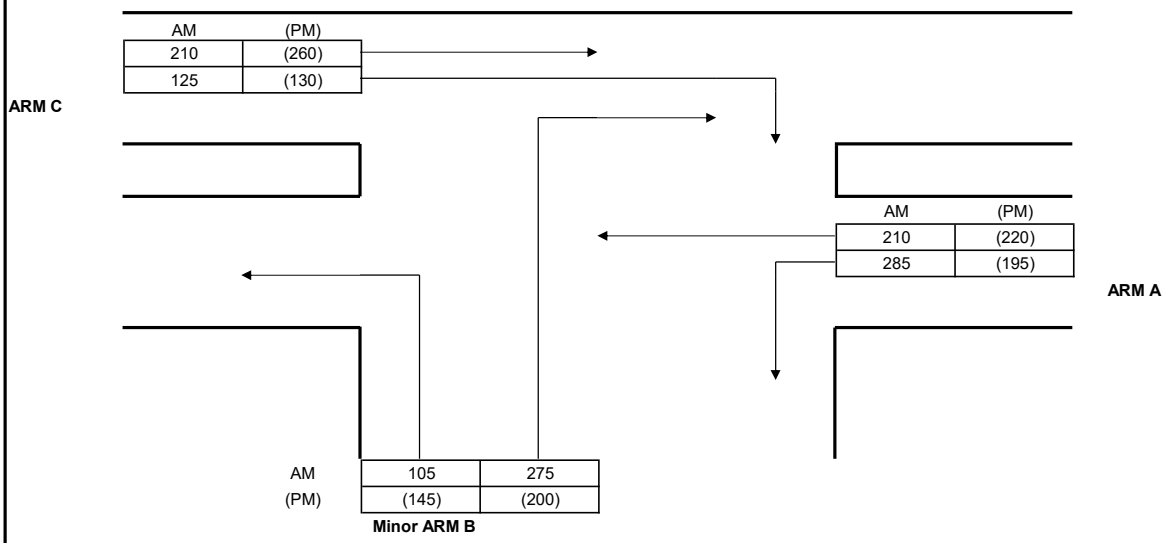
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

oject\000 - WSW 12A\20250526 WSW_12A_Calculation_Sens. Test_STT\Junction Calculation\[J01_2_P-Shek_Wu_Wai_Road-Mai_Po_Lung_Road.xlsm]2034R

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		210	260
	q(c-b)		125	130
	q(a-b)		285	195
	q(a-c)		210	220
	q(b-a)		275	200
	q(b-c)		105	145
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	402	399
	Q(b-c)	1	638	645
	Q(c-b)	1	554	574
	Q(b-ac)	1	448	475
RFC's	b-a		0.684	0.501
	b-c		0.165	0.225
	c-b		0.226	0.226
	b-ac		0.848	0.726
Worst RFC			**0.848**	**0.726**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

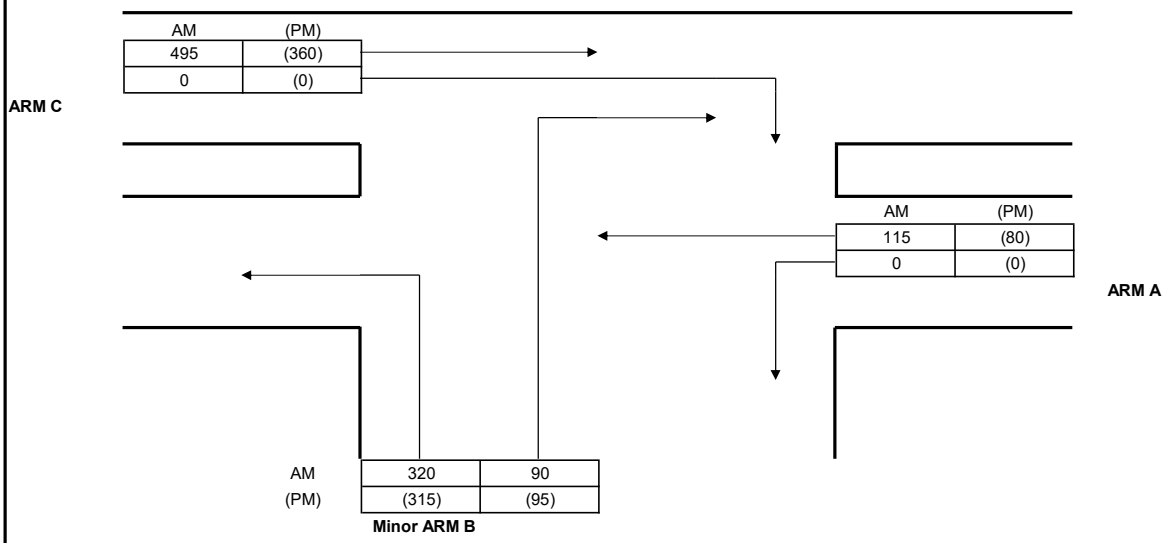
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	360
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		115	80
	q(b-a)		90	95
	q(b-c)		320	315
	f		0.78	0.77
		Factor		
CAPACITIES	Q(b-a)	1	615	655
	Q(b-c)	1	933	946
	Q(c-b)	1	418	424
	Q(b-ac)	1	838	857
RFC's	b-a		0.146	0.145
	b-c		0.343	0.333
	c-b		0.000	0.000
	b-ac		0.489	0.478
Worst RFC			**0.489**	**0.478**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

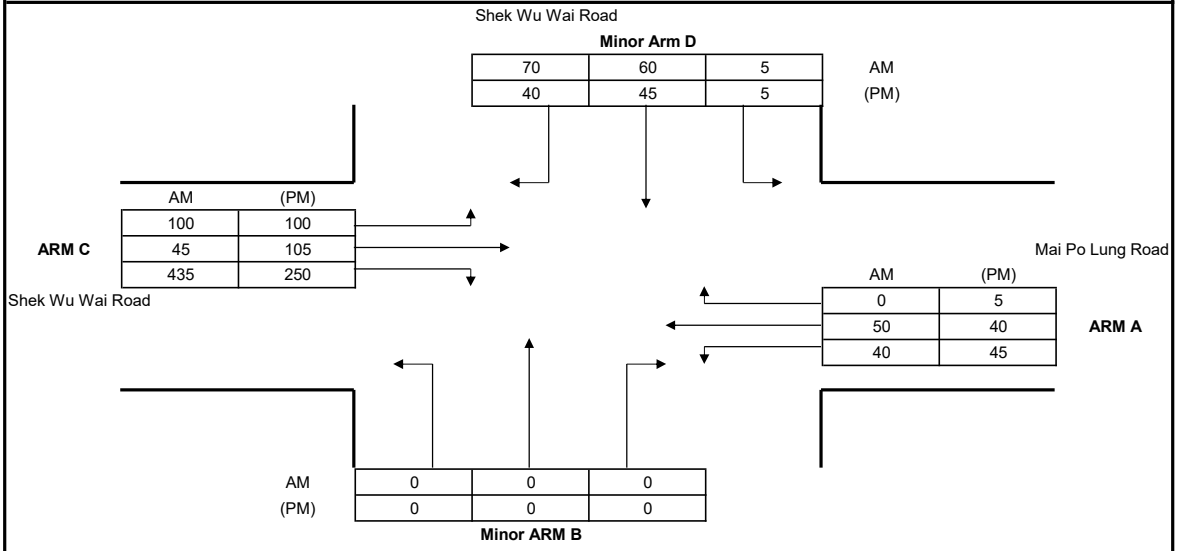
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	110	q(a-c)	50	40
	q(c-b)	435	250	q(a-d)	0	5
	q(a-b)	40	45	q(c-d)	100	100
	q(a-c)	120	80	q(c-a)	45	105
	q(b-a)	0	0	q(d-c)	130	85
	q(b-c)	0	0	q(d-a)	5	5
	f	0.00	0.00	f	0.04	0.06
CAPACITIES	Q(b-a)	236	269	Q(d-c)	596	581
	Q(b-c)	418	423	Q(d-a)	772	757
	Q(c-b)	647	655	Q(a-d)	632	619
	Q(b-ac)	236	269	Q(d-ca)	601	589
	Q(c-a)	590	1113	Q(a-c)	1800	1785
RFC's	b-a	0.000	0.000	d-c	0.218	0.146
	b-c	0.000	0.000	d-a	0.006	0.007
	c-b	0.672	0.382	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.225	0.153
	c-a	0.085	0.099	a-c	0.028	0.022

	AM	(PM)
Worst RFC	**0.672**	**0.382**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

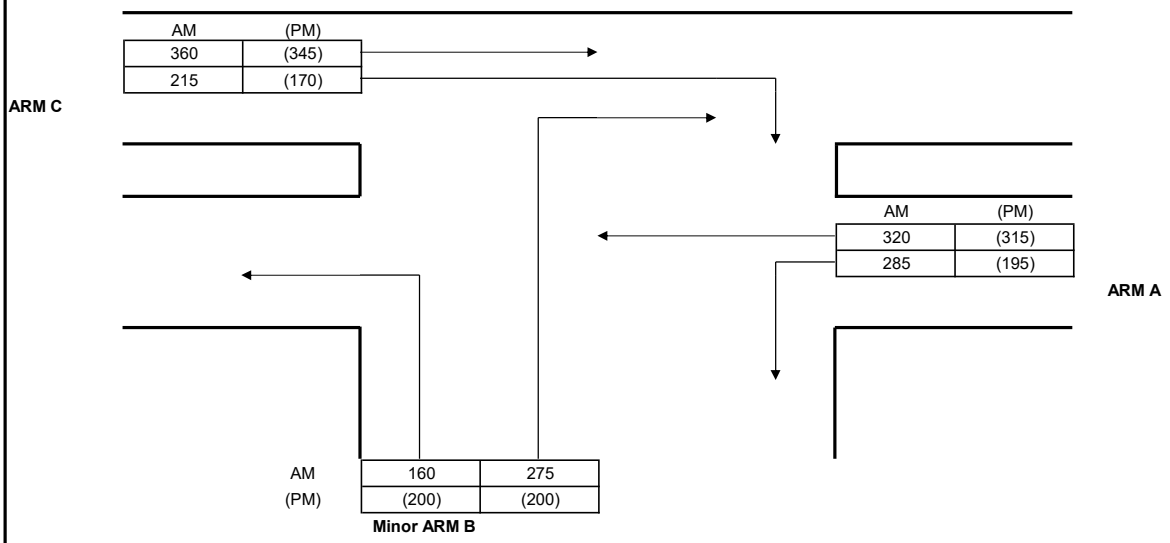
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	345
	q(c-b)		215	170
	q(a-b)		285	195
	q(a-c)		320	315
	q(b-a)		275	200
	q(b-c)		160	200
	f		0.37	0.50
		Factor		
CAPACITIES	Q(b-a)	1	318	347
	Q(b-c)	1	608	619
	Q(c-b)	1	525	550
	Q(b-ac)	1	386	445
RFC's	b-a		0.865	0.576
	b-c		0.263	0.323
	c-b		0.410	0.309
	b-ac		1.127	0.899
Worst RFC			**1.127**	**0.899**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1) (With Improvement)

Roundabout Capacity Calculation

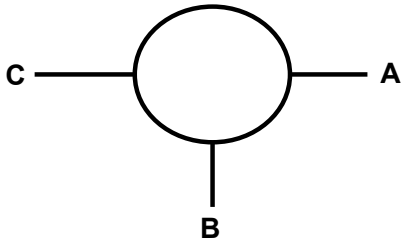
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement in Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	285	210	125	495
B	275	0	105	210	380
C	210	125	0	275	335

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	195	220	130	415
B	200	0	145	220	345
C	260	130	0	200	390

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1229	1226	0.40	0.34
B	1.10	4.41	0.02	1335	1.49	0.59	1337	1331	0.28	0.26
C	1.01	3.94	0.02	1194	1.49	0.56	1051	1093	0.32	0.36

Crtical Arm:	**A**	**C**
RFC:	**0.40**	**0.36**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

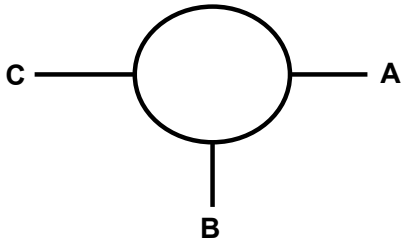
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Under Improvement Sensitivity in Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	285	320	215	605
B	275	0	160	320	435
C	360	215	0	275	575

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	195	315	170	510
B	200	0	200	315	400
C	345	170	0	200	515

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1178	1203	0.51	0.42
B	1.10	4.41	0.02	1335	1.49	0.59	1266	1269	0.34	0.32
C	1.01	3.94	0.02	1194	1.49	0.56	1051	1093	0.55	0.47

Crtical Arm:	**C**	**C**
RFC:	**0.55**	**0.47**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 2) (With Improvement)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

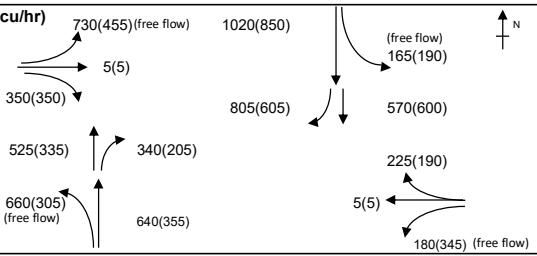
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		97%	97%	1775	1775	174	0.098		174	0.098	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	181	0.098		181	0.098	
San Tin highway		B	1	3.900		10				1865	1865	117	0.063		99	0.053	
Slip Road (WB)		B	1	3.900		12.5		96%	95%	1800	1800	113	0.063	0.063	96	0.053	0.053
Shek Wu Wai		C	2,3	3.500						1965	1965	466	0.237		405	0.206	
Road (SB)		C	2,3	3.500		15		78%	53%	1955	2000	463	0.237		412	0.206	
		C	2,3	3.500		12.5				1880	1880	446	0.237	0.237	388	0.206	0.206
Shek Wu Wai		D	4	3.500						1965	1965	288	0.147		179	0.091	
Road (NB)		D	4	3.500		15		22%	17%	2060	2070	302	0.147	0.147	189	0.091	
		D	4	3.500		12.5				1880	1880	275	0.146		172	0.091	0.091
Shek Wu Wai		E	3	3.500						2105	2105	348	0.165		290	0.138	
Road (SB)		E	3	3.500						2105	2105	347	0.165		290	0.138	
		E	3	3.500						1965	1965	325	0.165		270	0.137	
Shek Wu Wai		F	4	3.500						1965	1965	204	0.104		113	0.058	
Road (NB)		F	4	3.500						2105	2105	218	0.104		121	0.057	
		F	4	3.500						2105	2105	218	0.104		121	0.057	

Notes:

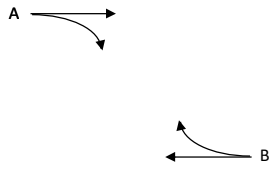
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	A,E,D	B,C,D
y	0.404	0.447	y	0.327	0.351
L (sec)	16	16	L (sec)	14	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.760	0.740
R.C. (%)	83%	66%	R.C. (%)	132%	111%

Stage / Phase Diagrams

1.



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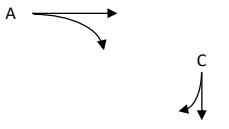
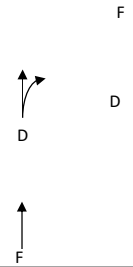


3.



4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: MAY, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

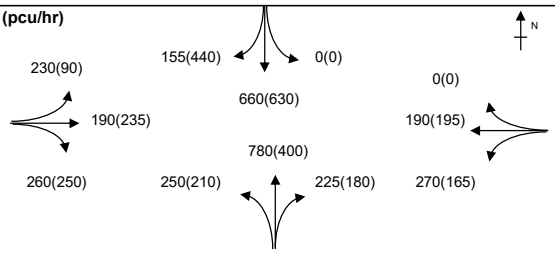
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	210	0.115	0.115	90	0.049	
		A	1	4.000	17.5	20		8% / 14%	0% / 7%	2120	2145	243	0.115		252	0.117	0.117
		A	1	4.000		17.5				1985	1985	227	0.114		233	0.117	
Road D2 NB		B	2	3.200	15					1760	1760	250	0.142		179	0.102	
		B	2	3.200	17.5			0%	15%	2075	2050	344	0.166		209	0.102	
		B	2	3.200						2075	2075	344	0.166		212	0.102	0.102
		B	2	3.200		12.5		71%	95%	1910	1865	317	0.166	0.166	190	0.102	
Road L11 WB		C	3	3.300	12.5					1735	1735	139	0.080		107	0.062	
		C	3	3.300	15			85%	47%	1920	1990	154	0.080	0.080	124	0.062	0.062
		C	3	3.300		20		0%	0%	2085	2085	167	0.080		129	0.062	
Road D3 SB		D	4	4.000	12.5			0%	0%	2015	2015	263	0.131		304	0.151	
		D	4	4.000						2155	2155	282	0.131	0.131	326	0.151	
		D	4	4.000		20		57%	100%	2065	2005	270	0.131		440	0.219	0.219

Notes:

Flow: (pcu/hr)



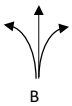
Group		A,B,C,D	Group		A,B,C,D
y		0.492	y		0.501
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		45%	R.C. (%)		42%

Stage / Phase Diagrams

1.



2.



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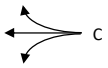


4.



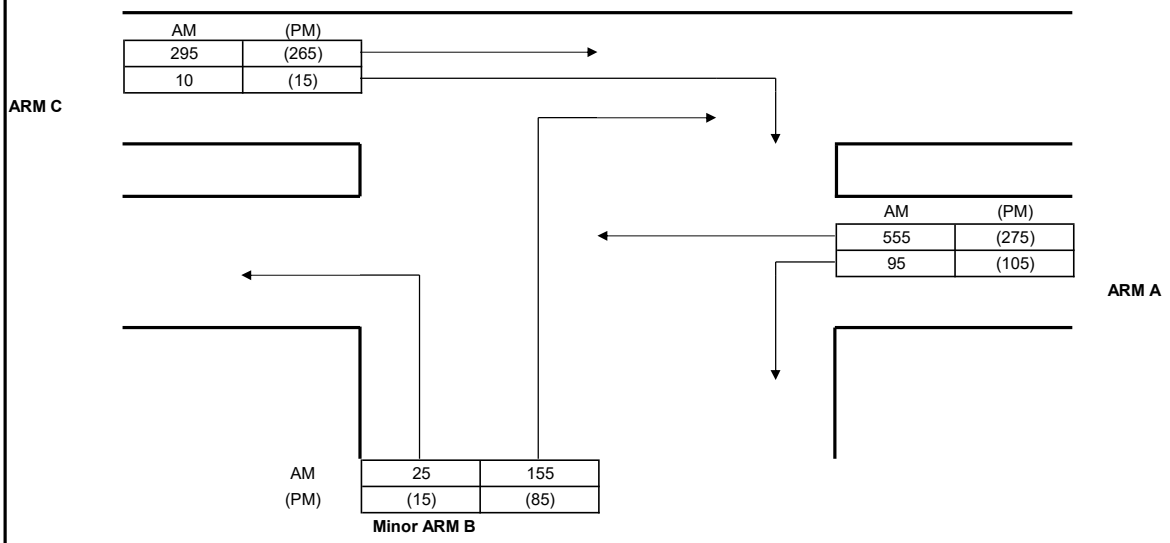
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7	I/G=
I/G= 6		I/G= 6		I/G= 7		I/G= 7	I/G=

Date: MAY, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		295	265
	q(c-b)		10	15
	q(a-b)		95	105
	q(a-c)		555	275
	q(b-a)		155	85
	q(b-c)		25	15
	f		0.14	0.15
		Factor		
CAPACITIES	Q(b-a)	1	360	424
	Q(b-c)	1	530	595
	Q(c-b)	1	563	631
	Q(b-ac)	1	377	443
RFC's	b-a		0.431	0.200
	b-c		0.047	0.025
	c-b		0.018	0.024
	b-ac		0.477	0.226
Worst RFC			**0.477**	**0.226**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

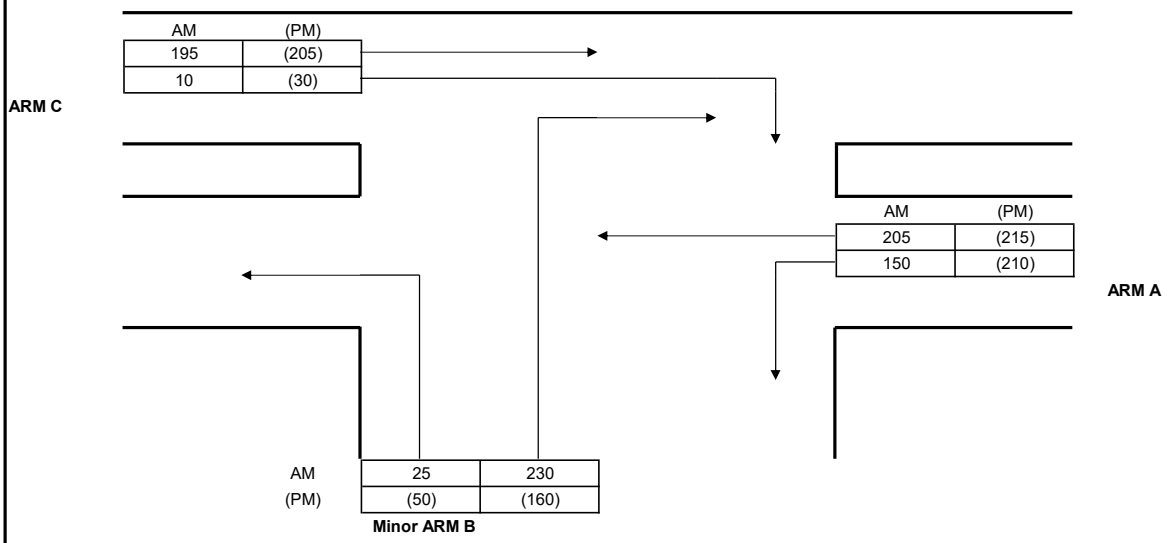
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		195	205
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		205	215
	q(b-a)		230	160
	q(b-c)		25	50
	f		0.10	0.24
		Factor		
CAPACITIES	Q(b-a)	1	455	438
	Q(b-c)	1	638	629
	Q(c-b)	1	558	542
	Q(b-ac)	1	468	472
RFC's	b-a		0.505	0.365
	b-c		0.039	0.079
	c-b		0.018	0.055
	b-ac		0.545	0.445
Worst RFC			**0.545**	**0.445**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

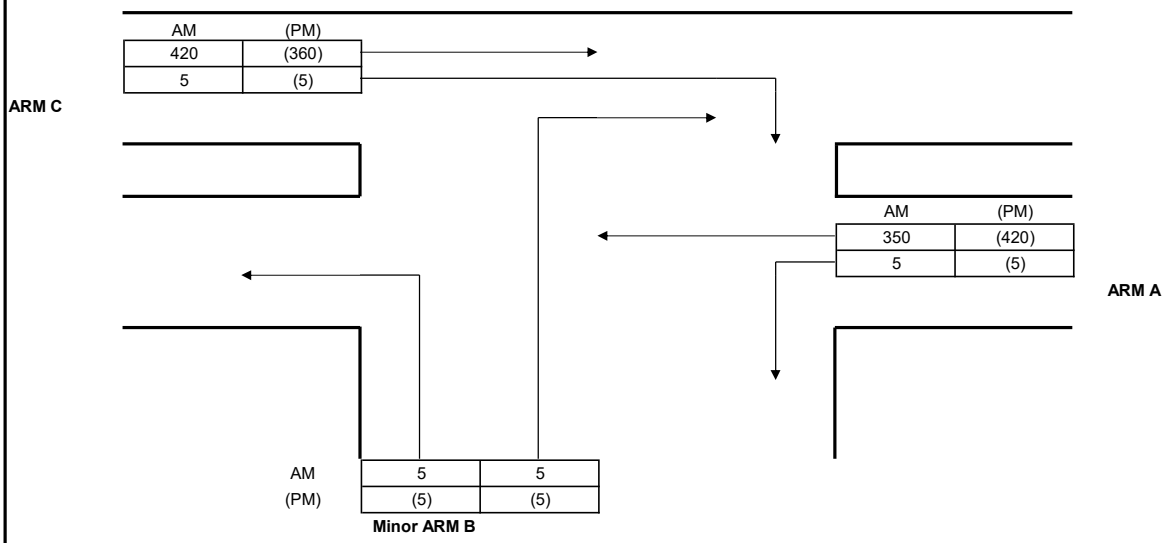
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		420	360
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		350	420
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	371	364
	Q(b-c)	1	570	553
	Q(c-b)	1	603	585
	Q(b-ac)	1	449	439
RFC's	b-a		0.013	0.014
	b-c		0.009	0.009
	c-b		0.008	0.009
	b-ac		0.022	0.023
Worst RFC			**0.022**	**0.023**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

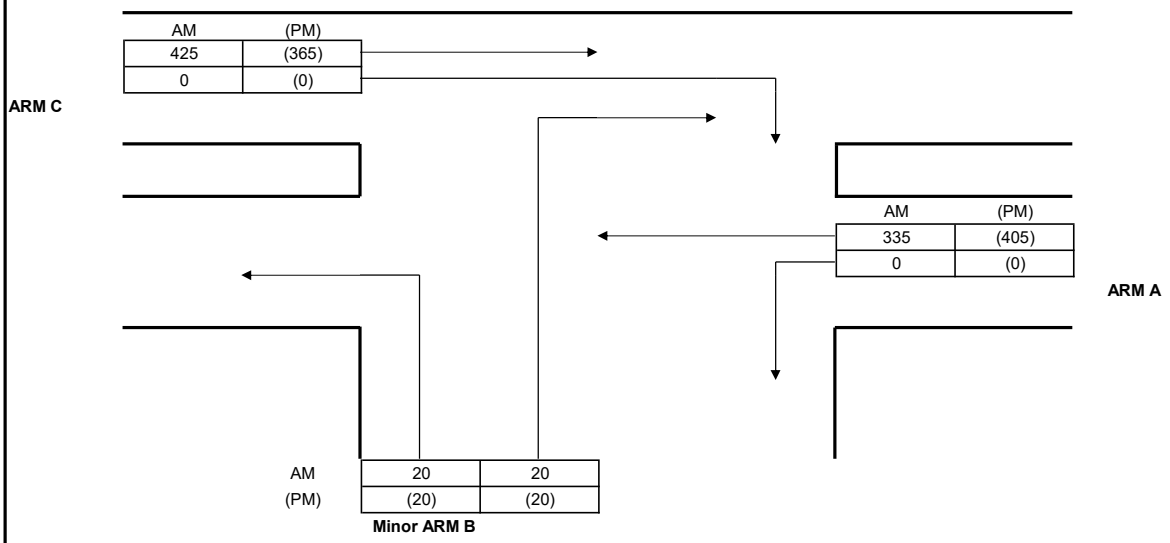
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		425	365
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		335	405
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	321	314
	Q(b-c)	1	491	477
	Q(c-b)	1	381	370
	Q(b-ac)	1	389	378
RFC's	b-a		0.062	0.064
	b-c		0.041	0.042
	c-b		0.000	0.000
	b-ac		0.103	0.106
Worst RFC			**0.103**	**0.106**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

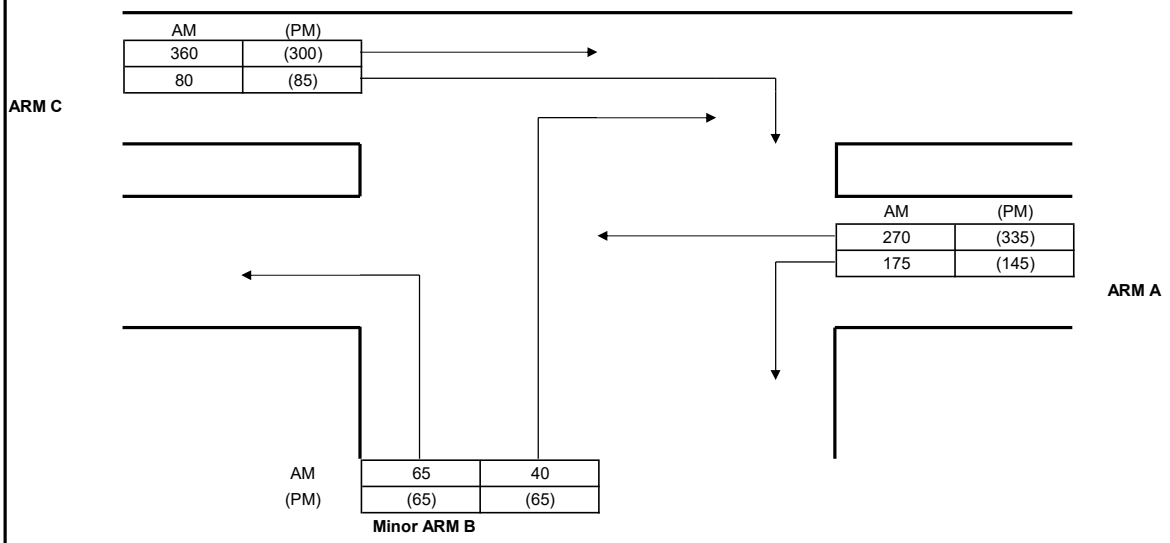
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	300
	q(c-b)		80	85
	q(a-b)		175	145
	q(a-c)		270	335
	q(b-a)		40	65
	q(b-c)		65	65
	f		0.62	0.50
		Factor		
CAPACITIES	Q(b-a)	1	378	372
	Q(b-c)	1	602	588
	Q(c-b)	1	575	566
	Q(b-ac)	1	491	456
RFC's	b-a		0.106	0.175
	b-c		0.108	0.111
	c-b		0.139	0.150
	b-ac		0.214	0.285
Worst RFC			**0.214**	**0.285**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

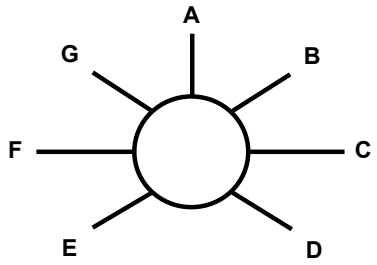
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange improvement I			Ref. No.:	2034R
Scheme:	Reference (Under Improvement in Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	14.00	32	25	140	35	0.35
B	7.30	12.00	36	30	140	25	0.21
C	7.30	12.00	18	45	140	30	0.42
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	11.00	30	25	140	40	0.27
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	255	40	225	540	30	2665	1120	640
B	10	10	105	10	230	140	30	3220	535	565
C	110	85	10	100	490	10	230	2495	1035	1260
D	60	20	50	10	250	250	90	3080	730	450
E	40	35	460	65	10	495	20	2025	1125	1785
F	300	245	10	145	570	10	0	1385	1280	1765
G	110	150	370	80	10	320	0	2265	1040	400

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	200	50	200	330	30	2225	830	970
B	10	10	70	10	160	85	30	2555	375	500
C	160	115	20	80	430	20	210	2080	1035	850
D	50	20	60	20	200	140	70	2685	560	430
E	85	30	280	70	10	270	20	1635	765	1610
F	580	225	10	150	600	20	0	1320	1585	1080
G	75	90	210	50	10	215	10	2535	660	370

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	11.12	2980.96	3369	1.00	0.68	1552	1848	0.72	0.45
B	1.03	10.62	2980.96	3216	1.00	0.66	1141	1592	0.47	0.24
C	1.03	9.86	2980.96	2988	1.00	0.62	1469	1735	0.70	0.60
D	0.99	9.74	2980.96	2952	1.00	0.62	1037	1279	0.70	0.44
E	0.96	10.32	2980.96	3127	1.00	0.64	1746	1987	0.64	0.39
F	0.98	9.26	2980.96	2806	1.00	0.60	1927	1965	0.66	0.81
G	0.99	9.29	2980.96	2815	1.00	0.60	1445	1284	0.72	0.51
								Crtical Arm:	**A**	**F**
								RFC:	**0.72**	**0.81**
									AM	**PM**

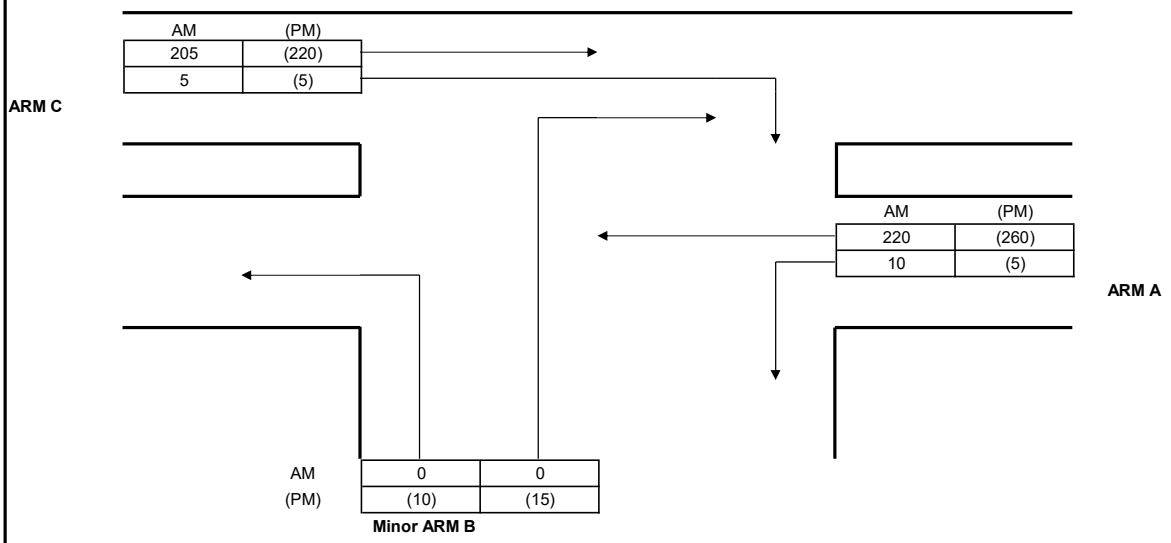
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

:ulation_Sens. Test_MP7, 8\Junction Calculation\[J8_R-Fairview_Park_Interchange_improvement by MP10 +proposed imp..xlsm]2034R

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		205	220
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		220	260
	q(b-a)		0	15
	q(b-c)		0	10
	f		0.00	0.40
		Factor		
CAPACITIES	Q(b-a)	1	488	477
	Q(b-c)	1	677	667
	Q(c-b)	1	676	667
	Q(b-ac)	1	488	539
RFC's	b-a		0.000	0.031
	b-c		0.000	0.015
	c-b		0.007	0.007
	b-ac		0.000	0.046
Worst RFC			**0.007**	**0.046**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

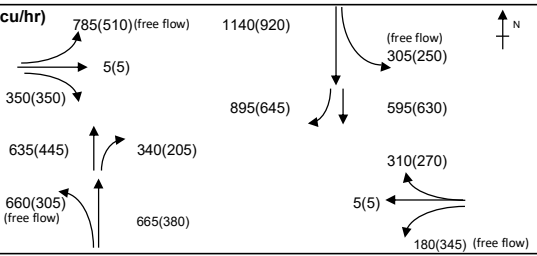
Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		97%	97%	1775	1775	174	0.098		174	0.098	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	181	0.098		181	0.098	
San Tin highway		B	1	3.900		10				1865	1865	160	0.086		140	0.075	
Slip Road (WB)		B	1	3.900		12.5		97%	96%	1795	1795	155	0.086	0.086	135	0.075	0.075
Shek Wu Wai		C	2,3	3.500						1965	1965	506	0.258	0.258	429	0.218	
Road (SB)		C	2,3	3.500		15		82%	54%	1945	1995	500	0.257		436	0.219	0.219
		C	2,3	3.500		12.5				1880	1880	484	0.257		410	0.218	
Shek Wu Wai		D	4	3.500						1965	1965	323	0.164		215	0.109	0.109
Road (NB)		D	4	3.500		15		9%	0%	2085	2105	343	0.165	0.165	230	0.109	
		D	4	3.500		12.5				1880	1880	309	0.164		205	0.109	
Shek Wu Wai		E	3	3.500						2105	2105	389	0.185		314	0.149	
Road (SB)		E	3	3.500						2105	2105	388	0.184		313	0.149	
		E	3	3.500						1965	1965	363	0.185		293	0.149	
Shek Wu Wai		F	4	3.500						1965	1965	212	0.108		121	0.062	
Road (NB)		F	4	3.500						2105	2105	226	0.107		129	0.061	
		F	4	3.500						2105	2105	227	0.108		130	0.062	

Notes:

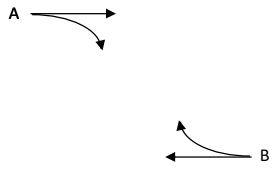
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.452	0.508	y	0.356	0.403
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	64%	46%	R.C. (%)	108%	84%

Stage / Phase Diagrams

1.



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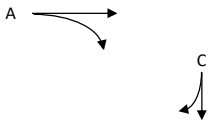

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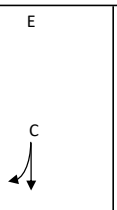

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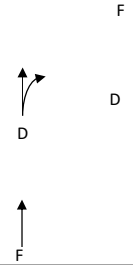


5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: MAY, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

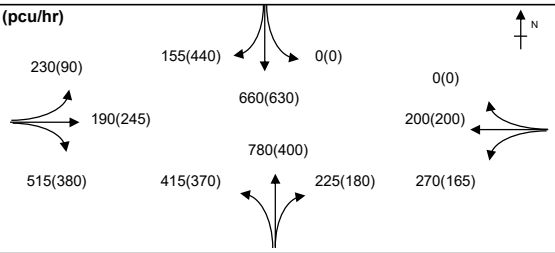
Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design Designed By: KCC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	230	0.126		90	0.049	
		A	1	4.000	17.5	20		0% / 47%	0% / 24%	2080	2115	361	0.174	0.174	323	0.153	0.153
		A	1	4.000		17.5				1985	1985	344	0.173		302	0.152	
Road D2 NB		B	2	3.200	15					1760	1760	321	0.182	0.182	217	0.123	
		B	2	3.200	17.5			25%	63%	2030	1970	370	0.182		243	0.123	
		B	2	3.200						2075	2075	378	0.182		256	0.123	0.123
		B	2	3.200		12.5		64%	77%	1925	1900	351	0.182		234	0.123	
Road L11 WB		C	3	3.300	12.5					1735	1735	142	0.082		109	0.063	
		C	3	3.300	15			81%	45%	1930	1995	158	0.082	0.082	125	0.063	
		C	3	3.300		20		0%	0%	2085	2085	170	0.082		131	0.063	0.063
Road D3 SB		D	4	4.000	12.5			0%	0%	2015	2015	263	0.131		304	0.151	
		D	4	4.000						2155	2155	282	0.131	0.131	326	0.151	
		D	4	4.000		20		57%	100%	2065	2005	270	0.131		440	0.219	0.219

Notes:

Flow: (pcu/hr)



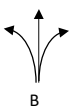
Group		A,B,C,D	Group		A,B,C,D
y		0.569	y		0.558
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		25%	R.C. (%)		27%

Stage / Phase Diagrams

1.



2.



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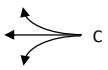


4.



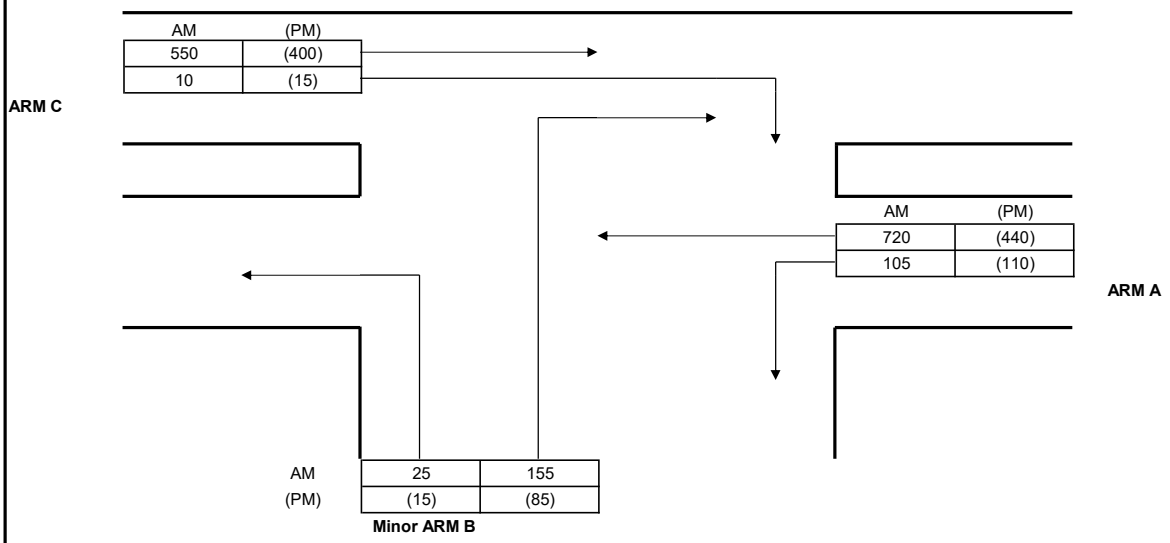
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: MAY, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.30	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		550	400
	q(c-b)		10	15
	q(a-b)		105	110
	q(a-c)		720	440
	q(b-a)		155	85
	q(b-c)		25	15
	f		0.14	0.15
		Factor		
CAPACITIES	Q(b-a)	1	287	368
	Q(b-c)	1	491	556
	Q(c-b)	1	518	588
	Q(b-ac)	1	305	388
RFC's	b-a		0.540	0.231
	b-c		0.051	0.027
	c-b		0.019	0.026
	b-ac		0.590	0.258
Worst RFC			**0.590**	**0.258**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

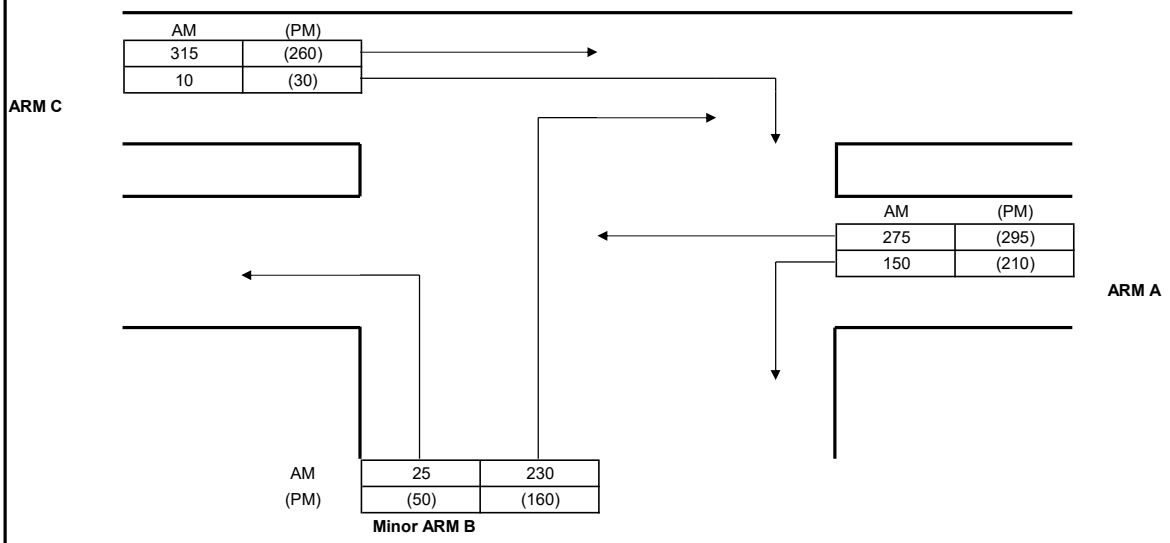
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		315	260
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		275	295
	q(b-a)		230	160
	q(b-c)		25	50
	f		0.10	0.24
		Factor		
CAPACITIES	Q(b-a)	1	419	410
	Q(b-c)	1	620	608
	Q(c-b)	1	542	523
	Q(b-ac)	1	432	445
RFC's	b-a		0.549	0.390
	b-c		0.040	0.082
	c-b		0.018	0.057
	b-ac		0.590	0.472
Worst RFC			**0.590**	**0.472**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

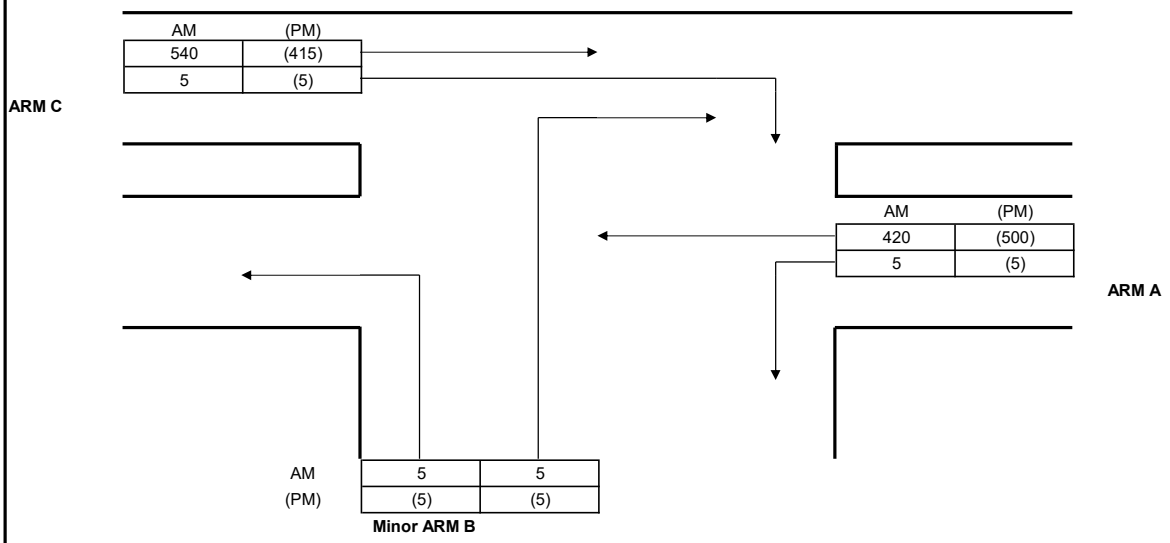
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		540	415
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		420	500
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	339	338
	Q(b-c)	1	553	533
	Q(c-b)	1	585	565
	Q(b-ac)	1	420	414
RFC's	b-a		0.015	0.015
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.024	0.024
Worst RFC			**0.024**	**0.024**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

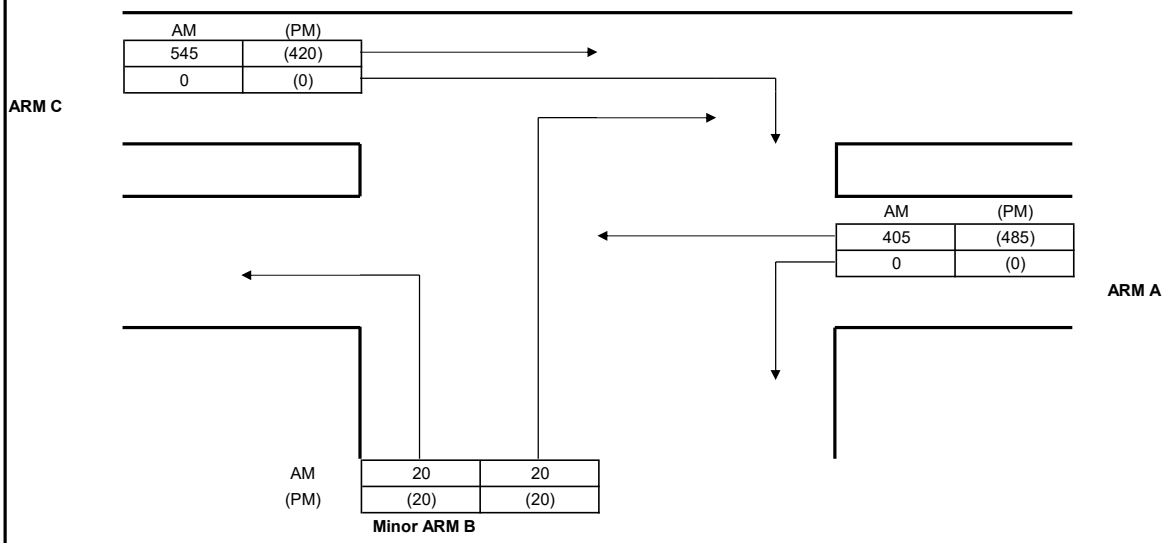
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		545	420
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		405	485
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	292	291
	Q(b-c)	1	477	459
	Q(c-b)	1	370	356
	Q(b-ac)	1	362	357
RFC's	b-a		0.068	0.069
	b-c		0.042	0.044
	c-b		0.000	0.000
	b-ac		0.110	0.112
Worst RFC			**0.110**	**0.112**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

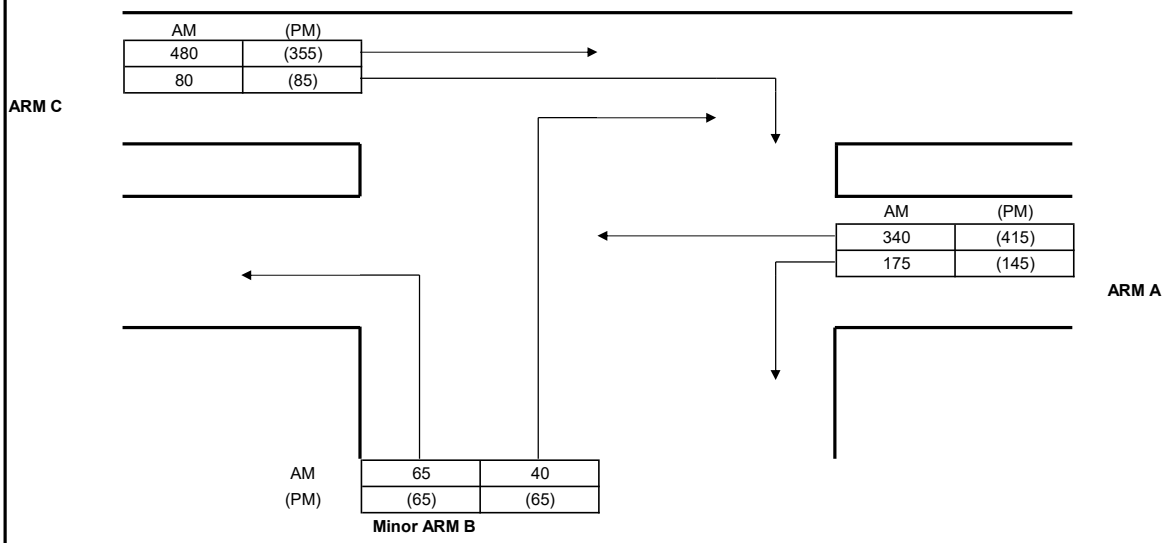
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		480	355
	q(c-b)		80	85
	q(a-b)		175	145
	q(a-c)		340	415
	q(b-a)		40	65
	q(b-c)		65	65
	f		0.62	0.50
		Factor		
CAPACITIES	Q(b-a)	1	343	345
	Q(b-c)	1	584	568
	Q(c-b)	1	557	545
	Q(b-ac)	1	461	429
RFC's	b-a		0.117	0.188
	b-c		0.111	0.114
	c-b		0.144	0.156
	b-ac		0.228	0.303
Worst RFC			**0.228**	**0.303**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

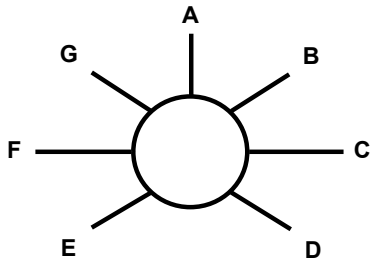
Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange improvement I			Ref. No.:	2034D
Scheme:	Design (Under Improvement in Sensitivity Test 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Fairview Park Boulevard
ARM B: Castle Peak Rd E
ARM C: NTCR E
ARM D: San Tam Rd E
ARM E: San Tam Rd W
ARM F: NTCR W
ARM G: Castle Peak Rd W



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	14.00	32	25	140	35	0.35
B	7.30	12.00	36	30	140	25	0.21
C	7.30	12.00	18	45	140	30	0.42
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	11.00	30	25	140	40	0.27
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	255	40	225	540	30	2735	1120	640
B	10	10	105	10	230	260	30	3220	655	635
C	110	85	10	100	490	10	230	2615	1035	1260
D	60	20	50	10	260	250	90	3200	740	450
E	40	35	460	65	10	495	20	2145	1125	1795
F	300	315	10	145	570	10	0	1385	1350	1885
G	110	150	370	80	10	320	0	2335	1040	400

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	200	50	200	330	30	2305	830	970
B	10	10	70	10	160	140	30	2555	430	580
C	160	115	20	80	430	20	210	2135	1035	850
D	50	20	60	20	205	140	70	2740	565	430
E	85	30	280	70	10	270	20	1690	765	1615
F	580	295	10	150	600	20	0	1320	1655	1135
G	75	100	210	50	10	215	10	2605	670	370

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	11.12	2980.96	3369	1.00	0.68	1505	1794	0.74	0.46
B	1.03	10.62	2980.96	3216	1.00	0.66	1141	1592	0.57	0.27
C	1.03	9.86	2980.96	2988	1.00	0.62	1392	1700	0.74	0.61
D	0.99	9.74	2980.96	2952	1.00	0.62	963	1246	0.77	0.45
E	0.96	10.32	2980.96	3127	1.00	0.64	1672	1953	0.67	0.39
F	0.98	9.26	2980.96	2806	1.00	0.60	1927	1965	0.70	0.84
G	0.99	9.29	2980.96	2815	1.00	0.60	1403	1242	0.74	0.54
								Crtical Arm:	**D**	**F**
								RFC:	**0.77**	**0.84**
									AM	**PM**

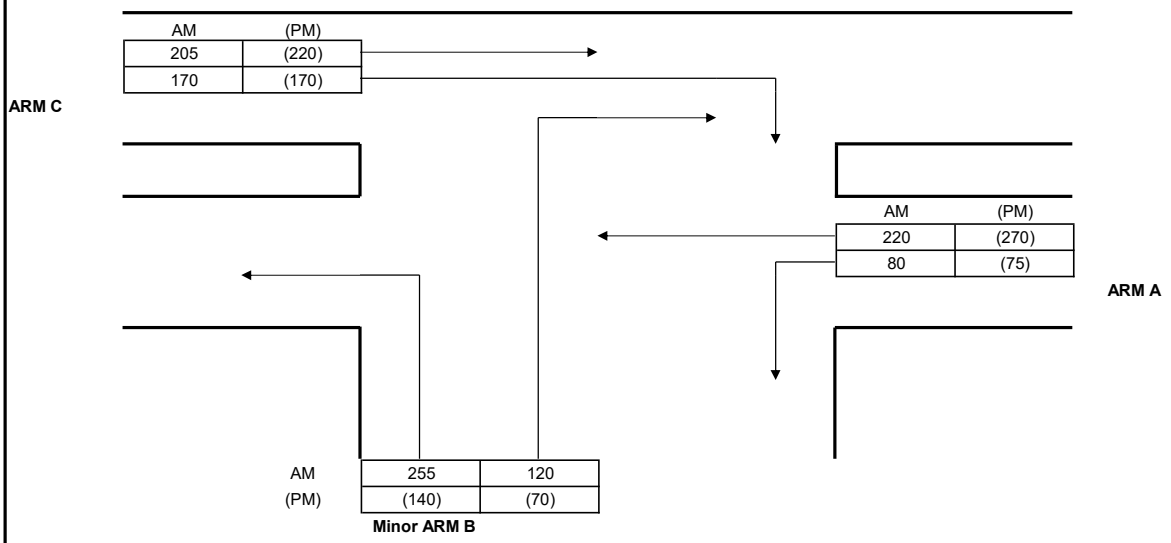
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

:ulation_Sens. Test_MP7, 8\Junction Calculation\[J8_R-Fairview_Park_Interchange_improvement by MP10 +proposed imp..xlsm]2034D

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		205	220
	q(c-b)		170	170
	q(a-b)		80	75
	q(a-c)		220	270
	q(b-a)		120	70
	q(b-c)		255	140
	f		0.68	0.67
		Factor		
CAPACITIES	Q(b-a)	1	426	412
	Q(b-c)	1	670	658
	Q(c-b)	1	658	646
	Q(b-ac)	1	566	549
RFC's	b-a		0.282	0.170
	b-c		0.381	0.213
	c-b		0.258	0.263
	b-ac		0.663	0.383
Worst RFC			**0.663**	**0.383**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

MASTERPLAN LIMITED
Planning and Development Advisors
領賢規劃顧問有限公司

Your Ref. TPB/Y/YL-MP/9
The Secretary,
Town Planning Board
15/F, North Point Government Offices
333 Java Road, North Point, Hong Kong

Date: 18 September 2025
By Hand and email

Dear Sir/Madam,

Application for Amendment to the Approved Mai Po & Fairview Park Outline Zoning Plan No. S/YL-MP/8, to amend the Notes of the "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone applicable to the site, Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai Po, Yuen Long

2nd (Formal) Further Information Submission

We submit herewith, our 2nd Further Information in response to comments (RtC) from relevant Government departments. The previous submitted Draft (Informal) Rtc are also included for reference. The Rtc that has been labeled with "CURRENT" are our latest responses to most-up-to-date departmental comments. Please find 40 hardcopies of our FI submission with this letter.

In summary, the major updates made to the Master Layout Plan (MLP), include the following: -

1) Response to TD comment – additional bicycle parking spaces provided in the basement level. The basement layout has been updated in the MLP [**Addendum 4** of RtC Table].

2) Response to DPO comment – the basement layout has been updated to indicate space for underground supporting sewage facilities [**Addendum 4** of RtC Table].

3) Response to AFCD comment – the number of stories of Tower C2-1 has been reduced from 10- to 8-storeys. This update has been reflected in the MLP (including Phasing Plan) [**Addendum 4** of RtC Table], and Landscape Master Plan (LMP) [**Addendum 6** of RtC Table]. The reduced two storeys have resulted in a reshuffling of the GFA to the other developments within the Site. While the building footprint of all the developments remain the same, slight adjustments were required to the parameters, as shown in **Table 4** of the revised Planning Statement (**Addendum 8** of RtC Table).

4) All the technical reports have been updated with the revised MLP. The conclusion and assessments of the reports are unaffected and remain the same.

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

5) Response to AFCD comment – Section B of MLP [**Addendum 4** of RtC Table], the parapet glass wall has been updated with a 2m-high solid wall at the interface boundary between the Wetland Restoration Area and residential portion. This update has been reflected in the MLP (Drawing MLP-04 Section B) and LMP (Section D).

The further information does not result in a "material change" in the nature of the application. The submission has been prepared in accordance with the Town Planning Board Guideline No. 32A on submission of further information under the Town Planning Ordinance.

Yours faithfully,

Benson Poon
For and on behalf of Masterplan Limited

Encl.

cc. Ms. CHAN Kei Yee, Karen (TP/YLE2) (DPO/FS&YLE)
Mr. CHIU Pak Him, Kimson (STP/YLE1) (DPO/FS&YLE)
Client and Consultants

Room 3516B, 35/F, China Merchants Tower, Shun Tak Centre, 200 Connaught Road Central, Hong Kong.
Tel: (852) 2418 2880 Fax: (852) 2587 7068 Email: info@masterplan.com.hk

Section 12A Rezoning Application No. Y/YL-MP/9

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

2nd (Formal) Further Information Submission

Response to Departmental Comments

18 September 2025

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Addendums

Addendum 1: Comparison table of current proposal with the application No. A/YL-MP/394
Addendum 2: Summary of Planning and Design Merits, and Ecological Merits
Addendum 3: (Revised) Ecological Impact Assessment
Addendum 4: (Revised) Master Layout Plan
Addendum 5: (Revised) Landscape Function Analysis Plan
Addendum 6: (Revised) Landscape Master Plan (including Tree Preservation Proposal)
Addendum 7: (Revised) Visual Impact Assessment

Addendum 8: (Revised) Planning Statement
Addendum 9: (Revised) Air Ventilation Assessment
Addendum 10: (Revised) Water Supplies Impact Assessment
Addendum 11: (Revised) Environmental Assessment
Addendum 12: (Revised) Sewerage Impact Assessment
Addendum 13: (Revised) Drainage Impact Assessment
Addendum 14: Email justification on the Person-Per-Flat Ratio
Addendum 15: (Revised) Traffic Impact Assessment

Response to Dept Comments of District Planning Officer, PlanD (received 9.9.2025) CURRENT

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
General 1. Please provide a comparison between the current proposal with the application No. A/YL-MP/394 under processing.	Please refer to **Addendum 1** for the comparison table.
2. Noting from the draft Ecological Impact Assessment (EcoIA) that one building block (i.e. C2-1) has been reduced from 10-storeys to 8-storeys, please update all related architectural drawings, including sections, master plans, as well as the relevant drawings across all technical assessments.	Noted. All related architectural drawings have been updated.
3. Noting from the Traffic Impact Assessment (TIA) that the number of flats and population have been updated, please update all relevant technical assessments where appropriate.	Noted. All relevant technical assessments have been updated.
4. Please prepare a drawing showing all design merits, planning gain as well as additional ecological measures to mitigate any visual, ecological, air ventilation impacts. Reference can be made to Drawing No. Z-11 of Y/YL-MP/10.	Please refer to **Addendum 2** for a summary drawing of the planning and design merits.
5. Please provide an estimation of the area required for excavation and filling of land.	The estimation of the area required for excavation and filling of land will be provided at the s16 planning application stage.
6. The approved EcoIA has included measures to avoid night-time lighting and glare to the surrounding areas. Noting that the proposed development is located at the immediate adjoining of the wetland restoration area and the future Sam Po Shue Wetland Conservation Park, please elaborate more on these measures, or advise if	The mitigation measures recommended in the EcoIA **(Addendum 3)** are very clear, with more detail than the approved EIA report of STT. Inputs in previous RtC to AFCD comments should have addressed this comment. Such impact is assessed and evaluated as insignificant. Measures could be further reviewed during detail design including features e.g. streetlight, façade, safety requirements etc.

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
there are additional measures to alleviate such impact.	
7. Please clarify how glare and noise impacts from swimming pools could be mitigated, e.g. in terms of operation hours, cautious design.	The swimming pools will have insignificant disturbance impacts, as the inherent location and design of the pools would mitigate the disturbance impact. The pools will be located at ground floor, surrounded by the proposed residential buildings, and entirely screened off by the perimeter wall and buffer planting. In addition, the pools will generally be closed in the winter season. Operational hours and design considerations – https://www.fehd.gov.hk/english/forms/pdf/Requirement_for_Swimming_Pool_Licence(revised).pdf Noise Impact: Under normal circumstances, swimming pool facilities are not expected to generate significant noise impacts during the operational phase. As such, they are typically not considered a source of concern in the noise impact assessment.
8. While it is understood that this is a rezoning application, as the provision of Residential Care Home for the Elderly (RCHE) may be regarded as a planning merits, please justify and supplement some information on the future implementation arrangement of the RCHE.	The RCHE would cater to the future demand for such community facilities in the district. The RCHE is also grouped in the Phase 1 construction program, so it is intended to be implemented and made available for operation at the earliest stages of the development. The initial intention is for Applicant to construct and operate the RCHE; however, this would be further explored and considered at the s16 planning application or detailed design stage.
Planning Statement 9. Please review if tables 2 and 3 and figures 4 and 5 regarding the approved and on-going applications in the surrounding areas need to be updated	The Tables and Figures has been updated. (**Addendum 8**)
10. Para. 7.1.1 – please update with the latest GFA, flat number, flat size and design population.	Noted, and para. 7.1.1 updated with latest parameters. (**Addendum 8**)

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
11. Table 4 (a) Please explain why the domestic GFA has been slightly increased.	In response to AFCD's comment to minimize the construction impact of Tower C2-1, the no. storeys have been reduced from 10- to 8-storeys. As such the domestic GFA of the reduced storeys has been reshuffled to other house developments in the site, while keeping the overall plot ratio the same. The slight increase in domestic GFA is due to the process of maximizing the internal floor space and dimensions of the houses, which has resulted in internal floor space that can accommodate a little bit more domestic GFA than was in the tower.
(b) Please clarify if the bicycle parking space should be 204 as shown on the revised draft TIA dated 14.8.2025.	To address TD comments, the total no. bicycle parking spaces has been updated to comply with the recently updated standard.
(c) Please clarify if all car parking spaces are for private cars. If affirmative, please indicate clearly in the table.	All car parking spaces are for residential (private cars). Table has been updated.
(d) Please clarify if basement parking will include all parking provisions (i.e. residential, visitors, accessible parking space, motorcycle, loading/unloading bays and bicycle) as mentioned.	The basement car park will include all parking provisions.
12. Para 8.5.3 – (a) these extra ecological merits (except for the buffer planting) are not found in EcoIA and Landscape Master Plan (LMP). Please clarify. If these are related to the landscape treatments, they should be shown on LMP.	Noted. The ecological merits are included in the EcoIA, section 9, **Addendum 3.**
(b) The wildlife viewing point on the roof-top of the residential blocks are not shown on LMP. Please also clarify if this means the roof-top will be opened to the residents.	Please refer to **Addendum 2** for the locations of wildlife viewing points. They will be open to residents and their guests only, through a management visitor registration system.
(c) Please clarify if the wildlife viewing points, recreational walk/nature trail might result in human disturbance to the wildlife.	The wildlife viewing points, recreational walk/ nature trail are located within the Residential Portion of the Application Site. They will not result in human disturbance to the wildlife.
(d) Noting the intention for increasing public awareness and education, please	The wildlife viewing points will be opened to residents and their guests only, through management visitor

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
explain if the wildlife viewing points, landscape gardens and ponds with recreational walk/nature trail will be opened to the public or just residents in the developments.	registration system. The landscape gardens and ponds with recreational walk/nature trail will be opened to residents and their guests.
13. Para. 8.6.1 – - Please indicate clearly what improvements works will be carried out by the applicant. Please also indicate clearly that according to the sensitive tests, in case of programme mismatch, which road and junction improvements works will be carried out by the applicant.	Please note that the widening works of existing bus stops (Maple Garden Bus Stop – Yuen Long Bound and Palm Springs Bus Stop – Sheung Shui Bound) would be carried out by the applicant, subject to the review of future public transport demand. In case of programme mismatch, the following junction improvement works would be carried out by the applicant: **Castle Peak Road – San Tin / Shek Wu Wai Road** (if programme of San Tin Technopole project is not in place); **Fairview Park Interchange** (if programme of Proposed Public Housing Developments at Sha Po and Application Y/YL-MP/10 are not in place)
14. Please supplement how the flood risk associated with storm surges and extreme weather has been taken into consideration in the proposed development.	In compliance with the Stormwater Drainage Manual, tide levels and rainfall with a 200-year return period, taking climate change into account, were adopted in the Drainage Impact Assessment. The assessment concludes that the completion of the proposed development will not aggravate the drainage conditions or result in flooding around the Application Site.
Plans and Drawings 15. Please add plan number for all drawings for easy reference.	Noted. Annotation label has been added to the MLP drawings. (**Addendum 4**)
16. The descriptions under the plan titles, i.e. “November 2019 submission” is misleading. Please revise.	Noted, and revised. (**Addendum 4**)
17. Basement floor layout – please review if the area for the temporary on-site sewage treatment plant would be	Noted, and updated with TSTP facilities in basement level. (**Addendum 4**)

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
unexcavated area, as the section plan for the STP shows that there are underground facilities.	
18. Section 1 could not fully show the Wetland Restoration Area (WRA) as indicated on the keyplan. Also, the buffer planting close to the WRA are missing. It is suggested to indicate the 7.5m-wide buffer planting and the solid wall as suggested in the EcoIA. Please review.	Noted, and Section updated. (**Addendum 4**)
19. In view of the change in the number of parking spaces, please review the plan showing the basement parking spaces.	The basement plan has reflected the change in number of parking spaces. The Revised MLP can be found in **Addendum 4**.
20. Phasing Plan – the annotations of "B" seems not in a proper position. Please review.	Noted, and revised. (**Addendum 4**)
21. Section B - Please indicate the approximate height (in mPD) of the existing houses at palm springs.	Noted, and revised. (**Addendum 4**)
- Please clarify the reason why "Approx. +5.0" is shown.	Noted, and revised. (**Addendum 4**)
- The annotation for D2-6 seems not in a proper position. Please review.	Noted, and revised. (**Addendum 4**)
22. There are two "site boundary" annotations shown in all section plans. Please differentiate clearly site boundary of WRA and the residential portion, and application site boundary.	Noted, and revised. (**Addendum 4**)
23. Please consider adding the height of the fences shown on the drawings.	Noted, and revised. (**Addendum 4**)
Landscape Function Analysis Plan 24. Please update the drawing with the latest location of the RCHE.	Please find the updated Landscape Function Analysis Plan in **Addendum 5**.

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
25. According to RtC item (d) in FI-1, the private open space of 9,998m2 is included as part of the 21,203m2 (i.e. communal open space). However, the demarcation of the private open space in LMP shows that part of it is occupied by water body/pool and communal landscape on the Landscape Function Analysis Plan. Please clarify.	The minimum required open space of 1,817m^2, including the water body/pool as part of its open space function, is included in the communal open space totaling 21,203m^2.
Landscape Master Plan 26. Please update the LMP according to the latest Master Layout Plan (MLP). The latest location of the RCHE has not yet been reflected.	Please find the Revised LMP in (**Addendum 6**).
27. The site formation levels and building height levels shown on the plans on the LMP seems not tally with the MLP. Please review.	The Revised LMP has been updated to tally with MLP. (**Addendum 6**)
28. Please clarify the location of the 2m solid wall as one of the ecological mitigation measures.	Please refer to the Section D in MLP **Addendum 4**, which indicate the location of the 2m solid wall at the Residential Portion/ WRA boundary. The 2m solid wall is an ecological mitigation measure to screen off any potential disturbance impact from residential portion to WRA, at the operation phase.
Water Supply Impact Assessment 29. Please review if the surrounding planned developments have been taken into consideration.	Please find the updated report that has taken surrounding planned developments into consideration. (**Addendum 10**)
WSIA 30. Para. 1.2.1 – please clarify how the 48,716m2 of open greenery area is derived from.	The figure of open greenery is based on 30% minimum site coverage, as required in PNAP-152. It does not include water features, and is a conservative approach.
Environment Assessment	

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
31. Please be reminded to update the latest development parameters in the report, including but not limited to pages 1, 10 (parking space number) and 20 (table 2.8, the no. of storeys for Tower C2-1).	Note, Page 1, 10 (parking space number) have been updated with the latest development parameters. The no. of storeys for Tower C2-1 is 8, thus the number will remain unchanged in Table 2.8.
32. Figures 0.1 to 3.3 - Please update the plans with the latest MLP.	Noted, Figures 0.1-3.3 have been updated with the latest MLP.
TIA (draft FI dated 15.8.2025) 33. You are advised to attach the justifications provided for the person per flat ratio (via email dated 27.8.2025) to your R-to-C to TD's comments.	Noted and included in RtC to TD's comments.
EcoIA 34. The EcoIA indicated that the construction works of 3-storey houses abutting WRA will be commenced first. However, the phasing plan could not reflect such. Please clarify the phasing arrangement for the proposed 6 phases.	For rezoning application purposes, the current phasing plan is a preliminary proposal of the phasing arrangement, and its refinement is subject to detailed design stage. Nonetheless, to allow flexibility to commence the construction of the houses abutting WRA at an earlier stage of construction, the phasing plan can be modified at detailed design stage, to include delineation of sub-zones within each of the phases to commence portions on a need and priority basis. For example, Phase 1 can be delineated into sub-zones of Phase 1A (encompassing the houses abutting WRA to be constructed first) and Phase 1B (encompassing the medium-rise buildings and clubhouse could be constructed later).
Sewerage Impact Assessment Please review if a better drawing could be shown for Appendix B.	In response to the comment from EPD dated 2025.06.09, Appendix B has been removed. (**Addendum 12**)
SIA	

Comments from the District Planning Officer/Fanling, Sheung Shui and Yuen Long East, Planning Department (PlanD) (received 5.9.2025) (Contact person: Mr. Karen Chan, Tel.: 3168 4041)	**Response(s):**
35. Please clarify if the internal sewage pumping station currently shown at a roundabout in Figures 2 and 4, will be built underground. If affirmative, it is noted that the section plans and drawings have not reflected such.	The internal sewage pumping station will be an underground facility, and the label "underground" has been added to the legend in Figures 2 and 4. (**Addendum 12**)
36. Please review if the E&M facility block (reserved only for temporary sewage treatment plant (TSTP) under option 1) is required to be shown on Figures 2 and 4.	Noted and removed. (**Addendum 12**)
37. Noting that the TSTP is not required for option 2, please clarify if there is any plan for the use of this land if a TSTP is not required. Also, please clarify its long-term use after decommissioning of the TSTP.	If a TSTP is not required, the land is intended for landscape amenity or bicycle parking facilities, to provide convenience and facilities for the enjoyment of residents and visitors. It is intended for long-term use as green space.
Air Ventilation Assessment (AVA) 38. The plans are not updated with the latest MLP. Please ensure all plans and drawings should be updated with the latest MLP.	Noted and updated plans are in the (Revised) AVA. (**Addendum 9**)
39. Please review if the drawing on good design feature of proposed scheme could be presented in a better way.	Illustration of the good design features in the proposed scheme are revised for better presentation. (**Addendum 9**)
40. It seems that the distance of building separations shown on the drawing on good design feature of proposed scheme does not tally with Figure 3.1 of VIA on the proposed urban design consideration. For example, the BS2 on VIA is marked "approx. 11m" but the building separation on AVA is shown as "at least 15m-wide" Please clarify.	The distance of the building separations is updated to tally with Figure 3.1 of the VIA. (**Addendum 9**)

Response to Dept Comments of Urban Design and Landscape (received 17.5.2025)

Comments from the Chief Town Planner/Urban Design and Landscape, PlanD (received 17.5.2025) (Contact Person: Ms Nicole LEE; Tel: 3565 3945 (Urban Design Unit)/ Mr Samuel HUI; Tel: 3565 3957 (Landscape Unit))	**Response(s):**
Re: VIA (Attachment 3) and Visual comparison of proposed scheme and approved scheme (Attachment 5)	
i. Visual corridors (Figure 3.1) – as raised in our previous comment, some of the proposed visual corridors overlap with the building blocks under the indicative scheme and may not form continuous visual corridors.	Noted, the drawings and text have been revised to reflect this concern with mention of the blockage at the ground level and up to +21.1 mPD where proposed low-rise houses are located within the Visual Corridors and Building Separations. It should also be noted VC2 and BS2 extend above the height of the low-rise houses at the northern edge of the Proposed Scheme, an area which is partially occupied by existing and proposed tree planting within the landscape buffer and fish pond bunds when viewed from the photomontage vantage points. As such these visual corridors and building separations continues above a level of +21 mPD.
ii. Building separation (Figure 3.1) – as raised in our previous comment, some of the proposed building separation overlap with the building blocks under indicative scheme. The consultant may wish to indicate the width of building separation between relevant building blocks instead of continuous strip striking through the application site.	Noted the location and extent of the Visual Corridors and Building Separations have been reviewed to avoid overlap with the adjacent buildings.
iii. As raised in our previous comment, the applicant is reminded to prepare the VIA in accordance to TPB PG No. 41. For effect on public viewers, the effects of the visual changes can be graded qualitatively in terms of magnitude as substantial, moderate, slight or negligible in accordance to TPB PG No. 41.	Noted the assessment of the impact on public viewers have been reviewed in accordance with TPB PG No. 41.

iv.	The 'Proposed Scheme' is compared against 'Existing Situation' under attachment 3 while compared against 'OZP Compliant Scheme' under attachment 5. According to TPB PG No. 41, the VIA should take into account existing and planned development context; and consist photomontages showing the existing views and future views to the proposed development in relation to other existing and known planned developments. The applicant may wish to adopt 'OZP compliant scheme' as baseline for evaluation of visual impact.	Noted the emphasis of the assessment contained within the main VIA text has been revisited to make the approved S16 (OZP Compliant) Scheme, the baseline for comparison with the Proposed Scheme. This approach is consistent with some of the other assessments in the planning application and has been verbally agreed with Planning Department.

Response to Dept Comments of Urban Design and Landscape (received 19.06.2025)

Further comments received from UD&L (VIA) on 19.06.2025 in response to our (informal) Draft FI-3 made on 13.06.2025 through PlanD:	**Responses:**
I refer to your draft submission of VIA and RtoC dated 13.6.2025. UD&L's comments are appended below for your information and/or necessary action, please.	Noted.
Our observations/comments from urban design and visual perspectives are as follows. i. Sections 7 and 8 – current draft FI submission has presented two sets of results, i.e., approved application No. A/YL-MP/344 and proposed scheme. Since OZP compliant scheme (i.e. the approved application No. A/YL-MP/344) is adopted as baseline scheme, the appraisal of visual changes should compare the proposed scheme against the baseline scheme.	The relevant sections updated in the VIA. (**Addendum 7**) Noted the text and table have been rewritten to make a comparison with the baseline Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme. As such there is now only one set of impacts relating to the Proposed Scheme.
ii. Visual corridors (para. 6.2 and figure 3.1) – as raised in our previous comment, some of the proposed visual corridors overlap with the building blocks under the indicative scheme and may not form continuous visual corridors. Under the current draft FI submission, the long strip of VC2 mostly overlapping with the proposed houses within the application site as well as the	The relevant sections updated in the VIA. (**Addendum 7**) Noted the diagram now refers to a third category "Gaps between buildings (above a elevation of +21 mPD)" which accounts for the low-rise houses at the edge of the Application Site. The other categories Visual Corridors and Building Separations remain.

houses in the Royal Palm. The function and effectiveness of VC2 as visual corridor is in doubt.	
iii. Building separation (para. 6.2 and figure 3.1) – as raised in our previous comment, some of the proposed building separation overlap with the building blocks under the indicative scheme. Under the current FI submission, the long strip of BS2 claimed with width of approximate 14m. However, it is overlapping with the proposed houses within the application. The presentation of the building separation is misleading and inaccurate.	The relevant sections updated in the VIA. (**Addendum 7**) Please refer to the response to item ii above.
iv. The existing condition of the selected VPs should be provided for reference.	The relevant sections updated in the VIA. (**Addendum 7**) Noted as discussed, the photomontages now show the existing situation on a separate page as agreed.
v. Para. 2.4 – according to the RNTPC paper for application No. A/YL-MP/344, the residential development comprises 789 houses instead of units.	The relevant sections updated in the VIA. Noted the terminology has been changed accordingly.

Response to Dept Comments of Urban Design and Landscape (received 11.07.2025) CURRENT

Further comments received from UD&L (VIA) email on 11.07.2025 in response to our (informal) Draft FI-3 made on 27.06.2025 through PlanD:	**Responses:**
Please note the following input and comments on the enquiry from the consultant and the 3rd Draft FI with a revised VIA:- Input on the enquiry dated 27.6.2025 from the consultant relating to visual corridor and building separation a) According to Urban Design Guidelines in Chapter 11 of Hong Kong Planning Standards and Guidelines, view corridors allow views to distant object such as landmarks, ridgelines, water body, countryside, other natural features, etc. Instead of defining visual corridor according to its dimension, it is more important to focus on the visual connection of the visual corridor to surrounding visual resources. To facilitate wind	Noted.

penetration, building separation of not less than 15m in width is generally considered as an effective measure. Naming of the design measures, as well as function and effectiveness of design measures, should be justified by the project proponent	
Comments on the revised VIA b) We have no further comment on the revised VIA.	Noted. The revised VIA is in **Addendum 7**.
c) The consultant is reminded to suitably update the planning statement to reflect the revised VIA.	Noted. The updates to the planning statement, including VIA aspects are provided in **Addendum 8**.

Response to Dept Comments of AFCD (received 24.3.2025) [responded w Draft FI 2.5.2025]

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): Circulated to AFCD in our (informal) FI made on 2.5.2025**
General comments The design and operation of the WRA aim to mitigate the ecological impacts by the original development scheme. The proposed increase in no. of storeys will potentially bring additional disturbance impacts to the WCA during the construction phase and operation phase. There is currently not sufficient information to demonstrate that the WRA could mitigate the additional impacts from the revised development scheme. The applicant should quantify such potential additional impacts, elaborate clearly how the existing WRA and other measures proposed in original EcoIA could mitigate the additional impacts, and list out clearly any additional measures required under the new scheme.	The EcoIA have been revised accordingly. Information has been supplemented according to the corresponding specific comments. As stated in the approved EIA, "The restored wetland will: · compensate for the loss of habitat as a result of proposed development; · provide flood protection to the surrounding developed area; · provide life support by increasing habitat heterogeneity and thus increasing the biodiversity of the area; · provide ecological linkages between the site and the CA; set a buffer between the residential development (set-back) and the existing fishponds area to the north of the Project Area; and · increase the biodiversity of the site and encourage various forms of wildlife." In the approved OZP no. S/YL-MP/8, the zoning of this Project Site is intended to provide incentive for the restoration of

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>
	degraded wetlands adjoining existing fishponds through comprehensive residential and/or recreational development to include wetland restoration area. It is also intended to phase out existing sporadic open storage and port back-up uses on degraded wetlands. The implemented WRA is not only mitigation measure for the development but also has eradicated the open storage uses and restored 4.7ha wetland habitats ecologically linked to the WCA. The implemented WRA will act as a buffer between the existing wetland areas and the residential part of the project area until construction is completed.
Specific comments ***Planning Statement*** • Figure 8 - The phasing plan seems incorrect (e.g. high-rise buildings up to 22 storeys). Please correct for our further comment. - Please review whether alternative phasing such as completing the low-rise portion adjacent to the WRA in each of the phases first would further minimize the construction impacts. • Please provide a summary table comparing development parameters of the new scheme with the original schemes (e.g. A/YL-MP/344, A/YL-MP/229)	Please find the Phasing Plan (Revised) with correct information. As mentioned in the approved EIA report, during the construction of the residential areas, the WRA will act as buffer area to the wetland conservation area to the north of the Project Area to minimise disturbance impacts from the ongoing construction work. The prioritisation of construction phasing of the low-rise portion to the south of WRA will be considered as far as practical during the detailed design phase, to further minimize the disturbance impacts to the ecological sensitive habitat during construction. Noted. Please refer to the comparison table of the current rezoning scheme and the most recently approved original scheme (Application No. A/YL-MP/344).

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
EcoIA • Section 1.2 Key amendments also include increased estimated population. Please add.	Noted and section 1.2 have been revised. Please find the updated EcoIA
• Section 3.2.1 The numbers of storeys (12- and 18- storeys) are incorrect.	Noted and section 3.2.1 have been revised. Please find the updated EcoIA**.**
• Section 3.2.2 Please revise as – "Wetlands mainly the fishponds continuous and adjoining to the Deep Bay Area are designated under TPB PG-No.12C, as the Wetland Conservation Area (WCA) with the planning intention of protecting the integrity of the Deep Bay wetland ecosystem. Any development within the WCA should comply with the principle of "No-Net-Loss in Wetland". **<u>New development within the WCA would not be allowed unless it is required to support the conservation of the ecological value of the area or the development is an essential infrastructural project with overriding public interest. Any such development should be supported by an ecological impact assessment to demonstrate that the development would not result in a net loss in wetland function and negative disturbance impact.</u>** The Application Site abuts the WCA".	Noted and section 3.2.2 have been revised. Please find the updated EcoIA**.**
• Section 3.2.3 Please revise as - "The Wetland Buffer Area (WBA) is also designated under TPB PG-No. 12C to include a buffer of about 500m on the landward side of the WCA. Developments within the WBA are required to demonstrate that ecological impacts on the WCA will be minimized and any negative ecological impacts will be fully mitigated through positive measures. **"No-net-loss in wetland" principle also applies to WBA.** Residential developments which seek to replace existing open storage areas and/or include pond restoration projects ~~**should normally be given sympathetic consideration by the Board**~~ **may be**	Noted and section 3.2.3 have been revised. Please find the updated EcoIA.

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
given sympathetic consideration by the Board subject to satisfactory ecological and other impact assessments. The Application Site lies within the WBA".	
• Figure 1 The boundaries of WCA and WBA are problematic. Please check.	Figure 1 has been updated.
• Table 1 The total number of species recorded for bird (49 no.) does not match with the text (54 no.).	Noted and Table 1 have been revised.
• Table 2 - The title does not match with the content of the table. - Mammal data were provided but the concerned EM&A did not include mammal monitoring. Please clarify.	- Noted and Table 2 have been revised. - Although mammal monitoring is not required in the EM&A Manual, mammal monitoring has been conducted concurrently with other faunal surveys and data has been summarized in the monthly EM&A reports.
• Section 4.2 - It is claimed that ecological gain has been induced within the project are by comparing the number of species recorded in Tables 3 and 4 with Table 1. However, it appears that the set of numbers are not comparable given that the survey areas are different among the three tables. - - Please quantify the "ecological gain" induced by the WRA and review whether it could offset the potential additional impacts.	- Only Table 1 and Table 4 are relevant when considering the ecological gain under the Application Site. Table 1 summarized the number of species recorded within the entire Application Site, prior to the implementation of WRA; while Table 4 summarized the number of species recorded within the implemented WRA in the recent 12-months EM&A reports. Within the implemented WRA, the number of species and the number of species of conservation importance have been increased in all six fauna groups, except mammals; however, mammals recorded in the approved EIA included trapping records of Brown Rat and House Mouse which are human commensal species. The increase in number of species of conservation importance utilising the implemented WRA, is therefore considered as ecological gain. - As mentioned above, the increase in number of species of conservation

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	importance utilising the implemented WRA, is therefore considered as ecological gain. However, it's not the ecological gain itself offset the potential impacts. The approved EIA stated the implemented WRA will become the buffer between disturbance-sensitive waterbirds and construction works of the residential part.
• Table 5 According to the EIAO-TM, herpetofauna survey and butterfly survey should also cover March, and firefly survey should also cover December.	- 12-month ecological surveys have been conducted from April 2024 to March 2025, according to the EIAO-TM. The survey programme and findings have been updated.
• Section 5 - According to EIAO-TM, bird survey should be conducted at dusk and night in additional to early morning, bat survey should be conducted at dusk, odonate and butterfly survey at day and night, aquatic fish survey at day and night. - A 12-month ecological survey is normally required given that the site falls within WBA abutting WCA.	- Surveys have been conducted. Data have been included in the revised report. - 12-month ecological surveys have been conducted from April 2024 to March 2025.
• Section 6.2 - As the survey transacts did not cover the WRA, please specify that the survey findings do not cover WRA. - The percentage for defining major or minor flightlines is different for wet seasons and dry season. Please review.	- Figure 2 has been updated to show the transect covering WRA explicitly. - Noted and Section 6.2 has been revised. The percentage should be 15% as in previous approved submissions.
• Section 6.2 Dry Season Flightline Survey, last para. Please supplement that Flightline no. 2 is across the application site.	Noted and Section 6.2 has been revised.
• Table 9 The WRA is being managed for nature conservation purpose. But its ecological value is just moderate which is lower than that of the fishponds that might not be using for nature conservation purpose in the assessment area. Please review.	Noted and Table 9 has been revised.

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
• Section 8.3, 8.6 of EcoIA; Section 8.5.3 (e) of the Planning Statement	
- Several setbacks are mentioned though the submission. Please specify the number of storeys and height (mPD) for the "taller buildings" and "lower buildings", and provide a figure to illustrate the 50m/ 100m/ 120m/ 150m setbacks.	- Please find replacement page for p. 28, Section 8.5.3 (e) of the Planning Statement.
- Making reference to the approved EIA Report of San Tin/ Lok Ma Chau Development Node, the reduced density zone and exclusion zone of higher buildings (35mPD) are 400m and 200m respectively during the construction phase. Please compare the proposed setbacks under the current application with the above disturbance zones and review whether the setback distance is sufficient to minimize the disturbance impacts caused by the proposed taller buildings.	- Making reference to the approved EIA Report of San Tin/Lok Ma Chau Development Node, ≤35mPD has been considered as low-rise buildings. High-rise buildings under this Application only refer to the 10-storeys, which have been located further away from the WCA. The MLP has already illustrated the distance between these blocks and the WCA. Within the exclusion zones (EZ) and reduced density zones (RDZ) of the species under consideration lies an area of fishponds that have been exposed to anthropogenic disturbances for decades, including fishpond operation and adjacent village development. There will be no direct impact from this Project to those fishponds to the north of the Project Site; hence, it is anticipated wildlife utilisation will remain in place where wetland habitats are available; waterbirds have been recorded in these ponds close to the villages. In addition, there is anticipated enhancement in habitat quality after the implementation of SPS WCP. Considering the current Application alone, there will be increase in disturbance during construction of high-rise buildings (only those 10-storeys in this Application). One of the additional measures, the 10-storeys have been located further away from the WRA, as well as the WCA (also the proposed SPS WCP); also, those at the eastern portion of Project Site have been considered at less ecologically sensitive area (i.e.

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	farthest away from Deep Bay) and located at least 50m away from the fishponds. Disturbance sensitive bird species of conservation importance recorded during 12-month surveys, have been summarized based on the disturbance distance estimate methodology originally generated to assess construction phase disturbance impacts of the Lok Ma Chau Spur Line. Within the RDZ, 50% of the disturbance sensitive bird are predicted to be excluded. From the 12-month surveys, total of 27 bird species of conservation importance have been recorded; approximately 40 bird individuals were recorded per survey while 21 out of 27 species have been recorded less than 1 bird per survey. The five most abundant species recorded within the RDZ are Tufted Duck (mean number to be excluded= 17.58; number of surveys recorded= 3), Little Grebe (3.54; 11), Great Cormorant (7.83; 5), Chinese Pond Heron (2.25; 11) and Little Egret (2.92; 11). Within the EZ, where all relevant species are excluded, total of 16 bird species of conservation importance have been recorded; less than 20 bird individuals were recorded per survey while 10 out of 16 species have been recorded less than 1 bird per survey. The five most abundant species recorded within the EZ are Tufted Duck (6.00; 2), Little Grebe (2.67; 8), Chinese Pond Heron (2.00; 8), Little Egret (1.58; 8) and Pied Kingfisher (1.17; 6). When comparing the predicted number of individuals displaced for these species with the mean number per month in Deep Bay reported by HKBWS (Winter Count in Oct 2022-Mar 2023), in which 2037 Tufted Duck, 420 Little Grebe, 6269

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
	Great Cormorant, 414 Chinese Pond Heron, 1039 Little Egret and 25 Pied Kingfisher were recorded, the disturbance impacts to these species of conservation importance from this Project are anticipated to be minimal. Therefore, additional mitigation measures are not required. The approved mitigation measures during construction phase and operation phase are considered sufficient to minimize the disturbance impacts. Hence, no change is proposed to the design or operation of the WRA. - The reduced density zone and exclusion zone are illustrated in Figure 6a and 6b. The existing disturbance is also illustrated in Figure 6c.
• Section 8.3 - It seems that the original total number of residential units abutting the WRA (i.e. 13) is incorrect. Please check. - "Greater setback of these residential units from the WRA" is mentioned. Please provide a figure to illustrate the increase in setback distance as compared with the original scheme.	- Noted and Section 8.3 has been revised for clarification. The latest approved amendment(A/YL-MP/344) has already increase the total number of residential units abutting the WRA from 13 (as approved in A/YL-MP/229) to 37. In the current Application, the number of residential units abutting the WRA remain unchanged as 37. - Section 8.3 has been revised for clarification. The additional measure is the increase in width of green barrier, i.e. 5m buffer planting within the residential portion.
• Section 8.4 The sentence "Since no changes are proposed to the WRA, no additional disturbance impact is anticipated to the fauna species of conservation importance in the WCA" may be inappropriate. Even though there are no proposed changes to the WRA, additional disturbance may be resulted from increase in population and higher building height of the adjoining residential development. Please revise.	- Noted and Section 8.4 has been revised to include the clarification as stated in the aforementioned responses to the comment regarding the exclusion zone and reduced density zone.

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
• Table 8 There are two Table 8. Please update the table number.	Table number have been updated.
• Section 8 - Please evaluate the impacts by making reference to Annex 8 of EIAO-TM. - - Please list out clearly the potential additional impacts, the relevant measures proposed in the original EcoIA, and the additional measures proposed under the current application.	- Noted and Section 8 has been revised. - The relevant measures proposed in the original EcoIA has been listed out. The additional measures proposed has been stated explicitly.
• Section 9 The proposed amendments do not relate to the layout only but also the building height and number of units. Please revise the section to tally with the current application.	Noted and Section 9 has been revised.
• Figures - Please provide a figure showing the location of species of conservation importance within the assessment area on a habitat map. - - Please provide two figures (one for dry season one for wet season) overlaying the flightlines and building layout.	- Figure 3b has been prepared to show the location of species of conservation importance. - Latest MLP has been overlaid to Figure 4 and Figure 5.
<u>Comments from wetland management perspective</u> • Appendix 3 & Appendix 8 As shown in the architectural drawings (Appendix 3, Page 3, Cross Section B) and our on-site observation, the ground level of the development portion is much higher than its adjacent Wetland Restoration Area (WRA). The applicant shall be reminded to take into account the gradient differences when designing and evaluating the effectiveness of the "buffer planting" which is said to be provided to provide screening effect and to mitigate disturbance impacts to the WRA. While it is stated in S.8.3 of the EcoIA (Appendix 8) that "the buffer planting between the residential portion and the WRA, will be increased	- The existing ground level has already been considered. The parameters are presented in mPD. The whip buffer planting within WRA (refer to Wetland Restoration and Creation Scheme as approved by AFCD) will remain unchanged and according to the EP, the associated planting of tall trees and shrubs shall be completed before occupation of residential units of the Project. - In the current Application, the buffer planting of 5m width along the interface within the residential portion has been

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
from width of 2.5m to 5m.", the "whip buffer planting within WRA" as shown in Appendix 3 remains as 2.5m. Pls check and rectify.	proposed as additional mitigation measure, to further minimize the disturbance impacts during construction phase and operation phase of residential development.
• Section 8.7 of the EcoIA (Appendix 8): - Based on the latest design, the WRA would be totally encircled by existing drainage channel, private ponds and existing/planned residential development. The applicant should confirm if maintenance access connected to the WRA would be provided under the project to maintain accessibility of WRA for future site management. In particular, there is currently a lack of proper access to allow fish stocking and transportation of maintenance and monitoring equipment to the WRA. - Please clarify if additional measures (e.g. installation and maintenance of dog-proof fence) shall be adopted to "secured to prevent unauthorised human access and exclude dogs from the WRA".	- An existing access track of 3.5m(W) has been provided for WRA maintenance under current site condition. The existing access track will be remained for future site management/maintenance. No WRA maintenance access passing through the residential development shall be provided. - This comment is management issue related to management plan and EM&A of the implemented WRA. The WRA has already been fenced off from the fishponds to the north, preventing unauthorised human access and feral dogs. Unauthorised human access will be avoided from residential part.
• Appendix 5 - DIA, Figures 3 & 6 Our previous comments d.d. 5 Sep 2024 on Appendix 5 (re-appended below) remain pertinent: The "existing drainage" and the "proposed drainage" as shown in the figures are incorrect or misleading. In particular, we have no record of any "existing open channel" (in light blue in Figure 3)", "drainage system" (in grey in Figure 6), or flow path directing surface run-off from the development portion of the site to the "mitigation wetland". The application is strongly advised to revisit the accuracy of the information provided in the DIA and to avoid proposing any drainage system connected to or within the "mitigation wetland". Any surface runoff/flow from the development portion of the site should be collected and	After site visit on 27th March, existing open channel" (in light blue in Figure 3) and "drainage system" (in grey in Figure 6) has been removed in Figures 3 and 6. The current drainage path and proposed drainage system has been updated in Figure 3 and 6. No surface runoff/flow from the development portion of the site will be collected and diverted into the "mitigation wetland" to avoid pollution.

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
diverted outside and away from the "mitigation wetland" to avoid pollution.	
<u>Comments from Wetland Conservation Park's perspective</u> ***Planning Statement*** • Section 2.3.1(c): Please revise the item to read: "The proposed Sam Po Shue Wetland Conservation Park (SPS WCP) to the north of the Site."	Noted. Please find the replacement page 3.
• Section 2.4.3: Please revise the Section to read: "To the north of the Application Site is the ~~"Sham Po Shue Wetland Conservation Park" ("WCP")~~ proposed SPS WCP, made up of mainly large areas of continuous fishponds and ~~vegetation~~ wetlands."	Noted. Please find the replacement page 5.
• Section 6.3.1: Please revise the Section to read: "…San Tin Technopole is right adjacent to the ~~Wetland Conservation Park (~~"SPS WCP"~~)~~…	Noted. Please find the replacement page 15.
• Section 8.5: Please update this Section to summarise the potential ecological impacts of the proposed development to the SPS WCP.	Noted. Please find the replacement page 15.
• Section 8.5.3(e): Please clarify if the land use zoning of nearest fishponds from the project site should be "OU(WCP)", instead of CA.	Noted, the land use zoning of nearest fishponds from the project site should be "OU(WCP)". Please find the replacement page 28.
Appendix 4: Environmental Assessment • Background Please revise the first paragraph to read: "…to rezone the Application Site on the ~~draft~~ approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/~~7~~8…"	Revised accordingly.
Appendix 8: Ecological Impact Assessment • Section 3.2:	

Comments from the Director of Agricultural, Fisheries and Conservation (received 24.3.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): <u>Circulated to AFCD in our (informal) FI made on 2.5.2025</u>**
Please include the SPS WCP as one of the "Recognised Sites of Conservation Importance". Please create a new Section 3.2.6 that reads: "SPS WCP is located north of the Application Site and falls within the 500m AA. SPS WCP is the first Park to be developed under the WCPs System proposed under the Northern Metropolis Development Strategy. The Park shall be approximately 338 ha, covering fishponds and wetlands in the Lok Ma Chau, SPS and Mai Po areas. The SPS WCP shall serve multiple functions: 1) Enhance the ecological quality and biodiversity of the Northern Metropolis; 2) Compensate for ecological and fisheries impacts arising from development of San Tin Technopole, to achieve no-net-loss in ecological function; 3) Provide quality outdoor eco-education and recreation facilities for public enjoyment; and 4) Introduce ecologically friendly and modernized aquaculture in the Park. The Park will be developed in phases, with development of Phase 1 of the park to commence in 2026/27 the earliest for completion in 2031. The development of the entire Park is scheduled for completion by 2039 to align with the estimated time for full operation of San Tin Technopole." Please also be reminded to update Figure 1 accordingly.	- Noted and Section 3.2 has been revised to include the SPS WCP as one of the "Recognised Sites of Conservation Importance". - Figure 1 has been updated.
• Section 8: Please include the assessment of the potential ecological impacts of the proposed development to the SPS WCP, as well as proposed mitigation measure(s), as appropriate. We defer to CEDD and/or other Department(s) to comment on the interface issue between the SPS WCP and the proposed development from technical perspectives.	Noted and Section 8 has been revised to state explicitly mitigation measures for the SPS WCP. Potential impacts to the proposed SPS WCP have already been addressed in the approved EIA and previous applications, as these are the existing wetland habitats to the north of the Project Site, also known as the WCA (recognized sites of conservation importance) from the beginning of the assessment.

<u>Response to Dept Comments of AFCD (received 22.5.2025) [responded w Draft FI 23.6.2025]</u>

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD**
Specific comments: Please number every paragraph to facilitate our vetting.	Numbering has been added to the report.
Section 1.1.1 - The survey period stated here (i.e. Apr 2024 – Jan 2025) does not tally with Section 5.	Section 1.1.4 has been revised. The survey period is April 2024 – March 2025.
Section 1.2 - It is stated that "Proposed changes in layout of the internal road, landscaping and number of houses (not abutting the WRA) are not anticipated to have any impact on the WRA and the wetlands in the Wetland Conservation Area (WCA)". Please elaborate the justifications. - For the sake of clarity, please add a paragraph at the end of the section listing out all the other proposed amendments.	Section 1.2 has been revised for clarification.
Section 3.2.3 - Please check whether "WRA" should read "WBA" in the sentence "No-net-loss in wetland" principle also applies to WRA".	Section 3.2.3 has been revised.
Table 4.1 - Please supplement the survey period and specify whether the "Project Area" included WRA.	Added the survey period in the title and add the note for Table 4.1. The Project Area in the approved EIA included the WRA.
Section 4.2 - For clarity, please revise as "Assessment Area (excluding **~~WRA~~ the Application Site**)" as both WRA and the proposed development site are excluded.	Section 4.2.2 has been revised.
- As mentioned in the RtC, only Table 1 and Table 4 are relevant when considering the species abundance within the Application Site. Please advise the purpose of Table 3 and revise the relevant text accordingly to avoid confusion.	Table 3 is summary of EM&A monitoring data within the Study Area, i.e. the fishpond areas to the north of the Application Site, for comparison with data within the WRA which is managed for wildlife. Section 4.2.2 has been revised.
- Please revise "Compared to Table 1, all fauna group have been recorded increase in total number of species and species of conservation importance, utilizing the WRA." as there is decrease in total number of mammal species.	Section 4.2.2 has been revised. The number of mammal species recorded within the WRA is lower than that in EIA Study; however, it is not necessarily a decrease in utilisation. Small mammal trapping conducted in EIA Study is not required for the EM&A monitoring. Those four small mammal species

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	recorded by trapping in EIA Study, is less detectable with only transect survey due to the low occurrence.
- Please include the EM&A data of the target species of WRA.	EM&A data of target species of WRA has been included in Section 4.2.
Section 5 - It seems that some of the survey methodology deviated from the requirements under EIAO-TM.	Section 5 has been revised for clarification. Survey methodologies followed the requirements under EIAO-TM. As required in EIAO-TM Annex 16 Section 5.1.1, "*The main objective of the baseline study of an ecological assessment is* ***to provide adequate and accurate*** *ecological baseline information of the proposed development and its vicinity*". In Section 5.1.5, "*Optimal time of the year, minimum survey frequency and optimal time of the day for conducting the ecological baseline surveys shall be determined according to Appendix B, unless otherwise agreed by the Director*". In EIAO GN 7/2023 Underlying Principles Section 2.2, "*Unlike academic research,* ***the ecological baseline survey aims at collecting ecological data through sampling with reasonable efforts****. The actual sampling effort would generally depend on the physical size of the site, diversity of the habitats, flora and fauna, seasonal variation of the target taxa groups under study and availability of existing ecological baseline information. The project proponent, in consultation with environmental consultants where applicable,* ***should determine the appropriate amount of sampling efforts in each case based on their professional judgement and actual site situations****, such that the data obtained are representative to address both spatial and temporal variations*". In EIAO-TM Annex 16 Appendix B and EIAO GN 10/2023, "Dusk" is recommended as optimal survey time of day for bats, birds and fireflies. The dusk period shortly after sunset have been included in the night-time surveys. The corresponding survey methodologies have been revised for clarity.

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD
- Habitat and flora: The survey month and frequency do not tally with Table 5.	Section 5 has been revised.
- Bird: It is stated that "Any species found during the night-time surveys for other fauna have been recorded." Please review whether such night survey meets the requirements of EIAO-TM and EIAO Guidance Notes. Please also note that survey at dusk is also required by EIAO-TM.	In EIAO-TM Annex 16 Appendix B and EIAO GN 10/2023, "Dusk" is recommended as optimal survey time of day for bats, birds and fireflies. The dusk period shortly after sunset have been included in the night-time surveys. The corresponding survey methodologies have been revised for clarity.
- Wet and Dry Seasons Flightline Surveys: One vantage point was missing in Figures 4-5. Also, the survey month for dry season flightline survey does not tally with Table 5. Table 5 states that flightline surveys were conducted for 12 consecutive months (Apr - Mar), but the paragraphs about wet and dry season flightline did not cover the months of February and March.	
- Mammals: Bat survey at dusk is required by EIAO-TM.	In EIAO-TM Annex 16 Appendix B and EIAO GN 10/2023, "Dusk" is recommended as optimal survey time of day for bats, birds and fireflies. The dusk period shortly after sunset have been included in the night-time surveys. The corresponding survey methodologies have been revised for clarity.
- Herpetofauna: The survey month does not tally with Table 5.	Section 5.1.10 has been revised.
- Aquatic fauna: The survey frequency and survey month deviated from the EIAO-TM. Besides, it is stated that "Any nocturnal species found during night-time surveys for other fauna were recorded." Please review whether such night survey meets the requirements of EIAO-TM and EIAO Guidance Notes.	Ecological survey programme and section 5.1.12 have been revised for clarity. As required in EIAO-TM Annex 16 Section 5.1.1, "*The main objective of the baseline study of an ecological assessment is to provide adequate and accurate ecological baseline information of the proposed development and its vicinity*". Aquatic fauna potentially affected by the proposed amendment is anticipated to be limited to the temporary drainage channel within the development site, while the drainage system of the WRA will remain independent from that of the residential component. In addition, with reference to the literature review, for fish and aquatic invertebrate, no species of conservation importance was recorded within the

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	Application Site. The survey frequency is considered adequate to confirm the absence of species of conservation importance, thus no adverse impact.
- Fireflies: both dusk survey and night survey are required by EIAO-TM.	The dusk period shortly after sunset have been included in the night-time surveys. The corresponding survey methodologies have been revised for clarity.
Section 6.1, 7.1 - Development site is not considered as a type of habitat. Please revise.	Section 6.1, Section 7.1 and Figure 3a have been revised to re-categorize the existing habitat within the development portion of the Application Site.
Section 6 - Please provide tables listing out the species of conservation importance recorded during the surveys and relevant information (e.g. recorded within the WRA, development site or assessment area outside the application site; conservation status etc.) in the main text. Please also attach appendices of tables listing out all the species recorded during the surveys and relevant information.	Table summarised species of conservation importance recorded have been included in Section 6. Appendix A summarized the 12-month EM&A findings and Appendix B summarized the species recorded during 12-month ecological surveys.
- Please provide a habitat map showing the records of species of conservation importance.	Figure 3b is supplemented to include the records of species of conservation importance. Given the vagile nature of avifauna, it is not a standard practice to map this group on figures. This faunal group is highly mobile, thus providing indicative locations on the figure would be misleading. Furthermore, it would be impractical to map every single individual recorded, particularly for birds seen in flight. Species recorded in the habitats within Application Site/Assessment Area are presented in Appendix B of the EcoIA. Bat species was also recorded foraging in flight, hence both Japanese Pipistrelle and Short-nosed Fruit Bat were not mapped.
Section 6.2 Flightline data - There are discrepancies regarding the number of major flightlines and minor flightlines described in the text, tables and figures. Please double check.	Section 6.2 has been revised.
- For Figure 4, please confirm whether Fightline 7 started/ ended at Pond 51 without crossing the Application Site.	Please note that these flightlines are presenting the indicative direction of disturbance-sensitive waterbird individuals flying across the Assessment Area. Unlike flightline survey for egretry/ardeid roost, there is no starting/ending point at specific Pond.

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	Bird individuals recorded using Flightline 7, were flying between the fishponds to the north of the Application Site and further north towards San Tin fishpond areas. It is confirmed this route was not crossing the Application Site.
- For Figure 5, please confirm whether Fightline 7 started/ ended at Pond 51 without crossing the Application Site.	Please note that these flightlines are presenting the indicative direction of disturbance-sensitive waterbird individuals flying across the Assessment Area. Unlike flightline survey for egretry/ardeid roost, there is no starting/ending point at specific Pond. Bird individuals recorded using Flightline 7, were flying between the fishponds to the north of the Application Site and further north towards San Tin fishpond areas. It is confirmed this route was not crossing the Application Site.
Section 6, odonates and butterflies - Please supplement whether species of conservation importance have been recorded.	Section 6.2 has been revised.
Section 8 - In addition to indirect impact to WRA, there are other potential additional impacts, e.g. indirect impact to WCA. For clarity, please (1) first identify all the potential additional impacts due to the proposed amendments, (2) evaluate the significance of those additional impacts in the absence of additional measures with reference to Annex 8 of EIAO-TM, (3) then recommend additional mitigation measures where necessary and (4) finally assess the residual impacts after mitigation. Please revise the entire section accordingly.	Section 8 have been revised accordingly. Due to the increase in building height, potential additional impacts have been identified as follows: - Indirect impact to the WRA - Indirect Impact to Fauna Species of Conservation Importance - Impact to Bird Flightlines - Impact of Bird Collision - Indirect Impact to the WCA and proposed SPS WCP The potential additional indirect impact to the WRA, fauna species of conservation importance, the WCA (the proposed SPS WCP), are disturbances from light, noise, human activities. In absence of mitigation measures, the potential light impact has been evaluated as insignificant as there is no light-sensitive receiver within the WRA and fishponds to the north abutting the Application Site, i.e. significant population of fireflies and ardeid night roosts. The existing fishponds have been lit up with streetlights, operation lightings and surrounding residential areas. To avoid and/or minimize the impact from the Application Site, the approved EIA report has already included following mitigation measures:

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	- Limiting the amount of lighting in the construction site - Situating away from the WCA fishponds In absence of mitigation measures, the potential noise impact has been evaluated with reference to San Tin Technopole approved EIA report, based on predicted maximum Exclusion Zone (EZ) and Zone of Reduced Density (RDZ) for the disturbance-sensitive species. These have been illustrated in Figure 6a, 6b and 6c. Species potentially impacted under EZ and RDZ has been evaluated as minimal, as the number of individuals recorded was low to very low when compared to mean population in entire Deep Bay. To avoid and/or minimize the impact from the Application Site, the approved EIA report has already included following mitigation measures: - 3m site hoarding between the WRA and the construction works - the WRA will act as buffer between the WCA, and the construction works of residential portion - Good site practice within the construction site - Selection of quiet equipment - Prevention of feral dogs. Additional mitigation measures proposed under current application are summarized as follows: - Lighting unit including the building/streetscape should be directional and minimize unnecessary light spill by hooding or lower intensity, subject to detail design. - Avoid use of the percussive piling. - Scheduling the foundation works for the nearest building (C2-1) from the WCA, between mid-March to mid-November only, to avoid the period when the number of disturbance-sensitive species is the greatest. - Increase in width of buffer planting between the residential portion and the wetland areas, from 5m to 7.5m. - To further minimize the potential disturbance impact from operation of 10-storey buildings, the MLP has been revised to reduce one of the 10-storey at the eastern portion, such that the nearest 10-storey building will be located at least 80m away from the WCA (Figure 7).

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	The 6-/8-/10-storey buildings have been considered carefully to minimize the potential impact, by setback of at least 50m away from the WRA and the WCA (Figure 7). The 3-storey houses abutting the WRA and the WCA will be completed first. These will become physical barriers between the wetland and the remaining construction works.
Table 24 - Please move this table after the assessment of residual impacts.	The summary table has been moved accordingly.
- Please add a column on additional impacts to the left of the column on additional measures, and a column of residual impacts at the right. Please also revise the table title and the concerned description paragraph accordingly.	The summary table and description paragraph have been revised accordingly.
- Tam Kon Chau Egretry which has been abandoned since 2008. Please revise the table to reflect the above.	Revised accordingly.
Section 8.3 - 1st para.: Light is another potential indirect impact to the WRA. Please beef up.	There is no light-sensitive receiver in the WRA and fishponds to the north, e.g. significant population of fireflies and ardeid night roosts. Section 8.4 has been supplemented accordingly.
- 2nd para.: the sentence "The buffer planting has been postponed due to the need to retain the existing site boundary and noise barrier, and it will be completed prior to the operational phase of the Project (refer to EP-311/2008/C). No additional mitigation measure was required for postponing the buffer planting." is confusing. It seems that such arrangement has already been stated under the EP and is not a new change under the current application. Please revise to reflect the above.	Section 8.4 has been revised accordingly.
- 3rd para.: The meaning of this paragraph is not clear. Is it about the residential units abutting the WRA? Does the "greater setback" refer to the increase in buffer planting from 2.5m to 5m? Please specify that the residential units abutting the WRA would increase from 2-storeys to 3-storeys and state the increase in house units due to such change. It is stated that "All measures to	For clarity, "setback" has been removed. The proposed increase in width of buffer planting along the interface of WRA and the residential portion. Mitigation measures in the approved EIA report have been listed out.

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screen the WRA from the residential proportion of the project included in the approved EIA are retained." Please list out those measures.	
- 4th para.: It is stated that "The proposed high-rise buildings (i.e. 10-storeys) have been considered carefully the alignment and orientation. More than 50m setback from the nearest WCA at the eastern part of Application Site is proposed while including the WRA and Palm Springs, there are more than 100m setback between the high-rise buildings and the WCA to the north and to the west." Please provide a figure to illustrate the aforesaid setbacks with clear labels. The figure mentioned in the RtC does not provide the requested information clearly. Please move this para. to Section 8.7 as it is related to the impact to WCA rather than impact on WRA.	Added Figure 7 showing the nearest 6-/8-/10-storeys from the WCA. The paragraph has been moved accordingly.
- Please evaluate the indirect impact by the 6-/8-/10-storeys buildings on WRA. Please specify the distance between the 6-/8-/10-storeys buildings and the WRA and provide a figure to illustrate these distances with clear labels.	Added Figure 7 showing the nearest 6-/8-/10-storeys from the WCA. Further clarification for evaluation of the WRA buffering function has been supplemented.
- Please provide evidence to demonstrate that the increase in buffer planting by 2.5m only could screen out the additional disturbances (e.g. light, noise human distance) due to the increase in building height and population in the residential portion.	Figure 7 and architectural cross-section drawings showing the 6-/8-/10-storeys building, have been carefully oriented with setback from the WRA and WCA. The increase in 2.5m buffer planting is additional mitigation measures. The potential additional disturbance due to the increase in building height is evaluated with reference to STT in Section 8.5. It is not anticipated increase in population will result in additional disturbance as the human activity will be limited within the residential portion.
- Please explain clearly regarding the potentially increased disturbances (light, human activities, noise etc.) to WRA due to construction activities of higher buildings in the residential portion.	The WRA was designed to provide a buffer between disturbance to WCA and construction works in the residential portion. To further minimise the potential disturbance to the WRA, a 3m site hoarding will be maintained between the WRA and the construction works, noise impacts will be minimised through good site practice within the construction site and the selection of quiet equipment, minimisation of night-

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	time lighting and location of this away from the wetlands and prevention of dogs from accessing the construction site will also be implemented. To minimise the potential disturbance to the WCA during the construction phase, the construction programme for foundation activities involving bore piling for Tower C2-1, located within the WCA buffer zone, will be scheduled between mid-March to mid-November only. All construction work will be screened from adjacent fishponds by 2.4m visual barriers, designed with a colour tone that matches the environment prior to the construction to minimise the potential disturbance to waterbirds. Noise impacts will be minimised through good site practice and selection of quiet equipment, such as avoiding the use of percussive piling. Night-time light disturbance will be minimised by no night work within the WCA buffer zone, limiting the amount of lighting in construction site, preventing lighting pointing directly toward the WCA and positioned the lighting as far from the WCA as possible.
Section 8.4, 3rd para. - It is stated that "the eastern portion of Project Site have been considered at less ecologically sensitive area (i.e. farthest away from Deep Bay)". However, it seems that the southern portion of the Application Site is even farther away from Deep Bay. Please explain the ecological merit of the stepped design from 3-storey houses abutting the WRA, 8 to 10-storeys (+35mPD to +42mPD) in the middle and 6-storeys buildings (+28mPD) along the southern boundary, as compared to a stepped design from 3-storey houses abutting the WRA, 6 to 8-storeys in the middle and 10-storeys buildings along the southern boundary.	The eastern portion itself is located farthest away from the Deep Bay and directly adjacent to existing developed areas, making it a less ecologically sensitive area. The potentially impacted area has been assessed, and the impact severity is evaluated in Section 8.5. In addition, ecological merit is not the only criterion when considering the alignment and orientation of the stepped design. From the standpoint of better urban design, the stepped building height would form a variation of building height to create visual interest, rather than a monotonous building form with bands of similar building heights. From the standpoint of land use compatibility, the lower building height of 6-storeys along the southern boundary is to minimize the visual impact, and to establish a reasonably compatible building form, scale and height to the surrounding existing low-rise houses, with trees and landscaping.
Section 8.4, para. 5-6 - The data do not tally with Appendix B. Please double check.	Checked with the Appendix (updated as Appendix C). The data is correct.

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Section 8.4, para. 7 - The estimated number of birds to be potentially displaced for Pied Kingfisher represented about 6% of the mean number per month in Deep Bay, and those for Tufted Duck, Little Grebe and Chinese Pond Heron were over 1%. It is not convincing to say that the disturbance impacts to these species of conservation importance from this Project are anticipated to be minimal. Please review.	Simple percentage comparison is not appropriate for evaluation, when considering the difference in population/occurrence/habitat preference of these species. Also, the predicted maximum distance of Exclusion/Reduced Density for each of these species are different, as presented in Appendix C, while Figure 6a and 6b are illustration of the highest maximum distance only. The two fishponds fall within predicted Exclusion Zone (EZ) are inactive. Disturbance-sensitive waterbirds foraging in the adjacent fishponds may temporarily visit these inactive ponds due to flushing from elsewhere. Tufted Duck generally occurs in large flocks but was only recorded on two survey within the predicted Exclusion Zone. Further elaboration and clarification have been included in Section 8.5.
Section 8.4 - Please explain clearly the potentially increased disturbances (light, human activities, noise etc.) due to increased population and building height of the residential portion during the operation phase.	Section 8.5 have been supplemented accordingly.
Table 25 - It is not clear what is the target of the impact (“developed area” ?) being evaluated.	The table has been revised. The table is evaluation of potential impact to fauna species of conservation importance.
Section 8.5 - Please clarify that the current information refers to dry season flightlines, and supplement with information for wet season flightlines.	Section 8.6 have been revised and supplemented accordingly.
- The flightline data do not tally Section 6.2.	Both Section 6.2 and Section 8.6 have been revised.
- 2nd para.: It seems that the assessment is based on a low-rise development proposal, which is not the case under application.	Section 8.6 have been revised and supplemented accordingly.
- Although there seemed to be only one flightline over the Application Site during both wet season and dry season, this flightline accounted for 10.09%/8.19% of the total flightlines recorded during the wet/dry season. This flightline passed	Please note that these flightlines are presenting the indicative direction of disturbance-sensitive waterbird individuals flying across the Assessment Area. Percentages presented in the table are comparison

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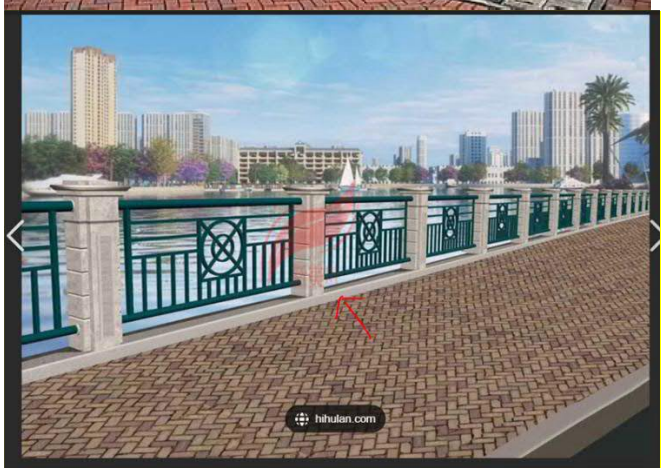
through the middle of the Application Site where the 10-storeys buildings are located. 94%/77% of the birds flew below 40m during the wet/dry season and will be impacted by the 10-storeys buildings. Please review the impact significance on bird flightlines, and review whether the building layout could modify to further minimize the impact.	between flightlines recorded from the two vantage points within the Assessment Area. The potential impact severity should be evaluated based on the mean number of birds per survey hour, which is also presented in the summary tables. In addition, both in wet season and dry season, the flightline across the Application Site has been evaluated as minor flightline with low utilisation. Comparing to the mean population (hundreds or thousands) of each species recorded in entire Deep Bay, mean number of 0.07-2.21 bird individuals of ardeids were recorded flying across the Application Site; mean number of 3.71-8.83 Great Cormorants were recorded flying across the Application, while the survey finding also showed their preference on flying across fishponds/other wetlands than flying across the Application Site. Therefore, the impact to flightline is not anticipated to be significant. During the surveys, relative height above ground (this was measured relative to a 10m tall noise barrier on site, with height recorded in 10m increments such that 1x = 10m, 2x = 20m etc.) were recorded. The 10-storey buildings (42mPD) are approximately 35m height above ground. The percentage in the comment is not reflecting the number of birds utilising the flightline. Approximately 7-10 bird individuals per survey hour were recorded flying at height of 40m or below in the flightlines surveys, which were conducted during the peak activity of the day, i.e. early morning including the dawn. During Further clarifications have been supplemented in the evaluation.
Section 8.6 - Please specify what do the 150m distance (from where?) and the wetland habitat (WRA?) refer to.	Section 8.7 has been revised.
Section 8.7 - 1st para.: Please specify the distance between the 6-/8-/10-storeys buildings and the WCA and provide a figure to illustrate these distances with clear labels. Then, please assess with supporting evidence whether the WRA could still provide adequate buffering function under the revised development scheme.	Added Figure 7 showing the nearest 6-/8-/10-storeys from the WCA. Further clarification for evaluation of the WRA buffering function has been supplemented.

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD
- The shortest distance between the 10-storeys building is only about 50m away from the fishpond of moderate to high ecological value within WCA. Please review whether the building layout could be modified to further minimize the disturbance impact on WCA by the 10-storeys buildings.	With regards to the concern in this comment, the MLP has been reviewed and revised, to further minimize the disturbance impact. The nearest 10-storeys building at the eastern portion has been lowered to 8-storey building. As shown in Figure 7 (attached), the nearest 10-storey will be approximately 80m away from the WCA, which is more than double of the distance between nearest wetland and the high-rise zone in STT. As shown in Figure 6c, the maximum predicted disturbance zones from 10-storey buildings without mitigation measures, none of the fishponds within the WCA will fall within the exclusion zone. While in Figure 6b, the maximum predicted disturbance zones including the low-rise buildings without mitigation measures, will be effectively minimized by the mitigation measures as in approved EIA report and the additional mitigation measures proposed in the current application, including but not limited to increase in width of buffer planting, use of quiet equipment, etc.
- 2nd para.: Please provide more details about the measure of avoiding night-time lighting and glare in the approved EcoIA. Does it refer to the construction or operation of the residential portion?	Section 8.8 have been revised. The mitigation measures for light impact in approved EcoIA refers to the construction phase. The mitigation measures for both construction and operation phase of the residential portion have been listed out.
Section 9 - It is stated that "The setback of 3-storey detached house adjacent to the implemented WRA, remains unchanged." This contradicts with Section 8.3.	Section 9, conclusion has been revised accordingly.
- Please update Section 9 after updating other sections.	Section 9, conclusion has been revised accordingly.
Comments from the management perspective of WRA: RtC, Sections 8.1-8.4, 8.7 & 9 of the revised EcoIA (Attachment 9) & Appendix 3 of the last submission:	
- According to Figure 6, the Wetland Restoration Area (WRA) is fully located in the Exclusion Zone during both the	As shown in Figure 6a, during construction of residential portion, the WRA is fully located within the predicted maximum Exclusion Zone. This is one of the

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD
construction and operational phases. Please revisit the indirect impacts on the WRA and hence the effectiveness of the WRA serving as an ecological mitigation wetland under the subject project.	mitigation measures in the approved EIA report, the WRA will act as buffer between the construction site and the WCA. Potential additional impact to the two inactive ponds adjoining the eastern portion, has been evaluated. Figure 6b has been checked and revised. The WRA is not fully located in the predicted maximum Exclusion Zone. Figure 6c has been added to illustrate the predicted maximum Exclusion Zone from the 10-storeys buildings, which have been located away from the WCA as far as possible, to minimize the disturbance impact.
- The assessment on the potential direct and indirect ecological impacts on the mitigation wetland / WRA is missing from Table 24. Please supplement.	The assessment on the potential direct and indirect ecological impacts on the has been added to the summary table.
- Please specify in relevant sections the change of ground level and the resulting building height of the proposed residential development portion (against the ground level of the WRA portion) as compared with the approved EIA / S16 schemes, and whether such changes would results in indirect impacts on the WRA that requires mitigation.	Parameter used is “mPD”. There is no change in ground level of residential portion. It is the same, +6.8mPD, with reference to approved S16 scheme, A/YL-MP/344. Hence, no additional impact on the WRA is anticipated.
- It is stated in S.8.4 that "a 3m site hoarding will be placed between the WRA and the construction works for residential area so that a visual barrier is maintained between the construction work and the wetland habitats". Please clarify if such hoarding would be built and maintained in the development portion during both the construction and operational phases, and review its effectiveness in screening the visual and ecological indirect impacts on the WRA taking into account the elevation differences between the WRA and the residential development. This also applies to the proposed provision of buffer planting in between the WRA and the buildings.	Parameter used is “mPD”. There is no change in ground level of residential portion. It is the same, +6.8mPD, with reference to approved S16 scheme, A/YL-MP/344. Hence, no additional impact on the WRA is anticipated. As stated in the approved EIA report, perimeter wall will be built at the interface between the WRA and the residential area, to ensure no public access to the WRA. The 3m site hoarding is stated in the Environmental Permit, for the approved scheme with +10mPD houses along the boundary of the WRA, while the WRA is at +5mPD. This kind of site hoarding is to screen the major source of disturbance during construction, i.e. the site workers, while the noise from work will be further minimized by quieter construction method and equipment. The buffer planting between the WRA and the adjoining 3-storey houses, is also considered as

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD
	effective, with reference to the adjacent existing residential area. Buffer planting with total of 7.5m in width along the interface is anticipated to be effective in screening the indirect impact to the WRA. The WRA design also considered the potential impact, hence the microhabitat closer to the residential portion has been planted with continuous reed. Further clarification has been supplemented to Section 8.5 for the evaluation of the potential impact.
- The "management issue related to the management plan and EM&A of the implemented WRA" mentioned in the RtC and failure to meet the management objectives, mitigation requirements and targets set out in the Wetland Restoration Plan would render the WRA inadequate to mitigate the impacts identified in the subject EcoIA. Please review the existing performance of the WRA and reconsider if additional measures shall be adopted with reference to the 5-yearly review reports submitted by the project proponent under EIAO.	The current performance of the WRA has been reviewed and included in Section 4.2. The current performance could be enhanced with management actions, instead of additional mitigation measures in the residential portion.
- As advised in the RtoC, the whip buffer planting in WRA will be kept unchanged, while an additional 5m buffer planting will be provided in the residential portion. Please clarify if the subject additional buffer planting is located in the approximate 7m "garden" area between the WRA and "house type A" in the architectural drawings (Appendix 3 of last submission, Page 3, Cross Section B).	The 5m buffer planting within residential portion, has been illustrated in the architectural cross-section drawing.
- Please overlay in relevant figures the design and location of the "existing access track of 3.5m(W) provided for WRA maintenance" on the proposed residential development plan. By our on-site observation, the current entrance access of WRA did not satisfy the condition as stated in the RtC. We understand from the existing management agent of the WRA that some of the habitat management actions listed in the WRP, including fish stocking, removal of exotic trees along the fringe	Noted. The design and location of the access track is subject to detailed design at a later stage.

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD
of the WRA and water drawdown during wintering season were hindered.	
RtC on DIA & Figure 6 - In view of the significant level differences between the WRA and the development portion and the potential increase of runoff Curve Number (CN) value in the development mentioned in the DIA, please clarify in relevant sections and Figure 6 if and how the surface runoff/flow from the development portion would be collected and diverted away from the WRA to avoid pollution and impacts on the created wetlands (e.g. soil and bank erosion, sedimentation, damage to wetland habitats after heavy rain) as well as the irrigation structures currently maintained in the WRA. Provision of additional drainage system within and along the northern end of the development portion to avoid overflow to the WRA should be considered. The cross-section of the area in between the WRA and the development portion should also be provided in Figure 6.	A bund wall (or solid protective barrier) and a surface channel are proposed along the boundary between the residential area and WRA, to prevent pollution and impacts on the WRA and its irrigation structures caused by surface runoff from the residential portion. The bund wall will stop the runoff from flowing into the WRA and ensure it is retained in the residential area until drained through the surface channel. The examples of bund wall or solid protective barrier are shown below.   The design of surface channel will be considered at the detailed design stages, and ensure there would not be runoff/flow into the WRA. The cross-section of the area in between the WRA and the development portion will be provided in Figure 6.
Comments from the perspective of Sam Po Shue Wetland Conservation Park:	

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD**
Planning Statement Section 6.3.1: 1. The San Tin Technopole Outline Zoning Plan No. S/STT/2 was approved on **20 September 2024**, please revise the first sentence accordingly.	Noted. Please find the replacement p.16 of the Planning Statement in Addendum 3.
Section 8.5: 2. It seems like only part of Section 8.5.3 is shown in the revised Planning Statement, and our previous comment was not addressed. Please update this Section to summarise the potential ecological impacts of the proposed development to the SPS WCP.	Please refer to the revised EcoIA, Section 8 (Addendum 2), for a summary of the potential ecological impacts of the proposed development to proposed SPS WCP.
Appendix 8: Ecological Impact Assessment Section 8.4: 3. Anticipated enhancement in habitat quality after the establishment of SPS WCP is irrelevant to whether the development would cause indirect impacts to fauna species of conservation importance. Please remove the last sentence accordingly.	The sentence has been removed.
Section 8.7: 4. The EcoIA made reference to that of the San Tin Technopole (STT), while it is noted that the distance between the proposed high-rise buildings (10-storey buildings) in the application site seems to be much closer to the SPS WCP than those that are of similar heights in the STT to the SPS WCP. The EcoIA failed to address the additional impacts of the proposed amendments to the SPS WCP. The conclusion of "minimal impact to the SPS WCP" is not justified. Please revise accordingly.	The EcoIA made reference to that of STT, as requested by AFCD comment in last RtC. The comment here said, "the proposed high-rise buildings (10-storey buildings) in the application seems to be much closer to the SPS WCP than those similar heights in the STT to the SPS WCP", is not accurate. With reference to Figure 10.8 in approved EIA of STT, the illustration of indirect disturbance from proposed development on wetland habitats. The high-rise zone (>35mPD) to the nearest SPS WCP is only 35m NBA in between, i.e. near Tam Kon Chau Road; while the nearest high-rise building under current application has been considered carefully at least 50m away from the fishpond areas. Nonetheless, both low-rise zone and high-rise zone of STT included direct loss of wetland area to be compensated. However, for the current application, the direct wetland loss has already been compensated with the implemented WRA, approximately one fourth of the Application Site, while the proposed residential

Further Comments (received 22.5.2025) from AFCD (Contact person: Dr Azaria Wong; Tel: 2150 6932)	**Response(s): circulated (Informal) Draft FI Submission (23.6.2025) to AFCD**
	portion is sandwiched between existing residential areas, i.e. Royal Springs, Palm Springs and Mai Po San Tsuen. The additional impacts has been evaluated in Section 8.5 to conclude the anticipated impact is minimal.
Section 9: 5. Please revise the first paragraph to read: "…the implemented WRA, ~~**and**~~ wetland habitats in the WCA**, and the proposed SPS WCP.**"	Section 9 has been revised.
6. Please revise Section 9 based on comment #4 above.	Please see response to comment #4 above. Section 9 has been revised.
We defer to CEDD and/or other Department(s) to comment on the interface issue between the SPS WCP and the proposed development from technical perspectives.	Noted.

Response to Dept Comments of AFCD (received 11.7.2025) [responded w Draft FI 22.8.2025]

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
General Comments In the latest proposal, the 10-storey building closest to the WCA is proposed to be lowered to 8 storeys, and the bore pilling activities for this building will be restricted during winter. However, there is still no convincing evidence showing that the potential ecological impacts from the increased building height and higher population density of the latest development scheme could be mitigated adequately.	**Addendum 3** In Section 8 of the revised Ecological Impact Assessment (EcoIA) (enclosed), potential additional impacts from the increased building height and higher population density, in terms of potential indirect impacts (including noise, light and human disturbance) are evaluated as **insignificant**, especially in view of the low number of potentially impacted wildlife. The original mitigation measures will be applied in the latest scheme, according to the approved EIA (AEIAR-120/2008), including: - A 3 m site hoarding will be placed between the WRA and the construction works for residential areas so that a visual barrier is maintained between the construction work and wetland habitats. - Night-time light disturbance will be minimised by limiting the amount of lighting in the construction site, and by situating this away from the WCA fishponds. The lighting units will be directional and hooded where appropriate to minimize unnecessary light spill. - Orientation of the 3-storeys houses abutting the WRA, is such that all will face towards the residential area, eliminating the need for public access next to the WRA. - As human activity will be greatest at the front of the buildings, the potential sources of impacts to waterbirds (including noise and night-time lighting) will be directed/concentrated away from the WRA; therefore, impacts to waterbirds will be minimised. - Good site practice within the construction site, selection of quiet equipment to minimise noise disturbance, minimisation of night-time lighting and location of this away from the wetlands, and prevention of human and dogs from accessing the construction site.

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	Nonetheless, additional mitigation measures that have been proposed in the latest development, include: - For the 6-/8-/10-storeys buildings, the proposed setback distances from the WCA as shown in Figure 7; - Restriction on the duration and method of construction activities on-site; - lighting design of building/ streetscape (subject to detailed design) to minimize disturbance; - wider buffer planting and 2m-high solid wall at the interface of WRA and residential portion.
	The planning applications No. Y/YL-NSW/7 and Y/YL-NSW/8 for the same "OU(CDWRA)" zone as our application site, were recently approved in October 2023 and February 2025, respectively. Both are located adjoining the WCA (and the proposed Nam Sang Wai Wetland Conservation Park), with higher plot ratio and all high-rise (15 to 29 storeys or +61.5mPD to +115mPD) domestic towers. In the approved planning application Y/YL-NSW/7, it was proposed plot ratio of not more than 1.5, with seven 15-storeys (or +53.95mPD) towers and a Wetland Restoration Area. The nearest two towers are 30m of landscape buffer from the WCA and the nearest tower from the WRA is 6m landscape buffer. - In the approved planning application Y/YL-NSW/8, it was proposed plot ratio of not more than 2.2, with 24 towers in stepped profile from 15-storeys (closer to WCA) to 29-storeys (furthest away from WCA) and a Wetland Restoration Area. The nearest six towers are approximately 30m from the WCA (and the proposed Nam Sang Wai Wetland Conservation Park), with part of the Wetland Restoration Area in between. In both RNTPC Paper No. Y/YL-NSW/7B and RNTPC Paper No. Y/YL-NSW/8A, Comments of the Director of Agriculture, Fisheries and Conservation, stated "has no objection to the application from nature conservation point of view."

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
~Continued	In comparison with this Application, the proposed plot ratio is no more than 1.3 with stepped-building height profile from 3-storeys to 10-storeys. The nearest high-rise building (10-storey) is 80m away from the WCA. Only 3-storeys houses are proposed abutting the WRA and the WCA at the eastern portion. All 6-/8-storeys building (low-rise <35mPD) have been proposed with at least 50m setback from the WRA, while most of these buildings are actually at least 100m away from the WCA. The high-rise buildings (10-storeys) are located furthest away as possible from the wetland habitats, at the same time optimizing the development potential of the residential portion, and minimizing the visual impact on the immediate low-rise neighbourhood developments. The potential noise, light and human disturbance at lower storeys will be effectively screened off by the 7.5m wide buffer planting and 2m-high solid wall at the interface between the WRA and residential portion. At higher storeys, the potential impact will be further mitigated as the proposed setback of 80m to 215m has significantly increased the distance between the domestic sources of disturbance and the wetland habitats. The potential additional impacts are assessed as insignificant, while mitigation measures have been proposed in addition to those committed in the approved EIA report (AEIAR-120/2008). The potential ecological impacts would be mitigated adequately. It is our understanding that the WRA is not in a deteriorating state. Refer to EcoIA Section 4.2.2., based on literature review, the WRA habitat size has remained the same, and its habitat function has already induced ecological gain within the Application Site. The WRA consistently attracts higher number in species of conservation importance, than it's been originally constructed and established for. Three target species, i.e. Chinese Pond Heron, Eastern Cattle Egret and Little Egret have been monitored monthly. It is not appropriate to conclude the WRA is not effective only based on the reduction in abundance of Eastern Cattle Egret (EcoIA Section 4.2.3), one of the

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	three target species. The reduction in abundance of Eastern Cattle Egret is not site-specific, i.e. related to any construction activities of the Project. The target level should be reviewed as the baseline data (dated April 2005 – June 2006) in the approved EIA has been nearly 20 years ago; however, it is more appropriate to review the target level in the corresponding Environmental Permit submission, under the EIAO. The 2nd 5-yearly review for the Wo Shang Wai WRA is in progress, and yet to be published. However, based on site observations by the NGO managing the current site and conduct regular ecological monitoring within WRA and outside WRA, the car park mentioned with increase in traffic flow is marked with circle in the map below, and along the Tam Kon Chau Road. The nearest egretry to Wo Shang Wai is Mai Po Village, where there also showed a declining trend in Little Egrets nests from 2018 with 99 nests to 2022 with 73 nests, and dramatic decline in ardeids nests in Deep Bay in 2022 (HKBWS, 2022), which indicated a general decrease in breeding ardeids in the Deep Bay.  Some Little Egret data extract from the HKBWS for your reference: **The number of Little Egret nests at surveyed colonies in Hong Kong in 2017 - 2022** Year / Mai Po Village (MPV) 2017 99 2018 99 2019 91 2020 70 2021 54 2022 73

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	To supplement a bit on the low record of Eastern Cattle Egret, it is noted that during the baseline ecological surveys for the EIA report, Eastern Cattle Egret had been occasionally recorded in 4 counts only within the Project Area (i.e. 1 count with 5 individuals on 16 May 2005, 1 count with 1 individual on 15 May 2006, 1 count with 2 individuals on 25 May 2006, and 1 count with 14 individuals on 27 June 2006) out of the 20 bird surveys carried out. The current target level of Eastern Cattle Egret (i.e. 1.3, based on the Baseline Annual Mean), may be over-rated due to a single count of 14 individuals on 27 June 2006. Furthermore, the population of Eastern Cattle Egret in Hong Kong comprise largely migrant and a small breeding population. From 2013 to 2022 recorded in the long-term egretry survey undertaken by Hong Kong Bird Watching Society (HKBWS), which shows the northwest New Territories is not always attractive to Eastern Cattle Egret for breeding. Although the record showed that this species has gathered in the Deep Bay area for breeding in recent years, it is noted that the majority of nests were found in Mai Po Mangrove colony of the Deep Bay, which is not in the vicinity of the WRA. In view of the above, the target level of Eastern Cattle Egret is not met mainly due to the over-rated target level which was skewed by one single record during the baseline stage on the base of a relatively low number and infrequent records, which is the general occurrence pattern of the species in the WRA and its periphery Tam Kong Chau fishpond area throughout the baseline and review period. At this current rezoning stage, the WRA has room to improve its performance based on an (out-dated) baseline data on the target species; however, the project is still under construction phase, and is considered acceptable for the target species levels to have not been achieved. However, should this situation continue, a review of the management of the WRA and adaptive management steps will be required. In addition, the WRA is still effectively performing as an ecological mitigation wetland, as demonstrated with increase in diversity and abundance of species of conservation importance that is connected to the WCA, as a single unfragmented wetland. The additional measures in

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	this respect could be considered at the detailed design and/or EP submission stages, where the target levels could be reviewed.
In view of the proposed building changes in the subject application (i.e. changes in height and arrangement), the additional indirect impacts on the WRA should be reviewed and addressed. The fact that the WRA is created to serve as an ecological mitigation wetland to compensate for the loss of wetlands under the project (but not solely as "a buffer areas between the WCA") is also omitted in S.8.4.4. The project proponent should revisit the indirect impacts on the WRA and hence the effectiveness of the WRA in serving as an ecological mitigation wetland for the subject project.	The WRA serving as an ecological mitigation wetland was not omitted in the EcoIA. The evaluation in S.8.4.4 merely reiterates that in the approved Wetland Restoration Plan appended in the approved EIA report (AEIAR-120/2008), " Because the proposed wetland restoration site and the area proposed for residential development is of such limited ecological value, it is not considered that construction period ecological mitigation measures are required." In other words, it is relevant to note that significant portion of the Application Site was long occupied by brownfield operation with degraded ecological value, which is the planning intention of the OU(CDWRA to eliminate the brownfields and restore the wetland areas. Nonetheless, the ecological mitigation measures during construction phase of residential portion have still been proposed in this application, based on the latest baseline condition as additional mitigation measures. Based on the literature review, the WRA has already induced ecological gain within the Application Site. The WRA consistently attracts higher number in species of conservation importance, than it was originally been constructed and established for. It is not appropriate to conclude the WRA is not effective only based on the reduction in abundance of Eastern Cattle Egret, one of the three target species. The reduction in abundance of Eastern Cattle Egret is not site-specific, i.e. related to any construction activities of the Project, but there has been reduction in these species in Deep Bay due to land-use changes the WRA construction works was completed in 2010 and established by 2012, while the construction works of residential portion has not yet commenced. At this current rezoning stage, the WRA has room to improve its performance based on an (out-dated) baseline data on the target species of Easter Cattle Egret; however, as the project is still under construction phase, it is considered acceptable for the target species levels to have not been achieved. However, should this situation continue, a review of the

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	management of the WRA and adaptive management steps will be required. In addition, the WRA is still effectively performing as an ecological mitigation wetland, as demonstrated with increase in diversity and abundance of species of conservation importance that is connected to the WCA. The additional measures in this respect could be considered at the detailed design and/or EP submission stages, where the target levels could be reviewed.
Given that the EcoIA has failed to provide sufficient information to demonstrate that the additional potential ecological impacts arising from the latest development scheme could be mitigated adequately, based on the information in the current draft submission, we do not support the current planning application from the ecological perspective. Please see the specific comments below	The EcoIA has been further supplemented with requested information in accordance with the specific comments. In both RNTPC Paper No. Y/YL-NSW/7B and RNTPC Paper No. Y/YL-NSW/8A, Comments of the Director of Agriculture, Fisheries and Conservation, stated "has no objection to the application from nature conservation point of view", on the two planning applications with higher plot ratio, all high-rise buildings, ≤30m from the WCA. In the EcoIA of this Application, the potential additional impacts are assessed as insignificant, while mitigation measures have been proposed in addition to those committed in the approved EIA report (AEIAR-120/2008). The potential impacts would be mitigated adequately.
<u>Specific Comments</u> Section 6.2.5 For clarity, please revise as "…7 bird individuals <u>per survey hour</u> were recorded…". Please revise Section 6.2.8 similarly.	Section 6.2.5 and 6.2.8 have been revised accordingly.
Section 6.2 The locations of bird and bat species of conservation importance are shown on the habitat map in a number of approved EIA Reports including San Tin/ Lok Ma Chau Development Node EIA. Please also provide such information on the habitat map for the current project for better	Indicative locations of bird and bat species are supplemented in Figure 3b, with reference to Figure 6a, by zoning into Exclusion Zone, Reduced Density Zone and Undisturbed Zone.

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
understanding of the wildlife distribution in the area.	
Section 8.5 It seems that only birds are evaluated. Please beef up regarding the indirect impact to non-avifauna species.	Supplemented in Section 8.4 and 8.5. Most of the non-avian species of conservation importance utilising the wetland habitats, will be near water, at ground level or lower. It is anticipated there is no additional impact from the increase in building height and population density, as their presence are more prone to the wetland habitat quality and foraging opportunities, rather than potential indirect impact.
Section 8.5 Please compare the extent of reduced density zone and exclusion zone of the latest scheme with the approved application no. A/YL-MP/344, and demonstrate whether the measures proposed in the approved EIA and the additional measures could address the additional disturbance impacts during the construction phase and operation phase.	Figure 6d and 6e, have been supplemented to illustrate the maximum predicted extent of potential disturbance impacts during construction phase and operation phase, respectively, under approved scheme of A/YL-MP/344, **in the absence of mitigation measures**. Figure 6a and 6b, illustrate the maximum predicted extent of potential disturbance impacts during construction phase and operation phase, respectively, under the proposed scheme in this application, **in the absence of mitigation measures**. **<u>During Construction Phase</u>** Comparing Figure 6a with Figure 6d, the maximum Reduced Density Zone (RDZ) of latest scheme extends to 400m, while the maximum RDZ of the approved scheme extends to 200m from building footprint. The potential increase in RDZ of latest scheme compared to the approved scheme is only due to the potential disturbance impacts from the proposed 10-storey, categorized as high-rise buildings with a larger RDZ extent. However, the potentially impacted wildlife (or fauna species of conservation importance) in the latest scheme's RDZ are in the WRA or the ponds to the north, and these have been assessed to have minimal disturbance impact in section 8.5. The maximum exclusion zone (EZ) of latest scheme extends to 200m, while the maximum EZ of the approved scheme extends to 100m from building footprint. The potential increase in EZ of latest scheme compared to approved scheme is concentrated in the surrounding developed/urbanized areas (i.e. west, east, and south), which do not have impact on any wildlife;

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	while the potential increase to the north, including the WRA and ponds (no. 51 and 52), are **insignificant**. **<u>During Operation Phase</u>** Comparing Figure 6b with Figure 6e, the maximum RDZ of latest scheme extends of latest scheme extends to 200m, while the maximum RDZ of the approved scheme extends to 100m from building footprint. The potential increase in RDZ of latest scheme compared to the approved scheme can be seen with a slightly larger extent at Pond 51 and 52, as well as to the surrounding developed/urbanized area (i.e. west, east and south). The increase is only due to the potential disturbance impacts from the proposed 10-storeys, categorized as high-rise buildings with a larger RDZ extent. However, the potentially impacted wildlife (or fauna species of conservation importance) in the latest scheme's RDZ are in the WRA or the ponds to the north, and these have been assessed to have minimal disturbance impact in section 8.5. The maximum exclusion zone (EZ) of latest scheme extends to 100m, while the maximum EZ of the approved scheme extends to 50m from building footprint. The EZ extent is almost the same, in fact, most of the extent does not extend beyond the WRA and is slightly smaller in the latest scheme at Pond 52. As shown in the RDZ and EZ comparison diagrams, the potential additional impact is anticipated to be **insignificant**, even in the absence of mitigation measures; therefore, the mitigation measures in the approved EIA and the proposed additional mitigation measures are considered sufficient to minimize the disturbance impacts.
Section 8.5.7 It is stated that "the disturbance impacts to these species of conservation importance from this Project are anticipated to be minimal". It seems not consistent with Table 30 which states that the indirect impact to fauna species of conservation importance will be moderate to high during construction phase and moderate during operation phase. Please review.	In Table 30, "Moderate to High Severity" during construction phase and "Moderate" during operation phase are Overall Impact Severity evaluated in the absence of mitigation measures, when considering the habitat quality and species of conservation importance. However, Section 8.5.7 evaluated the potential disturbance impacts to the disturbance-sensitive waterbirds as minimal, based on the insignificant number of individuals potentially displaced by the Project, in the predicted Exclusion Zone and Reduced

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	Density Zone. Therefore, this demonstrates that the potential **additional** impact from the increase in building height and population density is **not significant**.
Section 8.5.8 It is stated that "The approved mitigation measures during construction phase and operation phase are considered sufficient to minimize the disturbance impacts." Please provide evidence to prove this claim	Comparing Figure 6a with Figure 6d, the potential increase in maximum predicted extent during the construction phase is only due to the proposed 10-storeys buildings; however, the potentially impacted wildlife is assessed to be minimal in section 8.5. Comparing Figure 6b with Figure 6e, the maximum predicted extent is almost the same. As the potential additional impact is anticipated to be insignificant, the approved mitigation measures during construction phase and operation phase are considered sufficient to minimize the disturbance impacts.
Section 8.8.2 Please beef up regarding the impacts on WCA by noise, human activities and traffic due to high-building heights during the construction phase and increased population intake during operation phase.	Supplemented in Section 8.8.2. As mentioned in S.8.5.3, the proposed 10-storeys have been located further away from the WCA (also the proposed SPS WCP); also, those at the eastern portion of Project Site have been considered at less ecologically sensitive area (i.e. farthest away from Deep Bay) and located at least 80m away from the fishponds in WCA. With reference to noise impact assessment, there will be no adverse impacts due to the increase in building height during construction; while in operation, the domestic noise at distant is anticipated to be insignificant. Human activities and traffic will be restricted within the residential portion, at lower level would be entirely screened off by the buffer planting and perimeter wall while at high level would be minimized by the distance (and the setback). Hence, no additional impact is predicted to the wetland habitats in the WCA.
Section 8.9 A number of measures claimed to be additional mitigation measures have actually been proposed in the approved EIA Report for low-rise development (e.g. constructing the houses abutting the WRA first). Please distinguish those previously proposed measures from the additional measures clearly.	The sentence on constructing the houses abutting the WRA first has been removed from the section 8.9 (additional mitigation measures). The paragraph has been revised.

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
Sections 8.9.2 – 8.9.3 It is noted that the high-rise buildings in the central and southern portions are at least around 200m away from the WCA with WRA and low-rise buildings in between. However, for the eastern portion, there is no WRA as buffer between the WCA and the buildings, and the increase in building height and population will result in more significant disturbance impacts as compared with the approved scheme. Please consider taking additional measures (e.g. moving the high-rise buildings further away from the WCA, further restriction the time period of noisy construction works etc.) to minimize the disturbance impacts during the construction phase and operation phase.	The eastern portion of the Application Site has been considered as less ecologically sensitive location according to the approved EIA (AEIAR-120/2008). Originally, it was occupied by open storage and container vehicle yards. The planning intention of "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" i.e. "OU(CDWRA)", is to eliminate these brown fields and restore the degraded wetland areas which were scattered in patches within the Application Site twenty years ago. The brown fields have been eliminated and one-fourth of the Application Site has been established into the WRA, adjoining the WCA. Instead of longer in shape of WRA buffering the entire Application Site from the WCA, the current implemented WRA is more attractive wetland habitat, which the pond bunds are located further away from the residential portion. Furthermore, the ecological value of fishpond abutting the eastern portion is very limited by the existing disturbance from the adjacent village, car park and agricultural land outside the Application Site. With reference to approved EIA report of San Tin Technopole, high-rise buildings are defined as (>35mPD in height), as such, under current Application, this would refer to 10-storeys (+42mPD) only, while all the other buildings are low-rise are defined as (<35mPD in height). Comparing Figure 6a with Figure 6d, during the construction phase at the eastern portion of site, the predicted EZ and RDZ have a larger extent than the approved scheme due to the high-rise buildings (10-storeys), in the absence of mitigation measures. However, the potentially impacted wildlife within these zones is assessed to be minimal, based on the ecological survey findings. Therefore, the increase in building height and population is **not** anticipated to have "more significant" disturbance impact at this location. In fact, the potential additional disturbance impacts (both direct and indirect) have been assessed as insignificant in Section 8. Comparing Figure 6b and Figure 6e, during the operation phase at the eastern portion of site, especially at Pond 52, the predicted EZ and RDZ of the latest scheme is slightly smaller than the approved

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	scheme. This means the extent of disturbance impact of the latest scheme is slightly less than the approved scheme. The reduction of the Tower C2-1 from 10-storeys to 8-storeys in the current MLP, is able to minimize the disturbance impact at this location, in the absence of mitigation measures and with reference to the approved scheme. In conclusion, further moving the 10-storeys away from the WCA is considered not necessary. Nonetheless, additional mitigation measures have been proposed in the construction stage, including restricting construction activities in the residential portion between the hours of 7pm to 7am (in the next day), scheduling the foundation works for the nearest building (C2-1) from the WCA between mid-March to mid-November only, and the use of only bore piling construction method. In operation stage, lighting unit including the building/streetscape should be directional and minimize unnecessary light spill by hooding or lower intensity, subject to detail design. At the interface between the WRA and the 3-storey houses, it is proposed increase in 2.5m width of buffer planting within the residential area. During operation, there will be a total of 7.5m width of buffer planting plus a 2m solid wall, to screen off the disturbance from residential area. The 6-/8-/10-storey buildings have been considered carefully to minimize the potential impact, by setback of at least 50m away from the WRA and the WCA (see Figure 7).
Section 8.9.2 What is a WCA buffer zone? Please clarify.	This has been removed to avoid confusion. There is no WCA buffer zone but at least 50m setback from the WRA and WCA, as illustrated in Figure 7.
<u>Comments from the Management Perspective of WRA</u>	
RtC on indirect impacts on WRA, Sections 8.2-8.5, 8.8, 8.9 & 9 of the revised EcoIA our previous comments provided via our emails on 9.5.2025 & 19.6.2025 remain unaddressed. According to the	While the following information has already been presented in the assessment, we would like to clarify as follows: 1. S.8.5 and Figures 6-7 not only included assessment of potential indirect impact from

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
development proposal, the Wetland Restoration Area (WRA) is avoided but still located in the Exclusion Zone during both the construction and operational phases. Additional information provided in S.8.5 and Figures 6-7 only assessed the indirect impacts on the WRA resulting from the 10-storey buildings, leaving those related to the rest of the proposed development unaddressed. The fact that the WRA is created to serve as an ecological mitigation wetland to compensate for loss of wetlands under the project (but not solely as "a buffer areas between the WCA") is also omitted in S.8.4.4. The project proponent should revisit the indirect impacts on the WRA and hence the effectiveness of the WRA serving as an ecological mitigation wetland under the subject project.	10-storey buildings, but also the low-rise development (3-/6-/8-storeys). 2. Figure 6a and 6b illustrated the **predicted maximum** zones of potential disturbance during construction phase and operational phase, **in the absence of mitigation measures**. Although the EZ extent is within the WRA, the originally approved EIA mitigation measures together with the proposed additional mitigation measures would be put in place to mitigate the potential indirect impact. 3. Refer to Appendix C presented the **maximum distance** of each disturbance-sensitive bird species of conservation importance to be potentially displaced during construction phase and operational phase. The indirect disturbance impact is anticipated to be minimal, as the mean number of individuals recorded within the maximum disturbance zone is **low**. 4. The assessment does not omit the WRA as compensatory wetland. It has already been stated throughout the report, especially in beginning of Section 4.1. 5. As stated in the Section 4 Literature Review, the EM&A monitoring findings indicated the WRA has already induced ecological gain within the area. 6. Based on the initial 5-year wetland restoration area review, the monitoring findings already suggested a single unfragmented wetland has been formed in connection with neighbouring WCA, the habitat quality has been **significantly improved**. The enhanced ecological value is also reflected in the number and diversity of the fauna species recorded in the monitoring, including wetland fauna species of conservation importance that not recorded in previous project site prior to construction, although the target species annual mean for Eastern Cattle Egret and Little Egret were not achieved in recent years, which was mainly due to the land use changes in close proximity to the WRA (i.e. outside the project site were turned into open car park and storage and the

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	shift of the egretry from Tom Kon Chau to Hop Shing Wai) that resulted in overall decrease in Little Egrets and Cattle Egret usage around the wetland area closer to WRA. Therefore, the WRA has been effective as an ecological mitigation wetland up to this time in the project construction phase. In addition, the project is **still in construction phase**, therefore the WRA is still acting as a buffer to mitigate for the disturbance impact to the wetland conservation area (or SPS Wetland Conservation Park), and thus the effectiveness of the WRA in mitigating for the operation of the original development scheme is still too early to conclude.
RtC on indirect impacts on WRA, Sections 8.2-8.5, 8.8, 8.9 & 9 of the revised EcoIA Please review if the species of conservation importance recorded in the WRA, including those in the EIAO 5-yearly reports and the on-going ECF projects, shall be verified and included in Sections 8.4-8.5 and Figure 3b of the revised EcoIA to facilitate impact assessment	Recent 12-months of EM&A reports have been reviewed in Section 4 and list of species is summarised in Appendix A. Location information is not available in these reports. Only within WRA or survey area outside WRA was reported. It is not appropriate to be included in Figure 3b. Review of bi-annual EM&A reports including ECF survey findings, have been supplemented in Section 4.
RtC on change of ground level and resulting building height and S.8.4 of the revised EcoIA Please clarify if the 5-m elevation differences between the WRA and the residential portion was approved under EIAO and the S.16 scheme; and if negative, whether indirect impacts on the WRA resulting from the 5-m gradient differences were assessed and confirmed acceptable under the approved schemes. This comment also applies to the change of building heights in the residential portion.	For clarity, in the previous approved application A/YL-MP/344, the elevation difference between the WRA and the residential portion was approximately 2m, in accordance with the architectural drawing, from +5.0mPD (ground level of WRA southern bund) to +6.8mPD (ground level of residential portion). There is no change to the elevation difference in this application compared with the previously approved schemes. The increase in building heights is assessed in the Section 8.
RtC on change of ground level and resulting building height and S.8.4 of the revised EcoIA According to the EIAO submissions and the ECF progress reports, light-sensitive species including waterbirds,	In S.8.4.2, revised to "there is no **significant** ecological light-sensitive receiver within the WRA, …, **i.e. no significant population of fireflies and ardeid night roosts**." As for nocturnal species of conservation importance, which are generally light-sensitive, it is shown in the

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
herpetofauna and mammal species are recorded in the WRA. It is factually incorrect to state in S.8.4.2 of the EcoIA that "there is no ecological light-sensitive receiver within the WRA".	review of recent 12-months EM&A reports and the 12-month ecological surveys, these species recorded within WRA are not prone to being a light impact receiver. Please refer to the following: - Leopard Cat is primarily nocturnal but also active in daytime. Only scats have been recorded within the WRA. WRA has provided suitable habitat and foraging opportunities for this mammal species. Its occurrence is more likely prone to the presence of human or feral dogs. Light/glare impact to this species is not anticipated. - Black-crowned Night Heron is widely distributed in Hong Kong, with numerous records of foraging in urban setting. Light/glare impact to this species is not anticipated. - Greater Painted-snipe is primarily crepuscular and nocturnal while hides in dense vegetation during daytime. Light/glare impact to this species is not anticipated due to their preference on microhabitats, i.e. dense aquatic vegetation. - Many-banded Krait is nocturnal species often found near water sources. This species primarily eats other snakes but also consume rodents and frogs. WRA has provided suitable habitat and foraging opportunities for this reptile species. Light/glare impact to this species is not anticipated as they are moving at ground level or in water, where will be entirely screened by the vegetation. - For most of the amphibians and reptiles (herpetofauna) being nocturnal, is due to effect of temperature and humidity on their anatomy, instead of light. As no lighting will be directly shining towards the wetland or onto these fauna individuals, no potential impact is anticipated. The following discussion on light intensity are not considered necessary but included for reference. As there is no significant population of fireflies within the 500m Assessment Area, the predicted light level from the current Application is not comparable to literature of any potential impact receiver. Nonetheless, the light impact to the adjacent WRA and WCA is anticipated to be insignificant. Unlike commercial centre, the residential buildings will not

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	have extensive exterior lighting. All exterior lighting for management or security purpose could be installed at lower storeys where will be entirely screened off by the buffer planting. Regarding the domestic lighting, the interior setting will not be directly pointed at the wetland. Even assuming worst-case scenario, the windows facing the wetland will never be 100% switched on with domestic light. During night-time, rather than view, the resident will be more concerned with privacy, thus applying curtains/blinds/shutters at their window, which will minimize or even eliminate the light spill from a single unit. By simple physics calculation, for a single light source straightly pointing at the target area, light intensity decreases as the square of the distance increases. If a light source has an intensity of 100 lux at a distance of 1 meter, then at a distance of 2 meters, the intensity would be 25 lux ($100 / 2^2 = 25$). For a living room generally need 150 lux, from ceiling to floor around 3m in height; from a 30m distance, the light intensity is already less than 1 lux. In addition, light level reading was taken from the nearby wetland from the overnight operating Lok Ma Chau Station, where the buffer planting in between is not densely canopied, visually observable at the pond bund approximately 50m from the Station. The light level reading at 50m is already less than 1 lux. The Station with limited exterior lighting didn't pose significant light impacts, even the interior lighting is switched on overnight and visible via the curtain wall. 

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
RtC on installation of site hoardings and provision of buffer plantings It remains uncertain whether the 3m site hoarding and the perimeter wall would be built within the residential area, and whether it would be maintained by the project proponent during the operational phase. Information (e.g. precedent with proven success) has yet to be provided to demonstrate the effectiveness of the 3m hoarding and the 7.5m buffer plantings in screening indirect impacts, including ecological and visual impacts on the WRA during both the construction and operational phases. Please review and supplement.	In the existing site conditions, the 3m site hoarding has been installed and maintained by the project proponent at the interface between the WRA and the residential portion, within the residential area. The perimeter wall would be built in line with the construction of the residential portion. The proposed mitigation measures of site hoarding and buffer plantings are at the same level of dimensions (e.g. 3m-high hoarding) as those in the approved EIA report (AEIAR-261/2024) of San Tin Technopole, which is for a much larger scale and more extensive development. In addition, the 3m site hoarding was a mitigation measure that was accepted by authorities in the approved EIA report (AEIAR-120/2008). Following the approval of this rezoning application, the effectiveness of 3m hoarding and 7.5m buffer planting could be explored at the detailed design stage and will be monitored and evaluated as EM&A requirements under the EP. Considering this Application alone, the EcoIA assessment has evaluated the potential additional impacts on the WRA from the increase in building height and population density is not significant, and can be mitigated with the originally proposed mitigation measures in the approved EIA report and the proposed additional mitigation measures. The overall impact severity in the absence of mitigation measures remains unchanged as in the approved EIA report; hence, the proposed mitigation measures are adequate.
RtC on "management issues related to the management plan and EM&A of the WRA" Please provide details on how the current performance of the WRA, which is located immediately adjacent to the residential portion, could be further enhanced during the construction and operational phases of the subject project.	In general, implementation of management practices including fish-stocking and drain-down, have proven effective in attracting waterbirds, which could further enhance the current performance of the WRA. The monitoring findings already suggested a single unfragmented wetland has been formed in connection with neighbouring WCA, the habitat quality has been significantly improved. The enhanced ecological value is also reflected in the number and diversity of the fauna species recorded in the monitoring, including wetland fauna species of conservation importance that not recorded in previous project site prior to construction, although the target species annual mean for Eastern Cattle

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	Egret and Little Egret did not achieve in recent years, which may due to the land use changes in close proximity to the WRA outside the project site were turned into open car park and storage and the shift of the egretry from Tom Kon Chau to Hop Shing Wai that resulted in overall decrease in Little Egrets and Cattle Egret usage around the wetland area closer to WRA. Other than enhancing the WRA itself, the Landscape Master Plan of the proposed scheme included landscape gardens/wildlife ponds/butterfly garden, the wildlife utilisation across the entire Application Site will also benefit the WRA, when compared with existing bare ground or original brown fields/degraded wetland.
RtC on the "existing access track for WRA maintenance" Our previous comment remains unaddressed. In view that "the design and location of access track is subject to detailed design" and hence not available in the subject submission, it is uncertain whether unauthorised human access and dogs could be excluded from the WRA while proper access could be provided for WRA maintenance during both the construction and operational phases. Please review and specify.	The existing access track has been used for maintenance since the WRA was established. With respect to unauthorized human access and dogs, a gantry is proposed to be installed as an entrance to the WRA in the eastern residential portion, and locked with key access, only available for management parties.
S.4.2 In view of the existing performance in WRA, please review the target level in this EcoIA, and reconsider if additional measures shall be adopted to prevent further deterioration to the mitigation wetland's performance.	It is our understanding that the WRA is not in a deteriorating state. Refer to EcoIA Section 4.2.2., based on literature review, the WRA habitat size has remained the same, and its habitat function has already induced ecological gain within the Application Site. The WRA consistently attracts higher number in species of conservation importance, than it's been constructed and established. Three target species, i.e. Chinese Pond Heron, Eastern Cattle Egret and Little Egret have been monitored monthly. It is not appropriate to conclude the WRA is not effective only based on the reduction in abundance of Eastern Cattle Egret (EcoIA Section 4.2.3), one of the three target species. The reduction in abundance of Eastern Cattle Egret is not site-specific, i.e. related to any construction activities of the Project. The target level should be reviewed as the baseline data (dated April

<table>
<tr><th>Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)</th><th>Applicant's Response(s) in Draft FI 22.8.2025:</th></tr>
<tr><td></td><td>2005 – June 2006) in the approved EIA has been nearly 20 years ago; however, it is more appropriate to review the target level in the corresponding Environmental Permit submission, under the EIAO. At this current rezoning stage, the WRA has room to improve its performance based on an (out-dated) baseline data on the target species of Easter Cattle Egret; however, it is still effectively performing as an ecological mitigation wetland, as demonstrated with increase in diversity and abundance of species of conservation importance that is connected to the WCA. The additional measures in this respect could be considered at the detailed design and/or EP submission stages, where the target levels could be reviewed.</td></tr>
<tr><td>S.7.1, Table 13

Naturalness: Please review and specify on whether the "mitigation wetland" is an artificial wetland created under the approved WSW EIA project to mitigate wetland loss and to provide suitable habitats for a variety of species including waterbirds, dragonflies and amphibians.</td><td>Noted and included.</td></tr>
<tr><td>S.7.1, Table 13

Size: The targeted and the existing habitat types and sizes recorded in the "mitigation wetland" should be presented in the table.</td><td>The ecological value of the WRA as a mitigation wetland was evaluated as a whole area. The Table 13 has been updated to Table 15 in the EcoIA.

The table below has summarized the originally targeted microhabitats in the Wetland Restoration Plan. These were never considered as fixed values as they will be dependent on various habitat management practices. For example, the habitat area of "Open Water" has been adjusted with one of the management practices of drain-down procedure.

<table>
<tr><th>Microhabitats within WRA</th><th>Targeted Area (ha)</th></tr>
<tr><td>Grassland</td><td>0.33</td></tr>
<tr><td>Reedbed</td><td>1.12</td></tr>
<tr><td>Open Water</td><td>2.37</td></tr>
</table>
</td></tr>
</table>

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	<table><tr><td>Tall grass/shrubs</td><td>0.12</td></tr><tr><td>Tall trees/shrubs</td><td>0.66</td></tr><tr><td>Non-vegetated island</td><td>0.14</td></tr><tr><td>**Total area of WRA**</td><td>**4.74**</td></tr></table> With the completion of planting as scheduled in the approved Habitat Creation and Management Plan (HCMP) in August 2012, establishment work at the WRA is **completed** [except small areas along the eastern and southern boundary where the planting is affected by the existing noise barrier, and for which an approved Variation to Environmental Permit (EP-311/2008/D) to defer planting at these locations applies], and the 30-month establishment period was concluded in October 2012. Notwithstanding, the subtle difference in the targeted and the existing microhabitats will not result in any change in the evaluation of the "Ecological Value" of the WRA.
S.7.1, Table 13 Rarity: The rarity status of the species of conservation importance found in the "mitigation wetland" are missing.	Noted and the information has been supplemented in Table 15.
S.7.1, Table 13 Nursery/breeding ground: Considering the management objective of the WRA, please review if waterbirds should also be included in the list.	Noted and included.
Table 31 Direct Loss of habitats in Application Site: As mentioned above, the WRA was created to mitigate ecological impacts resulting from the original/approved scheme which are of much lower development density. Please review and include additional potential impacts resulting from the latest development plan as well as the additional mitigation measures required in the table.	Refer to the EcoIA Table 33, to supersede Table 31. The habitats within the Application Site in the past (i.e. original/approved scheme) and now (i.e. current application), are low/ low to moderate in ecological value. The direct loss of these habitats has been mitigated by the approved mitigation measure of establishing the WRA, with compensatory habitats for the potentially affected wildlife. There will not be any additional potential impacts, as the loss of habitats have been fully compensated within the WRA, and the residential portion remains the same. Despite the higher building height and

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	Applicant's Response(s) in Draft FI 22.8.2025:
	population of the latest development plan (i.e. current application), the WRA intention to mitigate the direct loss of habitat in the Application Site has been carried out with the establishment of the WRA.
Table 31 The evaluation on the indirect impact to WRA and the species of conservation importance there are missing. Please review and supplement.	The evaluation on the impact severity has been supplemented under the column "Additional Potential Impact" in Table 31.
Table 31 Please clarify if a 7.5m width (instead of 5m) buffer planting plus a 2m solid wall will be provided. The architectural cross-section drawing should be updated to reflect the provision.	In the approved scheme, there will be 2.5m width of buffer planting within the WRA and 2.5m width of buffer planting within the residential portion. This remains unchanged in the current Application. Under current Application, the buffer planting within the residential portion will be increased from 2.5m to 5m width. Hence, including the 2.5m buffer planting within the WRA, then there will be in total 7.5m width of buffer planting at the interface of the WRA and the residential portion. In addition, a 2m-high solid wall will be provided. Enclosed, **Figure 8** the architectural section B drawing has been updated accordingly.
RtC on DIA & Figure 6 The project team is advised to consult relevant authorities (i.e. DSD and EPD) if the proposed installation of "bund wall and a surface channel" would effectively collect and divert surface flow (and pollutants) to the WRA. We have to reserve our comment before the detailed design and practicability of the proposed drainage system become available.	In this rezoning stage, the concern on potential drainage flow (and pollutants) from residential portion would enter the WRA, is responded to with a proposed drainage installation of bund wall and surface channel to collect and divert surface flow (and pollutants), which is a standard practice. Following the approval of this rezoning application, the detailed design of the proposed drainage system would become available at the s16 planning application stage, where technical assessments of the layout scheme will be provided on the drainage conditions and mitigation measures, if any. The relevant departments would be consulted in the s16 application processing stage. Same as in previous approved planning applications of the subject site, there would be a planning mechanism in place to ensure that there would not be adverse drainage impact to the WRA.

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Applicant's Response(s) in Draft FI 22.8.2025:**
Figure 1 The boundaries of the Mai Po Nature Reserve and the Mai Po Inner Deep Bay Ramsar Site are inaccurate. Please rectify.	Figure 1 has been revised accordingly.
<u>Comments from the perspective of Sam Po Shue Wetland Conservation Park</u>	
Section 8.8 Please beef up this Section by making reference to Section 8.5.3 and discuss how the proposed layout of the development has been carefully considered to minimise the potential indirect impacts to the WCA and SPS WCP.	Noted and supplemented in Section 8.8.
Section 8.8 We defer to CEDD and/or other Department(s) to comment on the interface issue between the SPS WCP and the proposed development from technical perspectives.	Noted.
Section 8.8 We have also made some comments on the Planning Statement. It is supposed the revised Planning Statement will be circulated for our further comment in due course.	The revised Planning Statement will be provided in the formal FI submission.

Response to Dept Comments of AFCD (received 16.9.2025) [CURRENT]

Comments from the Director of Agricultural, Fisheries and Conservation (Received 11.7.2025) (Contact Person: Dr Azaria Wong; Tel: 2150 6932)	**Applicant's Response(s) in Draft FI 22.8.2025:**
In the RtC and the latest EcoIA, further elaboration on the additional ecological impacts by the proposed increase in development intensity has been provided, such as the disturbance impacts in terms of light, noise, human activities and traffic, the disturbance impacts on different taxa groups, and the extent of disturbance zones under the latest scheme as compared with the approved scheme. It is claimed that the additional impacts resulted would be insignificant under the latest scheme with a further setback of the closet 10-storey building and proper implementation of the proposed mitigation measures, e.g. restriction on constriction activities, increase in the width of buffer planting, avoiding direct lighting to the WRA.	Noted.
Given that there are no change in the development footprint and no major bird flightlines over the residential portion, and the additional disturbance impacts on the WCA and associated wildlife would be minimized with the setback of higher buildings and other mitigation measures, we have no further comments on the revised EcoIA and no strong view against the proposed development at this rezoning stage from nature conservation perspective. Please be reminded that an updated EcoIA with further details on the implementation of the proposed mitigation measures would be required to support the future s.16 application.	Noted.
Given the above, it is considered that a meeting on the subject rezoning application is not necessary.	Noted.

Response to Dept Comments of EEB (received 9.4.2025) (responded w Draft FI 2.5.2025)

Comments from the Secretary for Environment and Ecology (received 9.4.2025) (Contact Person: Ms Sophia Hui; Tel: 3151 7190)	**Response(s) in Draft FI 2.5.2025:**
In the planning statement and ecological impact assessment, the applicant stated the following: - "no change is proposed to the design or operation of the WRA with reference to the Wetland Restoration Plan (WPR) in the approved EIA"; - "the approved and completed WRA component will not be affected by this application and will continue to meet the requirements of this Guideline"; - "with the implementation of all mitigation measures, no additional ecological impact is predicted compared to the approved scheme and that the findings of the approved EcoIA under planning Application No. A/YL-MP/229 remain valid"; and - "on 25 January 2021, the Applicant made a one-off lump sum donation to the Environment and Conservation Fund ("ECF"). An agreement between the Applicant and the ECF was made on 26 January 2021. The conservation agent of the Applicant has been carrying out the maintenance and management plan and the funding agreement is fully applicable to this application."	Noted.
On the other hand, AFCD commented that: - "the design and operation of the WRA aim to mitigate the ecological impacts from the original development scheme. The proposed increase in no. of storeys will potentially bring additional disturbance impacts to the WCA during the construction phase and operation phase. There is currently not sufficient information to demonstrate that the WRA could mitigate the additional impacts from the revised development scheme. The applicant should quantify such potential additional impacts, elaborate clearly how the existing WRA and other measures proposed in the original EcoIA could mitigate the additional impacts, and list out clearly any additional measures required under the new scheme.	Noted.

The current Application Site at Wo Shang Wai ("WSW Project") had previously obtained s.16 planning approvals, with planning application no. A/YL-MP/229 (MP229) approved in February 2015 and planning application no. A/YL-MP/291 (MP291) approved in July 2020. The two planning applications have the same domestic GFA and plot ratio but different numbers of blocks and building height. Under the aforesaid s.16 planning applications, the applicant proposed to follow the funding arrangements of the original option under the Public-Private-Partnership Scheme of the New Nature Conservation Policy, i.e. project proponent to make a lump sum contribution to the Environment and Conservation Fund (ECF) sufficient to generate recurrent incomes to support the pledged conservation programmes (in the case of the WSW Project, the long-term maintenance and management of the WRA). Conditions pertaining to the aforesaid funding arrangements were imposed for the concerned planning approvals.	Noted.
On 26 January 2021, ECF received a lump sum contribution of $75M from the applicant for the purpose of supporting the long-term maintenance and management of the WRA, and a relevant funding agreement was signed between the applicant and the ECF Trustee on the same date for fulfilling the relevant approval conditions of planning application no. MP291.	Noted.
Subject to the applicant's responses to AFCD's comments, if there is need for the applicant to implement any additional measures to mitigate any additional ecological impacts, this may have an implication on the amount of funding needed so as to sufficiently support the long-term maintenance and management of the WRA, and hence there may also be a need to review and/or adjust the amount of funding that has to be made to the ECF to support the long-term maintenance and management of the WRA as well as the signed funding agreement.	As demonstrated in our responses to AFCD, it is anticipated there would not be additional ecological impacts, based on the increased development intensity of the proposed rezoning scheme.

Response to Dept Comments of EEB (received 10.6.2025)

Further Comments received from Secretary for Environment and Ecology on 10.6.2025	**Responses:**
From the ecological perspective, AFCD assessed that given that the application has failed to provide	**Noted.**

sufficient information to demonstrate that the WRA could mitigate the additional impacts arising from the revised development scheme in the current application (the revised scheme has more than two times higher of gross floor area (from not more than 82,963.2m2 to 265,847m2), plot ratio (from not more than 0.4 to 1.3) and building height (from 3 storeys to a maximum of 10 storeys), they do not support the current planning application. EEB agrees with AFCD's assessment, especially that there is no sufficient and convincing information and justifications to prove that the WRA as it is without any change/additional measures can adequately mitigate the additional ecological impacts arising from the substantially increased development intensity under the revised development scheme. Therefore, based on the information in the current draft submission, **EEB does not support the current planning application from the ecological perspective**.	
From the perspective of funding arrangements under the NNCP PPP Scheme, if there is a need for the applicant to implement any additional measures to mitigate any additional ecological impacts, this may have an implication on the amount of funding needed so as to sufficiently support the long-term maintenance and management of the WRA, and hence there may also be a need to review and/or adjust the amount of funding that has to be made to the ECF to support the long-term maintenance and management of the WRA as well as the signed funding agreement. We note that the applicant has maintained its position that no additional ecological mitigation measures are required despite AFCD's previous comments, and are thus not in a position to support the application based on the currently available information.	Noted.

Response to Dept Comments of EEB (received 11.7.2025) (responded w Draft FI 22.8.2025)

Comments from the Secretary for Environment and Ecology (Received 11.7.2025) (Contact Person: Mr Tony Hung; Tel: 3151 7076)	**Applicant's Response(s) in Draft FI 22.8.2025:**
The draft FI submission filed on 23 June 2025 included a revised Ecological Impact Assessment (EcoIA) and responses to AFCD's previous comments on the planning application. From the ecological perspective, AFCD assessed that given that the application	Further information has been included in the EcoIA and RtC, for AFCD's review. The information has demonstrated that the potential additional impact of increased building height and population density in the current planning application, in terms of noise, light and human disturbance to the WRA and WCA are

has failed to provide sufficient information to demonstrate that the additional impacts arising from the latest development scheme could be mitigated adequately, based on the information in the current draft FI submission, they do not support the current planning application. EEB agrees with AFCD's assessment, especially that there is no sufficient and convincing information and justifications for the additional impacts on the WRA and the effectiveness of the WRA in serving as an ecological mitigation wetland for the increased development intensity under the revised development plan of the project. Therefore, based on the information in the current draft submission submitted on 23 June 2025, **EEB does not support the current planning application from the ecological perspective**.	insignificant (Figures 6a to 6e), even in the absence of mitigation measures. Nonetheless, the potential additional disturbance impact could be mitigated by the proposed mitigation measures of the approved EIA (AEIAR-120/2008), and additional mitigation measures in the latest development scheme. The assessment method of disturbance impact and proposed mitigation measures in the current application are similar to those in the San Tin Technopole approved EIA (AEIAR-261/2024), which is for a development of much greater scale and density. Furthermore, there have been similar planning applications in the same zoning of "OU(CDWRA)" that have been **recently approved** for a higher plot ratio and building height, and even closer to the WCA than the current scheme. Presently, the WRA is still effective as an ecological mitigation wetland, in terms of its compensatory role for the habitat loss in wetland area and function of the original site conditions; mitigate the disturbance to wildlife in the WCA during construction phase; habitat function for species of conservation importance; and consistent size and connection to the neighbouring WCA as a single unfragmented wetland. The issue on meeting its target species levels could be reviewed at a later stage, and is not necessary in the rezoning stage. Especially when the project site is still in a construction phase, the status of meeting the target species (with out-of-date target levels) is on-going, and needs to be reviewed. The technical justifications to support the latest development scheme, is sufficient in terms of the level of detail needed in a rezoning application. Some of AFCD comments has requested the level of detail that is beyond what is needed to be reviewed at a rezoning stage, and we would like to defer to the detailed design stage, when the layout scheme would be refined and more certain. The request by AFCD on providing evidence and detailed assessments in this rezoning stage is unreasonable and unfair to the Applicant. With reference to the decision of the Nam Sang Wai Town Planning Appeal No. 1 of 2017, the Appeal Board considered that matters of increased building height and population of the development is a matter of planning intention and judgement, not ecological

	impact. The Appeal Board considered that AFCD provided input on matters of scale and intensity, outside its area of expertise. According to the DevB GC 1/2024, good practices should be followed by government departments to put in place measures to facilitate the application process and avoid delay, especially the para. 8 (g), (j) and (k). The latest development scheme has gone through a lengthy design process to balance the factors of minimizing ecological impact to wetlands (to the north), optimizing development potential of the site, and minimizing the impact to the existing surrounding developments (to the east, west and south). Therefore, the Applicant believes that the presented information has demonstrated to a reasonable degree for a rezoning proposal, that the increased building height and density of the latest development scheme, **would not impose adverse ecological impact on the WRA or WCA (SPS WCP)**.
From the perspective of funding arrangements under the NNCP PPP Scheme, if there is a need for the applicant to implement any additional measures to mitigate any additional ecological impacts, this may have an implication on the amount of funding needed so as to sufficiently support the long-term maintenance and management of the WRA, and hence there may also be a need to review and/or adjust the amount of funding that has to be made to the ECF to support the long-term maintenance and management of the WRA as well as the signed funding agreement. We note that the applicant has maintained its position that no additional ecological mitigation measures are required despite AFCD's previous comments, and are thus not in a position to support the application based on the currently available information.	The current planning application has proposed additional mitigation measures; however, at this juncture, there is no indication that they would affect the funding needed to support the long-term maintenance and management of the WRA. At the later detailed design stage, should there be a need to review the implications of the additional mitigation measures (if any), which may have implication on the amount of funding support of ECF, the Applicant is willing to collaborate with relevant government bureau/departments to carry out this review and conduct the necessary statutory procedures to make amendments. Besides, upon approval of the planning application, a lease modification would be carried out, which would include a review on the ECF.

Response to Dept Comments of EEB (received 16.9.2025) [CURRENT]

Comments from the Secretary for Environment and Ecology (Received 11.7.2025) (Contact Person: Mr Tony Hung; Tel: 3151 7076)	**Applicant's Response(s):**
I refer to the Consultant's email dated 22 August 2025, separate email to AFCD on 2 September 2025, the RtoC table and revised EcoIA attached in the two emails. We note that AFCD has no further comment on the revised EcoIA and has no strong view on the proposed development for the rezoning application from the nature conservation perspective, and stated that an updated EcoIA with further details on the implementation of the proposed mitigation measures would be required to support the future s.16 application. To this end, we have no strong view on the latest proposed development scheme in the rezoning application from the nature conservation perspective at this stage, subject to further detailed assessment at the s.16 planning application stage.	Noted.
From the perspective of funding arrangements under the NNCP PPP Scheme, if any change in the development scheme results in a need for the applicant to implement additional measure(s) to mitigate additional ecological impacts, this may have an implication on the amount of funding needed to sufficiently support the long-term maintenance and management of the WRA. In this case, there may be a need to review and/or adjust the amount of funding that has to be made to the ECF to support the long-term maintenance and management of the WRA as well as the signed funding agreement. We note that the applicant is committed to collaborate with relevant government bureau/departments "should there be a need to review the implications of the additional mitigation measures (if any), which may have implication on the amount of funding support of ECF" and "conduct the necessary statutory procedures to make amendment". To this end, we have no further comment from the perspective of the funding arrangement under the NNCP PPP Scheme.	Noted.

In this regard, it is considered that a meeting on the subject rezoning application is not necessary.	Noted.

Response to Dept Comments of Water Supplies Department (received 18.6.2025)

Comments from the Chief Engineer/ Construction, Water Supplies Department (received 18.6.2025) (Contact Person: Mr. Eddie He; Tel: 2152 5746) based on our (Formal) FI Submission 28.5.2025	**Response(s) sent out on 8.9.2025:**
Please note the following further comments on the submission:-	The following comments have been addressed and the relevant changes in the report have been marked in green highlight.
a) Para. 1.2.2 - Please clarify whether the total number of units should be 3571 or 3751.	The total number of units is 3571 but the number of units in residential blocks should be 3443 instead of 3623. We have revised this in the report. Update: due to AFCD comments, the total number of units and units in residential blocks of 3571 and 3443 have been revised to 3562 and 3434.
b) Para. 2.4 - Please review whether the following planned developments should be taken into account in the WSIA:- 1. Y/YL-MP/6: https://www.tpb.gov.hk/tc/plan_application/Attachment/20230303/s12afi_Y_YL-MP_6_11_gist.pdf 2. Y/YL-MP/8: https://www.tpb.gov.hk/en/plan_application/Y_YL-MP_8.html 3. A/YL-MP/384	The proposed developments in these three applications should not be taken into account, as they are applications under processing and have not been considered nor approved by the Town Planning Board.
c) Para. 3.1.1 - Please clarify whether the total number of units should be 3571 or 3751. Please advise how the population (in residential block) of 9641 are calculated.	The total number of units is 3571 is already correct. The population of 9641 is calculated by multiplying the number of units in the residential tower, which is 3443 by 2.8 person per house (assumed based on the data for Yuen Long District in the 2021 population census). We have added extra information in the report for clarification. Please refer to the Appendix C for more details of calculation. Update: due to AFCD comments, the total number of units, number of units in residential tower, and population, of 3571,

	3443, and 9641 have been changed to 3562, 3434, and 9975.
d) Para. 3.1.2 - "...the freshwater demand in R3 settlements..." should be read as "...the fresh water unit demand for the proposed 6-10 storey residential blocks...".	We have revised this in the report.
e) Para. 3.2.4 and Para. 3.2.5 - Please provide details on how the total water demand can be calculated.	Freshwater demand of each building is calculated by multiplying the number of units by 2.8 as the average occupier per unit (from the population census 2021 in Yuen Long district), by the unit demand factor of water (m3/person/day). Then the total freshwater demand is calculated by adding all the water demand of the 29 buildings. The total flushing water demand is calculated similarly using the flushing unit demand factor. We have added details for clarification in the report. Please refer to the Appendix C for more details of calculation. We have revised the total freshwater demand and the flushing water demand in the report since the previous values were wrong.
f) Para. 3.3.1 - For DN 700 - DN 375,the flow velocity should be limited to 0.9 m/s to 2.5 m/s. Please review.	The maximum velocity of the pipes has been changed to 2.5 m/s, calculation has been updated, and the related values have been changed in the report.

Response to Dept Comments of Water Supplies Department (received 10.9.2025) CURRENT

Comments from the Chief Engineer/ Construction, Water Supplies Department (received 18.6.2025) (Contact Person: Mr. Jeffrey Ho; Tel: 2152 5778)	**Response(s):**
While I have no further comment on the proposed water supply scheme, the applicant shall update the WSIA in their formal submission taking into consideration my observations below: (a) Paragraph 3.1.1 - The estimated total population of 9974 is not tally with 9975 as mentioned in the R-to-C table.	The estimated total population of 9,975 was corrected to 9,974. Please ignore the outdated number in previous RtC. (**Addendum 10**)

<table>
<tr><td>(b) Paragraph 3.1.2 - "..., the fresh water demand for the proposed 6-10 storey residential blocks is assumed to be 0.300m3 per person per day, with..." shall be read as ""..., the fresh water demand for the proposed 6-10 storey residential blocks and the proposed new private houses are assumed to be 0.300m3 and 0.390 m3 per person per day respectively, with..."</td><td>Updated (Addendum 10)</td></tr>
<tr><td>(c) Paragraph 3.3.1 - "..., the maximum advisable flow velocity..." shall be read as "..., the maximum flow velocity..."</td><td>Updated (Addendum 10)</td></tr>
<tr><td>(d) Paragraph 3.3.1 - While the maximum flow velocity in water mains is 3 m/s, the flow velocity limit recommended in the table below shall be followed in determining the suitable pipe sizes for a fresh water network.

<table><tr><td>Pipe Size Range</td><td>Recommended Flow Velocity Limit under Peak Flow Condition</td></tr><tr><td>> DN700</td><td>≤ 3 m/s</td></tr><tr><td>DN700 - DN 525</td><td>≤ 2.5 m/s</td></tr><tr><td>DN450 - DN375</td><td>≤ 2 m/s</td></tr><tr><td>DN300 - DN200</td><td>≤ 1.5 m/s</td></tr></table></td><td>The sentence “While the recommended flow velocity limit for different pipe size ranges is given in the table below, which is followed to determine the suitable pipe sizes for the freshwater network” and the recommended flow velocity table (Table 3-2) have been supplemented as in Paragraph 3.3.1. (Addendum 10)</td></tr>
<tr><td>(e) Paragraph 3.3.2 - When discussing the capacity of water main, please use the maximum flow velocity of 3 m/s in your calculation.</td><td>(Assuming the comment refers to calculation in Appendix C which was mentioned in Paragraph 3.3.2)

Updated (Addendum 10)</td></tr>
<tr><td>(f) Paragraph 4.1.4 - "...Coefficient is taken as 120 for pipe with diameter larger than 600mm, and 110 for pipe with diameter ..." shall be read as "...Coefficient is taken as 120 for fresh water main with diameter equal to or larger than 600mm, and 110 for fresh water main with diameter ..."</td><td>Updated (Addendum 10)</td></tr>
<tr><td>(g) Appendix C - Please include Planning Application Y/YL-MP/10, which is approved on 4 July 2025, and the two light public housing sites at Yau Pok Road in your calculation.</td><td>Updated (Addendum 10)</td></tr>
<tr><td>(h) Appendix D - The Hazen-Williams Coefficient for DN600 fresh water main shall be 120.</td><td>Updated (Addendum 10)</td></tr>
</table>

Response to Dept Comments of Director of Environmental Protection (received 18.6.2025)

Comments from Director of Environmental Protection (received 18.6.2025) (Contact Person: Mr. Chris Wong; Tel: 2835 1000) based on our (Formal) FI Submission 28.5.2025	**Response(s):**
Please note that we have no further comment on the revised Environmental Assessment (EA) and revised Sewerage Impact Assessment (SIA), except the minor textual ones as listed below:-	
Air Quality a) Section 1.2 – 7th paragraph: Please delete "Apart from Shatin district" in line 2.	Noted and deleted. **Addendum 11** – updated pages has been highlighted in the (Revised) Environmental Assessment.
b) Section 1.4.1 – 1st and 2nd paragraphs: Please delete "Table 1.3" and "Table 1.4" in the last sentences of both paragraphs respectively.	Noted and deleted.
c) Section 1.5.1 – 10th paragraph:- 1. Re. R-t-C #8, please state if the identification of concurrent project is carried out by site surveys, desktop review and/or approved planning/EIA applications, etc. 2. Please check if dust monitoring will also be implemented by the concurrent project. If affirmative, please add "and the concurrent project" after "proposed Project" in the last line.	1) Section 1.3.1. has been updated to confirm that the concurrent project was identified during desktop review of approved EIAs and planning applications in the area. 2) That's correct. The text has been updated accordingly. (**Addendum 11**)
d) Section 1.5.2 – 3rd paragraph: Re. R-t-C #11, please add the 2nd last sentence ("These will be designed to be located facing away from any nearby ASRs as far as practicable") in the last submission at the end of this paragraph.	Noted and updated. (**Addendum 11**)
e) Section 1.5.2 – 4th paragraph: Please supplement at the end of this paragraph if the potential odour impact will be further reviewed and assessed when the option for sewage treatment is confirmed and more details become available at a later detailed design stage.	Noted and supplemented accordingly. (**Addendum 11**)
f) Section 1.5.2 – 5th paragraph: Please confirm if the temporary on-site STP will no longer be in use after it is abandoned. If affirmative, please add "and it will no longer be in use" after "proposed Development" in line 10.	It is confirmed that the temporary on-site STP will no longer be in use after it is abandoned. The text has been updated accordingly.

g) Section 1.5.2 – 8th paragraph: Please add "of the proposed development" after "nearest air-sensitive use" in line 8.	Noted and updated. (**Addendum 11**)
<u>Noise</u> h) S.2.1 Introduction: Please explicitly advise at which stage a NIA submission will be made (i.e. future s.16 planning application).	Revised.
i) S.2.1.2 Fixed Noise Assessment / Legislations, Standards, Guidelines and Criteria: Since majority of the site will be screened from San Tin Highway by the planned 10-levels building blocks, the statement that of majority of the area would be indirectly affected by IF is incorrect. Please revisit the situation. Such clarification is required for the determination of the noise criteria for the design of planned fixed noise source within the development.	Noting that some area of the site may be screened from San Tin Highway by the planned building blocks, the statement for degree to which NSR is affected by IF is revised. A remark is also added under Table 2.8 for specifying the fixed noise criteria for representative NSR identified for fixed plant noise assessment. (**Addendum 11**)
j) S.2.1.2 Fixed Noise Assessment / Legislations, Standards, Guidelines and Criteria: In any event, the ASR assumed in this report is for indicative assessment only. It should be noted that the noise emanating from any place other than domestic premises, a public place or a construction site is controlled under Section 13 of the Noise Control Ordinance. At the time of investigation, the Noise Control Authority shall determine the noise impact from concerned sources on the basis of prevailing legislation and practices being in force and taking account of contemporary conditions/situations of adjoining land uses. Nothing in this report shall bind the Noise Control Authority in the context of law enforcement against all the sources being assessed.	Noted.
k) S.2.2.1 Road Traffic Noise (RtC item 18): Please explicitly state in S.2.2.2 that there will be no diagnostic rooms or wards included in the RCHE under the proposed development area. As a result, the stricter noise criterion for road traffic of 55 dB(A) for L10 (1hr) will not be adopted.	Note is added under Table 2.2.
l) S.2.2.2 Planned Fixed Noise Sources (RtC item 20): While no quantitative assessment has been carried out for planned fixed noise source, it is premature and factually incorrect to conclude that there will be no adverse fixed noise impact from the planned fixed noise source. The applicant should be made known of	The developer would ensure that the planned fixed noise source meeting the planning requirement for the planned fixed noise source, i.e. 5dB(A) below the acceptable noise level (ANL) or the prevailing background noise level, whichever is lower. The relevant details

the noise planning requirement for the planned fixed noise sources, .i.e. 5dB(A) below the acceptable noise level (ANL) or the prevailing background noise level, whichever is lower. Depending on the location of the planned fixed noise source, the design criteria will also be different (see comment on s.2.1.2). Such information should be supplemented. Should the design parameters are not available at this stage, please commit to review the noise impact of the planned fixed noise sources when they become available.	will be provided in the later detailed design stage. Depending on the location of the planned fixed noise source, the representative NSR as well as the respective ANL may be different. S.2.5.2 is revised. (**Addendum 11**)
m) S. 2.5.2 (RtC item 21): Respective document of TD's agreement remains outstanding. Please document TD's agreement on the traffic forecast data in the report once available. In case TD has no comment on the methodology for traffic forecast only, the consultant should provide written confirmation from the respective competent party (e.g. traffic consultant) that TD's endorsed methodology has been strictly adopted in preparing the traffic forecast data, and hence the validity of traffic data can be confirmed.	TD's confirmation is still pending. Endorsement from TD will be provided once received.
n) Blank page on table 2.2, page 15 of EA Rev. D. is noted. Please rectify.	Rectified.
<u>SIA</u> o) S.2.4 2nd bullet – Please revise as "rising mains / sewers".	Noted and revised
p) Table 4.1 – The "Total ADWF" for "Amended Scheme of this Application" should be calculated as "3,744.86".	After recalculation, the total ADWF for Amended Scheme of this Application is 3788.04 (=3699.26+22.4+43.18+19+4.2).
q) S.5.6 – Please add "An updated SIA will be submitted to the satisfaction of EPD assessing the potential sewerage impact to the San Tin Technopole sewerage system for conducting the hydraulic assessment and verifying the assumptions adopted in the current assessment when San Tin Technopole sewerage system is confirmed and becomes available."	Noted and revised
r) Heading of S.6 & S.7 – Please revise as "Fallback Option 1" and "Fallback Option 2" respectively.	Noted and revised
s) S.7.1 – Please revise as "…and then pump through a proposed twin rising main / sewers to …"	Noted and revised

t) S.7.3 to S.7.6, Appendix B, S.9.4 – Please delete.	Noted and revised
u) S.7 – Please add a "An updated SIA will be submitted to the satisfaction of EPD if Option 2 is pursued."	Noted and revised
v) S.9.7 – Please revise as "An updated SIA report for the selected sewage disposal arrangement will be submitted to the satisfaction of EPD…"	Noted and revised
w) S.9.8 – Please revise as "The updated SIA will assess…" and move to the second sentence of S.9.7.	Noted and revised
x) S.9.9 – Please revise as "If Fallback Option 2 is pursued, an updated SIA will be submitted to the satisfaction of EPD assessing the impact to the existing and planned sewerage system and the sizing of the new rising mains / sewers …"	Noted and revised
General y) Please note that the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO. The Applicant should review the EIAO implications at later stage and confirm with the EPD, and observe and ensure the proposed development will comply with all statutory requirements under the EIAO.	Noted.
z) Please provide full set of revised EA and SIA with changes highlighted and their comments addressed in the next submission for their record.	Noted.

Response to Dept Comments of Director of Environmental Protection (received 15.9.2025)
CURRENT

Comments from Director of Environmental Protection (received 18.6.2025) (Contact Person: Mr. Chris Wong; Tel: 2835 1000) based on our 3rd Draft FI	**Response(s):**
Please be advised that our previous textual comments on the EA and SIA have been addressed, except the followings to enhance the consistency and clarity:	Noted and background has been updated. **Addendum 11**

i. Please state in the Background of the EA that "As the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO, the Applicant should review the EIAO implications of the proposed development at later stage and confirm with the EPD. The Applicant should also observe and ensure the proposed development will comply with all statutory requirements under the EIAO."	
ii. S.2.2.2 of EA: Please state in the NIA that should the design parameters are not available at this stage, please commit to review the noise impact of the planned fixed noise sources when they become available.	Noted and section 2.8.2 has been updated. **Addendum 11**
iii. Table 4-1 of SIA: While it is understood from the RtC that the total recalculated ADWF is 3788.04, the number in the table and S.5.4 is 3779.16. Please clarify and rectify if necessary.	The final total ADWF is 3779.16 m3/day. (**Addendum 12**)
iv. There is a mismatch on the total no. of units shown in EA (i.e. 3751 under indicative development parameters) and s.1.7 of SIA (i.e. 3562). Please clarify and rectify if necessary.	No rectification is required for the SIA report.
v. Please clarify the designed capacity of the temporary onsite STP as 3,779.16 m3/day (S.6.5 of SIA refers) or 7,471.96 m3/day (S.6.8 refers). Please clarify and rectify if necessary.	Revised in S6.8, and the value of 7,471.96 m3/day refers to the excess flow. (**Addendum 12**)
It is noted that the applicant is required to apply for s16 planning application in future. We wish to reiterate our advice that there should be a mechanism (i.e. the future s.16 planning application) for the applicant to submit a proper NIA report to review, explore, demonstrate and implement appropriate noise mitigation measures for full compliance with the relevant noise criteria and requirements under ProPECC PNs, HKPSG and NCO in both construction and operation phases of the proposed developments. Similarly for sewerage infrastructure, an updated SIA report should be submitted by the applicant under such mechanism to assess the potential sewerage impact with the detailed scheme and ensure the implementation of mitigation measures, if required.	Noted. A proper NIA report and updated SIA report will be submitted by the applicant at the future s.16 planning application stage.

Considering the above and the draft Further Information submitted, I wish to reiterate our previous stance that, with implementation of mitigation measures, the proposed development will unlikely cause adverse environmental impacts. We have no objection to the subject application from environmental planning perspective.	Noted.
Please note that the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO. The Applicant should review the EIAO implications at later stage and confirm with the EPD. The Applicant should also observe and ensure the proposed development will comply with all statutory requirements under the EIAO.	Noted.
Please provide a full set of the finalized EA and SIA with incorporation of the amendment pages and with our above comments addressed in the next submission for our record.	Noted.

Response to Dept Comments of UD&L on Landscape and AVA (received 18.6.2025)

Comments from UD&L (received 18.6.2025) (Contact Person: Ms. Nicole Lee (Urban Design Unit); Tel: 3565 3945/ Mr. Samuel Hui (Landscape Unit); Tel: 3565 3957) based on our (Formal) FI Submission 28.5.2025	**Response(s):**
Landscape Having reviewed the Further Information (FI-1), it is noted that no new landscape information is provided in the submission compared with the previous draft submission. We remain our view of having no adverse comment from landscape planning perspective.	Noted.
Air Ventilation Our observations/comments from an air ventilation perspective are as follows. (a) **Value of H (Section 5.1, 2nd para. and Table 5.1)** – According to the consultant's argument stated in first paragraph of Section 5.1, the Assessment Area	According to Technical Circular No. 1/06, *"Occasionally, it may be necessary to include an assessment area larger than that defined above so that special surrounding features and open spaces are not omitted."* In this case, the original 1H (42m) has been extended to a larger 1H (150m) to incorporate special surrounding

(150m) should be 3.6H, while the Surrounding Area (300m) should be 7.2H. The consultant should revise the texts where appropriate.	features and open spaces beyond the original Assessment Area. Therefore, the new 1H is 150m and 2H is 300m instead of 3.6H and 7.2H. (**Addendum 9**)
(b) **Summary of SAVRs under annual wind condition (Section 6.2)** – For complete information, the consultant should explicitly state that the Proposed Scheme would result in lower SAVR at Castel Peak Road – Mai Ro, Road 1, Road 2, Fishponds 1 and Fishponds 2 when compared to the Baseline Scheme under annual wind condition.	Section 6.2 is revised accordingly to include the aforementioned areas. (**Addendum 9**)
(c) **Summary of SAVRs under summer wind condition (Section 6.3)** – For complete information, the consultant should explicitly state that the Proposed Scheme would result in lower SAVR at Castel Peak Road – Mai Ro, Road 2, Palm Springs – Arcadia, Wo Shang Wai Village and Fishponds 2 when compared to the Baseline Scheme under summer wind condition.	Section 6.3 is revised accordingly to include the aforementioned areas. (**Addendum 9**)

Response to Dept Comments of UD&L on Visual and AVA (received 12.9.2025) CURRENT

Comments from UD&L (received 18.6.2025) (Contact Person: Ms. Nicole Lee (Urban Design Unit); Tel: 3565 3945/ Mr. Samuel Hui (Landscape Unit); Tel: 3565 3957)	**Response(s):**
General i. According to the updated MLP, the building height of the block C2-1 is revised from 42mPD to 35mPD. The applicant is reminded to update relevant assessments including VIA and AVA to tally with the updated MLP.	Noted. The layouts have been updated in all the reports.
Urban Design and Visual Perspectives ii. **Para. 8.7.1 of Planning Statement** – The predicted visual impact of the OZP compliant Scheme ranging from slightly adverse to negligible appears incorrect. According to the VIA, the visual impact of Proposed Scheme compared against the OZP Compliant Scheme should range from moderately adverse to negligible.	Noted. The para. 8.7.1 has been updated accordingly in Planning Statement. (**Addendum 8**)

Air Ventilation Perspective iii. **Para. 8.8.1 of Planning Statement** – According the simulation results, the overall performances of the Baseline and Proposed Schemes on pedestrian wind environment are comparable under both annual and summer conditions. As such, the consultant should update this paragraph accordingly.	Noted. The para. 8.8.1 has been updated accordingly. (**Addendum 8**)
iv. AVA – Value of H (Section 5.1, 2nd para. and Table 5.1) – According to the consultant's argument stated in first paragraph of Section 5.1, the Assessment Area (150m) should be 3.6H, while the Surrounding Area (300m) should be 7.2H. The consultant should revise the texts where appropriate.	Noted, section 5.1 and Table 5.1 have been updated. (**Addendum 9**)

Response to Dept Comments of Drainage Services Department (received 27.6.2025)

Comments from DSD Chief Engineer/ Mainland North (received 27.6.2025) (Contact Person: Mr. Jacky Leong; Tel: 2300 1432) based on our (Formal) FI Submission 28.5.2025	**Response(s) in our Draft FI submission 8.9.2025:**
I have no further comments on the Sewerage Impact Assessment.	Noted.
Please find our comments below on the DIA report: 1. Appendix G: Please supplement the hydrographs of the pre-development subject to the same rainfall profile to demonstrate that the respective drainage impact was properly mitigated by the proposed scheme.	Supplementation of pre-development hydrographs in Appendix G cannot accurately demonstrate the mitigation impact of the WRA, because the WRA catchment area in the pre-development scenario (MP02A-02) differs from that in the post-development scenario (MP02A-a9) due to differences in catchment delineation, as shown in Figures 4 and 5. However, Appendix H can reflect the mitigation impact on runoff from the Application Site.
2. Please also supplement the key dimensions of the proposed wetland restoration area.	Noted, the key dimensions of the WRA have been supplemented in Table 8-1.
3. As per bullet 6 of your RtC, it was advised that the wetland restoration area was not to be considered as the pre-development scenario. However, referring to Table 7-1, the wetland restoration was considered as pre-development area. Please review and revise as appropriate.	The Application Site before development is considered as vacant lot with CN value of 85, so Table 7-1, Table 7-2, Table 9-1, Table 9-2, Appendixes F, H, and I have been revised, accordingly.

Response to Dept Comments of Drainage Services Department (received 15.9.2025) CURRENT

Comments from DSD Chief Engineer/ Mainland North (received 27.6.2025) (Contact Person: Mr. Jacky Leong; Tel: 2300 1432)	**Response(s):**
I have no further comment on the SIA.	Noted.
For the DIA, the applicant is requested to confirm whether the twin 225mm pipe and the 4m-wide emergency bypass spillway referred to in Section 8.2.4 are included as part of the "stormwater retention facilities" described in Section 11. In this regard, it is also assumed that the applicant will take up the maintenance responsibility for these drainage structures.	The applicant will be responsible for the maintenance of the twin 225mm pipes and the 4m-wide emergency bypass spillway, as these components are part of the stormwater retention facilities.

Response to Dept Comments from the Commissioner for Transport (received 9.7.2025)

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	**Applicant's Response(s) in Draft FI to TD on 15.8.2025**
Comments from Traffic Engineering Perspective	
a) RtC 1: It is noted in Drawing No. 4.4 of TTIA that the development traffic flow from Shek Wu Wai Road to San Tin Highway eastbound is 140 pcu/hr which is more than 100 pcu/hr (one-way) on strategic road. Hence, 2-Tier Modelling should be adopted to provide a more realistic forecast. You are reminded to take into account the latest toll fee of Tai Lam Tunnel in the traffic model submitted.	2-tier model has been adopted in the forecast. The toll fee changes of Tai Lam Tunnel is also considered in the traffic forecast of the revised TIA. (**Addendum 15**)
b) RtC 2: 1. Please review the provision of private car parking spaces for flat sizes 40<FS<70 and 70<FS<100 by adopting R3 of 1.10 for the proposed domestic plot ratio of 1.28.	R3 of 1.10 has been adopted for the calculation of parking provision.
2. Please provide breakdown of the accessible parking space.	The no. of accessible parking spaces is revised.
3. Please adopt MC parking provision at a ratio of 1:83 flats for residential development.	The MC parking provision is revised accordingly.
4. Please advise the loading/unloading arrangement for house.	Please note that there is no requirement for houses in the lease. Nevertheless, the loading/unloading activities for houses would be assisted by management staff.
5. Please refer to Guideline of Provision of Bicycle Parking Space in Annex B of Checklist of Traffic Impact Assessment (TIA) for development Projects published in TD website below: https://www.td.gov.hk/en/publications_and_press_releases/publications/free_publications/index_categoryid_8.html?print=1	Please note that the provision for bicycle parking spaces is derived from Chapter 8 of HKPSG, which is also adopted by the recent approved planning application Y/YL-MP/10. The provision rate has been updated under the assumption of the distance to future rail station. Please also note that Annex B of Checklist of Traffic Impact Assessment (TIA) is for NDAs., which is not applicable to our site.
6. Please provide additional references of RCHE in operation with similar scale and public transport coverage, and advise whether there are any visitor parking provision for RCHE.	An additional traffic survey on 2 adjacent RCHEs was conducted in mid-July 2025. The

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	Applicant's Response(s) in Draft FI to TD on 15.8.2025
	survey result is also included in the revised TIA for reference. (**Addendum 15**)
c) RtC 3: It is noted that there would be a roundabout adjoining Mai Po South Road. Please clarify whether there would be drop bars controlling ingress/egress at Mai Po South Road. If there would be drop bars, please provide analysis to demonstrate that traffic at Mai Po South Road would not be affected.	Please note that there would be no drop bar at the main entrance of development. Therefore, traffic at public road would not be affected.
d) RtC 4: Taking into account the size of the development and there would be additional public transports routing through San Tin Interchange and the connecting roads to support the development, please provide assessment of relevant roads and junctions.	Please note that the additional PT trips would be minimal to the adjacent road network.
e) Section 2.3.3: Please also take into account the location and the public transport coverage of the referenced RCHE to determine whether they are suitable for reference.	An additional traffic survey on 2 adjacent RCHEs was conducted in mid-July 2025. The survey result is also included in the revised TIA for reference.
f) Table 3.1: Please include the signalized junction of Castle Peak Road – San Tin and slip roads to/from San Tin Interchange.	Please note that the additional PT trips would be minimal to the adjacent road network.
g) Section 3.3.1: Taking into account the size of the development, the walking distances of most of the building blocks exceed 500m to public transport services. Please review this section.	Please note that the 500m coverage of PT service was adopted in approved S16 TIA for the same subject site. The usage of public transport services would also be reviewed upon the population intake of the development.
h) Section 4.1.1: 1. The proposed development is a large scale development and may affect the development potential of San Tin Technopole. Please also assess the traffic performance of relevant road and junction in a design year after the full population intake of San Tin Technopole to ensure that the proposed development would not affect the development potential of San Tin Technopole	Based on the virtual meeting with TD on 25 July 2025, a sensitivity test for the full population intake of San Tin Technopole (STT) in design year 2039 is included in the revised TIA report.
2. As the proposed design year is 2034, please clarify whether the commissioning of Northern Link (NOL) has been taken into account in the assessment. Please also clarify whether the latest toll fee of Tai	Please refer to the revised TIA. The commissioning of NOL would expect to share the burden of road traffic and help to improve the road junction

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	Applicant's Response(s) in Draft FI to TD on 15.8.2025
Lam Tunnel has been taken into account in the assessment.	performance. The toll fee changes of Tai Lam Tunnel is also considered in the traffic forecast of the revised TIA.
i) Table 4.2: Please clarify whether the development trips have taken into account the full population intake of San Tin Technopole	Based on the virtual meeting with TD on 25 July 2025, a sensitivity test for the full population intake of San Tin Technopole (STT) in design year 2039 is included in the revised TIA report.
j) Sections 4.2.4 and 4.2.5: Please take into account the development proposal of Ngau Tam Mei in the assessment.	Please note that the Ngau Tam Mei development has been considered in the assessment.
k) Tables 4.4 and 4.5: 1. The flat sizes in the table do not tally with Table 2.2. Please review.	Please refer to the remark of Table 2.2 for the nos. of unit under different flat sizes.
2. The trip rates of RCHE should be reviewed according to the comment in item (e) above.	An additional traffic survey on 2 adjacent RCHEs was conducted in mid-July 2025. The survey result is also included in the revised TIA for reference.
l) Table 4.6: Taking into account the larger flat size (average housing size 74.5m2) in the proposed development, please critically review whether the average domestic household size of 2.8 and the estimated population of 9,999 are underestimated.	Please note that the current usage of average domestic household size of 2.8 is based on the 2021 by-census data for the small TPU 542 covering our site. Reference was also made to nearby applications, including Y/YL-MP/10, Y/YL-NSW/8, Y/YL-NSW/9, Y/YL-NSW/7, and the LSPS002 of the Tung Shing Lei site, which have adopted person-per-flat ratios ranging from 2.5 to 2.8. This aligns with Hong Kong 2030+ and government policies promoting home space enhancement, supporting larger living spaces to improve livability.
m) Section 4.3.5: It is noted that there would be one-way of approximately 1,622 pax/hr of public transport demand. Please review whether the footpath and pedestrian crossing facilities at Mai Po South Road could cater for the two-way pedestrian flows without provision of shuttle bus mentioned in Section 4.3.6.	The LOS assessment of footpath at Mai Po South Road is included in the revised TIA. Subject to the TD's meeting on 25 Jul 2028, the shuttle bus service would be divided into short haul service and long-haul service in the assessment. Please note that new franchised bus service would be applied, subject to further agreement and the review of PT usage upon population intake for the subject site.

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	**Applicant's Response(s) in Draft FI to TD on 15.8.2025**
n) Section 4.4.1: Please clarify whether "Year 2034 Reference Case" has taken into account the traffic generation/attraction of San Tin Technopole.	The STT flow up to 2034 has been considered in The Year 2034 Reference Case.
o) Section 5.1.1: 1. Please be advised that the cycle time of new junction should be limited to 90 seconds with RC greater than or equal to 25% according to TPDM. Hence, please review the junction calculation. For example, please reduce the cycle time of junction B to 90 seconds.	Please kindly note that the usage of cycle time (105 second) of junction B is based on the extract of CEDD's study.
2. Please provide the formulation of lost time adopted in the junction calculation. For example, it is noted that the lost time of Junctions A and B are only 16 and 22 respectively.	Please find the formulation of lost time of calculation in the revised TIA for reference. (**Addendum 15**)
3. Please review the junction calculation of priority junctions. For examples, the lane width of Castle Peak Road – Mai Po are less than 4.2m adopted in the junction calculation of Junction I.	The parameters of junction calculation is reviewed in the revised TIA. (**Addendum 15**)
p) Section 5.1.3 and RtC 12a: If the applicant of Y/YL-MP/10 does not implement the proposed junction improvement works, please advise whether the applicant of this application would undertake the junction improvement works.	Noted. The applicant of this application would undertake the junction improvement works if necessary.
q) Table 5.1: As the additional public transports supporting the proposed development might route through SanTin Interchange and Castle Peak Road – San Tin. Please include San Tin Interchange, the signalized junctions of Castle Peak Road – San Tin, Castle Peak Road – Chau Tau and the slips road to/from San Tin Interchange and the junction of Castle Peak Road – San Tin and Kwu Tung Road.	Please note that the additional PT trips would be minimal to the adjacent road network.
r) Table 5.3: 1. It is noted that the development traffic flow from Shek Wu Wai Road to San Tin Highway eastbound is 140 pcu/hr. Please assess the traffic flow at San Tin Highway eastbound at the north of Shek Wu Wai Interchange with the additional development traffic flow.	The road section of San Tin Highway is included in the revised TIA.
2. Remark (3): Shek Wu Wai Road is not a PD. Please review the design capacity.	Since the concerned Shek Wu Wai Road should be considered as part of the signal junction, the road link assessment would be excluded in the assessment.

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	**Applicant's Response(s) in Draft FI to TD on 15.8.2025**
3. As mentioned in item h) above, please assess the traffic performance in a design year after the full population intake of San Tin Technopole, and mention the effect of commissioning of NM Highway to San Tin Highway in the report.	Based on the virtual meeting with TD on 25 July 2025, a sensitivity test for the full population intake of San Tin Technopole (STT) in design year 2039 is included in the revised TIA report. The effect of commissioning of NM Highway is included in the revised TIA.
s) Section 5.2: 1. As mentioned in item m) above, please conduct pedestrian assessment from the entrance/exit of the proposed development to the public transport facilities at Castle Peak Road – San Tin.	The LOS assessment of footpath at Mai Po South Road is included in the revised TIA.
2. Please review if cycle track could be provided to connect the proposed development and the existing cycle track at Castle Peak Road – Mai Po.	Based on the virtual meeting with TD on 25 July 2025, provision of cycle track is not feasible due to the adjacent private lots.
t) Section 5.3.3 and Drawing 5.8: Please consider to provide signalized junction and shift the bus stop away from the proposed junction.	Based on the virtual meeting with TD on 25 July 2025, relocation of bus stop is not feasible due to the adjacent private lots.
u) Section 5.3.7: Similar to item h) above, please access the traffic performance of relevant road and junction in a design year after the full population intake of San Tin Technopole.	Based on the virtual meeting with TD on 25 July 2025, a sensitivity test for the full population intake of San Tin Technopole (STT) in design year 2039 is included in the revised TIA report.
v) Section 5.3.9: Please clarify what is the further junction improvement in later stage and consider to take up the further junction improvement if other developments are unable to take up the work.	Please refer to the Section 5 in the revised TIA. (**Addendum 15**)
w) Table 5.12: Similar to item r) above, please assess the traffic flow at San Tin Highway eastbound at the north of Shek Wu Wai Interchange with the additional development traffic flow.	The road section of San Tin Highway is included in the revised TIA.
x) Noted there is a change on the directional split of the trips generated from the subject Site. Trips using Fairview Park Interchange has been reduced significantly from 180 pcu/hr to 120 pcu/hr. Please justify.	Please note that the direction split of the development trips has been reviewed and made reference to the application Y/YL-MP/10.
y) Y/YL-NSW/8 and Y/YL-NSW/9 have been approved by the Town Planning Board on 28.2.2025, and should be included in the assessment under 2034 Design Case instead of sensitivity test.	Please note that both applications of Y/YLNSW/8 and Y/YL-NSW/9 have been considered in 2034 reference case.

Comments from Commissioner for Transport (received 9.7.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our (Formal) FI Submission 28.5.2025	**Applicant's Response(s) in Draft FI to TD on 15.8.2025**
z) Please holistically review the report content related to the junction improvement works for Fairview Park Interchange. It has been noted that several planning applications have been quoted for providing junction improvement in Junction H i.e. Y/YL-MP/7, Y/YL-MP/10, Sha Po Public Housing Development, etc.. A drawing showing the ultimate state of Junction H incorporated all the junction improvement works should be provided and used in the junction calculation checking. Please supplement.	Please note that the Drawing 5.3 in the revised TIA has incorporated the junction improvement under different planning applications at Fairview Park Interchange.
aa) Understand that junction improvement works from Y/YL-MP/10 has been assumed in this TTIA but the trips generated from Y/YL-MP/10 has not been included in the assessment. Please explain.	The traffic flow of Y/YL-MP/10 has been considered in the revised TIA.
<u>Comments from Transport Operation Perspective</u> bb) Sections 4.3.6 and 4.3.7; based on the mode hierarchy of public transport services, please note that shuttle bus/coach would only be considered if no other public transport services are available. The project proponent should not assume their proposed shuttle bus would be approved by TD. Hence, it should be assumed that the feeder demand for railway/SPB should be redistributed to franchised bus/GMB and review the total peak hour demand for these public transport services/proposed routes and their need for additional public transport facilities (inside and/or outside the development Site with due consideration of item g) above as appropriate.	Subject to the TD's meeting on 25 Jul 2028, the shuttle bus service would be divided into short haul service and long-haul service in the assessment. Please note that new franchised bus service would be applied, subject to further agreement and the review of PT usage upon population intake for the subject site.
cc) In view of the updated estimated peak hour PT demand (i.e. over 1,600 passengers during the peak hour) and the above updates to the demand of franchised bus and GMB services, please ascertain if the associated public transport facilities (e.g. lay-bys within walking distance) should be enhanced further to support the strengthened/additional PT services if required.	Subject to the TD's meeting on 25 Jul 2028, the shuttle bus service would be divided into short haul service and long-haul service in the assessment. Please note that new franchised bus service would be applied, subject to further agreement and the review of PT usage upon population intake for the subject site. The LOS assessment of footpath and queuing space for the assigned Franchised bus passengers have been included and revised in the assessment.

Response to Dept Comments from the Commissioner for Transport (received 2.9.2025)

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	**Response(s) in our Draft FI to TD on 10.9.2025:**
1. RtC(b): - Please follow the Checklist of TIA for bicycle parking provision, and advise the loading/unloading arrangement for houses.	The bicycle parking provision is revised accordingly. Please refer to the revised Chapter 2.3 for the loading/ unloading arrangement for houses.
- Please provide breakdown of visitor parking spaces to demonstrate that each block has sufficient visitor parking spaces, and clarify whether there are any pick-up/drop-off laybys and motor cycle parking spaces/bicycle parking spaces for RCHE.	Please refer to Table 2.2 in the revised TIA for breakdown of visitor parking spaces. As indicated in Table 2.2, there will be proposed provision of private car parking space, HGV L/UL bay, ambulance lay-by and light-bus lay-by for RCHE.
- Please also clarify whether the visitor parking spaces of the residential development could be shared to RCHE, and seek comment from BD on the provision of accessible parking spaces as appropriate.	The visitor parking spaces would not be shared with RCHE. BD comment on the provision of accessible parking spaces would be sought if necessary.
2. RtC (d), (f) & (q): Taking into account the scale of the proposed development, please provide assessment of relevant roads and junctions from San Tin Interchange to/from the proposed development. For examples, assessment of Junctions J & K (similar to Table 3.2) and the signalized junctions connecting San Tin Interchange should be provided in design years including the sensitivity tests.	Please find the revised TIA for reference for Junction J&K for review. Since new Section 16 Application would be required in later stage, the assessment for the signalized junctions connecting San Tin Interchange would be further reviewed.
3. RtC (g): According to TPDM, the ideal walking distance to a bus stop should not exceed 400 metres. Please critically review the walking distances from the building blocks of the proposed development to public transport services (particularly from the western portion of the site to public transport facilities), and whether additional provision/enhancement of public transport facilities are required (e.g. extension of bus laybys, etc.).	The walking distance to nearest NB bus stop and SB bus stop (San Tam Road) is around 410m and 540m, respectively. It is noted that the ideal walking distance to bus stop should not exceed 400m. However, the distance between 2 bus stops in Castle Peak Road – Mai Po is already over 800m. Therefore, the PT trips to the nearest bus stop have already been considered. Also, if shuttle bus is not approved, potential pick-up/drop-off to allow bus service would be provided within the subject site, which has similar function of residential shuttle bus to share the PT trips. It would subject to further

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s) in our Draft FI to TD on 10.9.2025:
	review of actual passenger demand upon occupation of the subject development and further review and agreement with the corresponding public transport operators and government departments, if necessary.
4. RtC (h): - In Drawing No. 4.4, it appears that there are only minimal enhanced PT traffic generation. Please review.	Subject to Table 4.7 and 4.9, the additional PT traffic generation is minimal.
- In Drawing No. 4.5, it is noted that the traffic flows at Junction I have been further increased to the similar order as the observed traffic flow at Junction B in Drawing No. 3.13 (which has flare lane at Shek Wu Wai Road). Please critically review whether the proposed priority junction arrangement would induce conflict between the vehicles leaving/entering Mai Po South Road and the main flows along CPR and whether signalized junction arrangement and/or other local junction widening works is required.	Please note that the junction I would operate within capacity in Design Year 2034 with the existing junction layout. Nevertheless, please refer to Annex G regarding the indicative improvement layout with the calculation spreadsheet for Junction I in the revised TIA for review.
- Please check the traffic flows in all the flow diagrams as well as the junction/link performance calculation. For example, in Drawing No. 4.5, the traffic flow at Junction C heading CPR-ST southbound is 790 (i.e. 765+25) (AM), however, it is reduced to a total of 415 (i.e. 180 + 235) (AM) in Junction I. Please review and explain.	Further to the phone conversation with Mr. Ma (TD), the traffic flows in all the flow diagrams and calculations have been reviewed in the revised TIA.
5. RtC (i): - It is noted in Tables 5.16 and 5.17 that the DFC of Junction C and V/C of Link L3 and L4 are about 0.9, which are above 0.85. Please seek agreement from CEDD as this might affect the development potential of San Tin Technopole and other potential public developments (e.g. NTM development) and propose mitigation measures to improve junction performance to DFC<0.85 as appropriate.	Please find the revised TIA for reference. The DFC of junction C would be 0.78, and V/C of L4 would be 0.91 in Sensitivity Test 3 in Design Year 2039. V/C ratio ≤ 1.0 implies the road has sufficient capacity to cope with the anticipated traffic volume. CEDD comment would be sought if necessary.
- Please review the traffic performance of L5 and L6 which have V/C higher than 1, and assess the routing mentioned in item 2 above. As the V/C of L5 and 6 are higher than 1, please review the descriptions in Paras. 5.3.22 & 5.3.23.	Please find the revised TIA for reference. 1.0 ≤ V/C ratio ≤1.2 indicates a manageable degree of congestion along the road.

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	**Response(s) in our Draft FI to TD on 10.9.2025:**
6. RtC (j): Please clarify whether the traffic flows from NTM development have been included in the reference case of 2034.	Please note that the Ngau Tam Mei development has been considered in the assessment.
7. Table 4.5 and Paras. 4.3.6 & 4.3.7: Please advise the formulation of the induced mechanized trips and provide assessment if the coach service mentioned in Para. 4.3.7 cannot be provided as discussed in the previous meeting.	If shuttle bus is not approved, potential pick-up/drop-off to allow bus service would be provided within the subject site, which has similar function of residential shuttle bus to share the PT trips. It would subject to further review of actual passenger demand upon occupation of the subject development and further review and agreement with the corresponding public transport operators and government departments, if necessary.
8. RtC (l): We have no further comment provided that PlanD have no comment on the proposed household size.	Noted. Please note that the current usage of average domestic household size of 2.8 is based on the 2021 by-census data for the small TPU 542 which covers our site, the San Tin Constituency Area, and the Yuen Long District. Reference was also made to nearby applications of similar comprehensive development, including A/YL-KTN/663, A/YL-NSW/242, A/YL-MP/287, and A/YL-MP/247, which have adopted person-per-flat ratios ranging from 2.58 to 3.28, while larger average flat size in some application sites. Also, this aligns with Hong Kong 2030+ and government policies promoting home space enhancement, supporting larger living spaces to improve livability. Enclosed, please find justification email dated 27.8.2025 from Masterplan to DPO regarding person-per-flat ratio. (**Addendum 14**)
9. RtC (m): As mentioned before, please assess the performance of footpath and crossing facilities without provision of shuttle bus as it might not be approved. In addition, for Drawing No. 5.7, it is noted	If shuttle bus is not approved, potential pick-up/drop-off to allow bus service would be provided within the subject site, which has similar function of residential

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s) in our Draft FI to TD on 10.9.2025:
that there are some narrow footpaths in the vicinity of the bus bays. Please review whether the width of footpath along the bus bays could be widened and whether the length of the laybys could be extended to address the demand of future public transport.	shuttle bus to share the PT trips. It would subject to further review of actual passenger demand upon occupation of the subject development and further review and agreement with the corresponding public transport operators and government departments, if necessary.
10. Para. 4.4.1: As mentioned in the previous meeting, please assess the scenarios if shuttle bus is not approved.	If shuttle bus is not approved, potential pick-up/drop-off to allow bus service would be provided within the subject site, which has similar function of residential shuttle bus to share the PT trips. It would subject to further review of actual passenger demand upon occupation of the subject development and further review and agreement with the corresponding public transport operators and government departments, if necessary.
11. RtC (o): - For Tables 5.3 & 5.13, please review the traffic performance of L3, L4, L5 and L6 which have V/C higher than 0.85 in 2034.	V/C ratio ≤ 1.0 implies the road has sufficient capacity to cope with the anticipated traffic volume. V/C ratio above 1.0 indicates the onset of mild congestion and a 1.0 ≤ V/C ratio ≤1.2 indicates a manageable degree of congestion along the road.
- The V/C of L5 is higher than 1. Please review the descriptions in Paras. 5.3.12 & 13.	Please find the revised TIA for reference. 1.0 ≤ V/C ratio ≤1.2 indicates a manageable degree of congestion along the road.
- Furthermore, please check the junction calculation. For example, please check the major road width for junction calculation of Junction C.	The parameters of junction calculation are reviewed in the revised TIA.
12. RtC (s): As mentioned in the previous meeting, please take into account the impact if no shuttle bus can be provided, and explain why it is not feasible to provide cycle track.	The provision of cycle track is not feasible due to the adjacent private lots. Please refer to Annex F in revised TIA for reference.
13. RtC (t): As mentioned in the previous meeting, please elaborate the site constraints and review if there are any other possible locations for setting up the bus stop.	The relocation of bus stop at Castle Peak Road – San Tin is not feasible due to the adjacent private lots. Please refer to Annex F in revised TIA for reference.

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s) in our Draft FI to TD on 10.9.2025:
14. RtC (bb) & (cc): As mentioned in the previous meeting, we emphasised that shuttle bus/coach services should only be considered if no other public transport options are available. Therefore, the project proponent should not assume their proposed shuttle bus will be approved by the Transport Department (TD). Please request the consultants to reallocate the feeder demand to franchised buses or green minibuses (GMB), review the total peak hour demand for these public transport services/proposed routes, and assess the need for additional public transport facilities (either inside or outside the development site (within walking distance) as necessary. As a remark, if public transport provision is insufficient, future residents of the proposed development might consider other transport modes such as taxi or hire car, which would further increase the traffic generation/attraction of the proposed development and might overload the nearby junctions, especially Junction I.	If shuttle bus is not approved, potential pick-up/drop-off to allow bus service would be provided within the subject site, which has similar function of residential shuttle bus to share the PT trips. It would subject to further review of actual passenger demand upon occupation of the subject development and further review and agreement with the corresponding public transport operators and government departments, if necessary.

Response to Dept Comments from the Commissioner for Transport (received 12.9.2025) CURRENT

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s):
- RtC 3: As the original population density is relatively low, the distance between the bus stops is longer. However, as the proposed development would significantly increase the population density, please consider to provide additional bus stops with bus bays within 400m walking distance to support the proposed development if necessary.	For the induced franchised bus trips, the additional NB bus stop heading to Sheung Shui direction would be subject to further liaison and agreement with the corresponding public transport operators and government departments, if necessary. However, for the SB bus stop, since the existing routing heading to Yuen Long direction turns to San Tam Road at the Castle Peak Road – Mai Po / San Tam Road junction (Junction C), passengers will still need to walk through the pedestrian footbridge to the nearest SB bus stop near Maple Gardens.

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s):
	Since new Section 16 Application would be required in later stage, the public transport service would be further reviewed. (**Addendum 15**)
- RtC 4: As discussed with MVA, please review the traffic flows and the associated junction calculation, particularly for Junctions C and I. In addition, the proposed junction improvement works in Annex G should comply with the requirements in TPDM and should be implemented by the applicant.	The traffic flow and calculation have been reviewed in the revised TIA. The proposed junction improvement works in Junction I (as shown in Annex G would comply with the requirements in TPDM and would be undertaken by the applicant.
- Para. 4.2.5: Please consider to add "The population intake programme of the proposed development will take into account the commissioning programme of NOL and the capacity of road network to ensure that the proposed development would not cause any significant traffic impact to the road network." after the last sentence.	Noted. The TIA has been revised accordingly. (**Addendum 15**)
- Table 4.6: It is noted that 11% of residents would take PV/Taxi. Please allow sufficient pick-up/drop-off spaces and taxi stands within the proposed development.	Noted. Sufficient pick-up/drop-off spaces and taxi stands within the proposed development would be provided, and reviewed in later detailed design stage.
- Para. 4.3.6: Please provide the formulation of 64.2% and 35.8%.	Please refer to Remark (5) and (7) for consideration. The split of 64.2% is the proportion of Rail/LRT and Shuttle Bus in PT modal trips: (48.3%+4.1%)/81.7% = 64.2%. The remaining 35.8% is the proportion of Bus and PLB in PT modal trips: (25.8%+3.5%)/81.7% = 35.8%.
- Para. 4.3.7: Please clarify what is SPB.	The SPB should be revised as Shuttle Bus, please find Para 4.3.7 in the revised TIA for review.
- Para. 4.3.12: The design of the potential bus stops and related facilities provided within the subject development should comply with relevant design requirements of TD. In addition, please add "other public transport" and "and public transport" after "Potential bus stops and" and "to allow bus route" respectively, or consider to provide a Public Transport Interchange.	Noted. Please find Para 4.3.12 in the revised TIA for review.
- Para. 4.4.1: Please clarify whether the induced bus trips include coach trips.	The coach trips are included in the induced bus trips.

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	**Response(s):**
- Para. 5.1.6: Please review the presentation of this para. as the V/C is no more than 1 for L5 and advise whether there are any future improvements to the performance of road link.	Noted. Please find Para 5.1.6 in the revised TIA for review.
- Para. 5.2.5: As mentioned in previous RtC (m), it is noted in Drawing No. 5.7 that there are some narrow footpaths in the vicinity of the bus bays. Please review whether the width of footpath along the bus bays could be widened and whether the length of the laybys could be extended to address the demand of future public transport.	Please note that the footpaths in the vicinity of the bus bay have been reviewed, the result is as shown in Table 5.5 and indicated in Drawing 5.6. The result shows that the identified footpaths would operate in LOS A and B. The extension of bus bay would be subject to further review and agreement with the corresponding public transport operators and government departments, if necessary. The further widening of footpath near the bus stop would be subject to review in later stage.
- Tables 5.13 & 5.17: Please review the name of L5.	Noted. Table 5.13 and 5.17 are revised accordingly.
- Paras. 5.3.12 & 5.3.22: For L5, please review the presentation of these paras. and advise whether there are any future improvements to the performance of road link by other projects.	Noted. Please find Para 5.3.12 and 5.3.22 in the revised TIA for review.
- Para. 6.1.7: Please add "other public transport" and "and public transport" after "Potential bus stops and" and "for the potential bus route" respectively, or consider to provide a Public Transport Interchange.	Noted. Please find Para 6.1.7 in the revised TIA for review.
- Para. 6.1.11: Similar to the above comments, please review the presentation of this para.	Noted. Please find Para 6.1.11 in the revised TIA for review.
<u>Comments by TO/NT (Contact Person: Mark WONG)</u>	
R-to-C Noting point (3) of the R-to-C stated that the walking distance to the nearest bus stops exceeds the ideal walking distance, please review whether the "existing nearby public transport services" are accessible to the residents of the subject development site. Additionally, assess whether the transport demand would be shifted to and adequately served by the proposed public transport services within or near the development site.	For the induced franchised bus trips, the additional NB bus stop heading to Sheung Shui direction would be subject to further liaison and agreement with the corresponding public transport operators and government departments, if necessary. However, for the SB bus stop, since the existing routing heading to Yuen Long direction turns to San Tam Road at the Castle Peak Road – Mai Po / San Tam Road junction (Junction C), passengers will still need to walk through the pedestrian

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s):
	footbridge to the nearest SB bus stop near Maple Gardens. The actual passenger demand would be further reviewed upon occupation of the subject development and further review and agreement with the corresponding public transport operators and
Please provided further details of the recommended public transport facilities (e.g., additional lay-bys or a Public Transport Interchange)	Since new Section 16 Application would be required in later stage, the details of the potential public transport facilities would be further reviewed.
TIA Report **Para 4.3.6:** Please provide further details of the recommended "potential bus service." For example, advise the number of proposed routes, their proposed routing (both bounds), headway, and vehicle allocation for the proposed short-haul and long-haul bus routes.	Since new Section 16 Application would be required in later stage, the details of "potential bus service" would be further reviewed.
Para 4.3.12: Please confirm whether the potential bus stops and related facilities would accommodate the operation of 12.8m bus vehicles and whether relevant bus ancillary facilities would be provided to support the terminating routes (if any).	Since new Section 16 Application would be required in later stage, the 12.8m would be accommodated within the development. Details will be further reviewed in the Section 16 Application.
Table 4.7: Please review whether the "shuttle bus trips" or "coach" mentioned in remarks (5) and (6) should be replaced by the "proposed bus services," and supplemented with the necessary details.	Remarks (5) and (6) are updated in the revised TIA. Since new Section 16 Application would be required in later stage, details will be further reviewed.
Comments by Donald Leung E/BP, TE/NTW Transport Department Tel. 2399 2778 On top of the comments provided by Victor in preceding email, please find my comments related to Fairview Park Interchange (Junction H) below:- Please provide the rationale for the change of traffic flow towards Yuen Long direction in AM peak from 315 pcu/hr (first submission) to 215 pcu/hr (this Draft FI-3 submission).	Please note that the direction split of the development trips has been reviewed and made reference to the application Y/YL-MP/10, generally 40% trips (around 140 pcu/hr) to Sheung Shui bound and 60% trips (around 210 pcu/hr) to Yuen Long bound for residential and RCHE trips. For the proposed bus service, the "long haul service" to Kowloon/Hong Kong Island, which equals to approximately 5 pcu/hr, would also be included in the trips to San Tin Highway SB.
Out of the 215 pcu/hr towards Yuen Long direction in AM peak, please provide justification on why 120 pcu/hr would go north to use Shek Wu Wai Road	Out of the 215 pcu/hr generation trips heading to Yuen Long bound in AM peak, 95 pcu/hr would go north and approach

Comments from Commissioner for Transport (received 2.9.2025) (Contact Person: Mr. Victor Ma; Tel: 2399 2727) based on our Draft FI Submission 15.8.2025	Response(s):
instead of going south to use Castle Peak Road - Tam Mi.	San Tin Highway SB at future Shek Wu Wai Interchange, while 120 pcu/hr would go south to use Castle Peak Road – Tam Mi. The split of these two routes of Yuen Long bound traffic is derived based on the travelling distance and travelling time. The distance to San Tin Highway southbound (close to the slip road from Fairview Park Interchange) using Castle Peak Road – Tam Mi is approximately 2.5 km, while the distance using future Shek Wu Wai Interchange to the same point is approximately 5.4 km. With consideration of travelling speed, 50kph at Castle Peak Road and 100kph at San Tin Highway, with the consideration of the junctions through the respective routes, the travelling time through Castle Peak Road - Tam Mi is approximately 4 mins, while the travelling time for the new route via Shek Wu Wai Interchange is approximately 5.6 mins. Therefore, by proportion, approximately 60% of the Yuen Long bound traffic would make use of the Fairview Park Interchange and the remaining would make use of future Shek Wu Wai Interchange, which is also adopted in the assessment.
Para. 5.1.3: please state clearly which part of the improvement works at Junction H would be taken up by the applicant. If not all the junction improvement works as illustrated in Drawing 5.3 are to be carried out by the applicant, please demonstrate that Junction H could still performance satisfactorily after the implementation of junction improvement work by the applicant.	Please note that the entire junction improvement works would be undertaken by the applicant, if there is programme mismatch.

Comparison between the Current Application No. Y/YL-MP/9 and Application No. A/YL-MP/394

	Application No. A/YL-MP/394 [A]	**Current Application No. Y/YL-MP/9 [B]**	**Difference [B-A]**
Application Site Area (about)	207, 408 m^2	207, 408 m^2	Nil
Areas of the Site (about)			
Wetland Restoration Area	47,400 m^2	47,400 m^2	Nil
Communal Open Space	13,938 m^2	21,203 m^2	+7,265 m^2
Communal Landscape and Communal Perimeter Landscape	16,465 m^2	38,761 m^2	+22,296 m^2
Communal Streetside Landscape	2,901 m^2	Nil	-2,901 m^2
Private Garden (of Houses)	50,209 m^2	15,444 m^2	-34,765 m^2
Residential Portion			
Total Plot Ratio (about) Domestic Plot Ratio (about) Non-Domestic Plot Ratio (about)	0.4 Nil	1.30 1.28 0.02	+0.9 +1.28 +0.02
Total GFA (about) Maximum Domestic GFA (about) Maximum Non-Domestic GFA (about)[1]	82,963 m^2 82,963 m^2 Nil	269,879 m^2 266,079 m^2 3,800 m^2	+186,916 +183,116 +3,800
Site Coverage (not more than)	25%	25%	Nil
Total Number of Units (about)	649	3,562	+2,913
Average Unit Size (Approx.)	127.8 m^2	74.7 m^2	-53.1 m^2
Ancillary Recreational Facilities (Clubhouse GFA) (about)	3,000 m^2	11,581 m^2	+8,581
Estimated Population (about)	1,817*	9,974*	+8,157
Building Height and No. of Buildings (about)[2]			
2-storey House	+16.8 mPD (473 nos.)	Nil	-473 nos.
3-storey House	+21.3 mPD (176 nos.)	+21 mPD (128 nos.)	-0.3 mPD -48 nos.
6-storey Residential Tower	Nil	+28 mPD (12 nos.)	+12 nos.

[1] Non-domestic GFA includes RCHE only, and excludes clubhouse and E&M.

[2] Rounded up to the nearest integer. Please refer to Appendix 1 for the exact figures.

8-storey Residential Tower	NIL	+35 mPD (16 nos.)	+16 nos.
10-storey Residential Tower	NIL	+42 mPD (19 nos.)	+19 nos.
Clubhouse (2-storey)	+17 mPD (1 no.)	+16 mPD (4 nos.)	-1 mPD +3 nos.
Residential Care Home for Elderly cum E&M Building (4-storey)	Nil	+25 mPD (1 no.)	+1 no.
E&M Building (TSTP)	+12 mPD (1 nos.)	+12 mPD (1 no.)	Nil
Residential Car Parking Provisions			
Residential	1,298	1,514	+216
Visitors'	5	200	+195
Accessible Parking Space	1	6	+5
Motorcycle Parking Space	37	42	+5
Loading / Unloading Bay for Heavy Good Vehicles	1	47	+46
Bicycle Parking Space	Nil	764	+764
RCHE (100-places) Car Parking Provisions			
Ancillary Private Car Parking Space	Nil	3	+3
Loading Bay for Light Good Vehicles	Nil	1	+1
Ambulance Lay-by	Nil	1	+1
Taxi/Private Car Pick-up/Drop-off Space	Nil	1	+1

Remarks:

* Based on person per flat-ratio of 2.8.

WETLAND CONERVATION AREA AND SAM PO SHUE WETLAND CONSERVATION PARK



Planning and Design Merits

1. Stepped Building Height Decends from Central Areas to the North and South of the Site (10-, 8-, 6-, and 3-storey high)
2. Building Separations and Visual Corridor
3. RCHE Community Facility Provided in Early Phase of Scheme
4. Communal Open Space, Landscaping and Gardens
5. Green Rooftop
6. Visual Gap Between Buildings Above An Elevation of +21mPD
7. Wind Path and Central Tree-lined Boulevard

WETLAND CONERVATION AREA AND SAM PO SHUE WETLAND CONSERVATION PARK



Ecological Merits

1. 50m Tower Setback Line from Wetland Restoration Area
2. 7.5m-wide Buffer Planting, i.e. Green Barrier
3. 2m-high R.C. Boundary Fence Wall / Solid Wall
4. Landscaped Gardens, Wildlife Pond with Nature Trail
5. Perimeter Tree Planting of 3m-wide Buffer Zone, with 2.5m-high Wall
6a. Wildlife Viewing Points (Ground level)
6b. Wildlife Viewing Ponits (Rooftop)
7. Min. 80m Setback from WCA for 10-storey Buildings

To Amend the Notes of the “Comprehensive Development to include Wetland Restoration Area” Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Ecological Impact Assessment

Profit Point Enterprises Limited

Revision: 0

12-September-2025

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Bringing ideas to life

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1 INTRODUCTION

1.1 Background

1.1.1 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.1.2 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.3 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

1.1.4 The EcoIA presented here in support of the S.12A planning application of a revised residential scheme is based on the findings of ecological surveys conducted between April 2024 – March 2025, together with review of 12-months EM&A reports (December 2023 – November 2024). The assessment is derived from the results of literature review and ecological surveys conducted within the Application Site and within 500m of its boundary.

1.2 Key Relevant Amendment under Current Application

1.2.1 No changes are proposed at the implemented WRA and at the interface (boundary) between the residential portion and the WRA.

1.2.2 Proposed changes in layout of the internal road, landscaping, community facilities and are not anticipated to have any impact on the WRA and the wetlands in the Wetland Conservation Area (WCA), as these are all at the ground level and will be screened off with the perimeter wall and buffer planting.

1.2.3 Key amendments in the proposed Master Layout Plan (MLP) which might have potential implication to the findings of the approved Ecological Impact Assessment (EIA) mainly involve those proposed at the houses immediately facing the WRA and the stepped building design. These comprise:

- Detached/semi-detached houses abutting the WRA increase from 2-storey (+16.80mPD) to 3-storey (+21mPD)
- From 3-storey houses in the residential portion, to stepped design of 6 to 8-storeys just outside 50m setback from the WRA boundary, then to 8 to mainly 10-storeys (+35mPD to +42mPD) in the central and southern locations of the site, and mainly 6-storeys buildings (+28mPD) along the southern site boundary that are closest to the surrounding residential developments
- Increase in Estimated Total Population, from 2210 to 9998

2 LEGISLATION AND STANDARDS

2.1.1 Environmental legislation, guidelines, standards and references listed below have been referred during the preparation of this EcoIA.

- Environmental Impact Assessment Ordinance (EIAO) (Cap. 499)
- Country Parks Ordinance (Cap. 208)
- Forests and Countryside Ordinance (Cap. 96)
- Wild Animals Protection Ordinance (Cap. 170)
- Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)
- Town Planning Ordinance (Cap. 131)
- EIAO Technical Memorandum (EIAO-TM) Annex 8 – Criteria for Evaluating Ecological Impact
- EIAO-TM Annex 16 – Guidelines for Ecological Assessment
- EIAO Guidance Note (GN) No.3 – Flexibility and Enforceability of Mitigation Measures Proposed in an Environmental Impact Assessment Report (GN 3/2010)
- EIAO GN 6/2010 – Some Observations on Ecological Assessment from the Environmental Impact Assessment Ordinance Perspective
- EIAO GN 7/2023 – Ecological Baseline Survey for Ecological Assessment
- EIAO GN 10/2023 – Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys
- The International Union for Conservation of Nature (IUCN) Red List of Threatened Species.

3 BASELINE CONDITIONS

3.1 Application Site and Assessment Area

3.1.1 The Assessment Area (AA) for this EcoIA includes all areas within 500m distance from the boundary of the Application Site. The Application in this assessment refers to the area within the Site Boundary, whereas AA refers to the area within the 500m radius but excluding the Application Site.

3.1.2 Currently, the Application Site comprises mainly the completed Wetland Restoration Area (WRA) under approved EIA (AEIAR-120/2008) and the residential component where site formation works have been in progress. The residential portion includes paved haul road, regularly managed grassy with unwanted plant species (mainly *Leucaena leucocephala)*, temporary internal drainage channel, with retained trees scattered within the site.

3.2 Recognized Sites of Conservation Importance

Mai Po Inner Deep Bay Ramsar Site

3.2.1 The Mai Po Inner Deep Bay Ramsar Site is of particular significance for migratory waterbirds including a number of globally threatened species and was recognized as such in 1995 through the designation as a Ramsar Site. The core area of the Ramsar Site comprises Mai Po Nature Reserve and much of the intertidal mudflats, which are protected further by being included in the Mai Po Marshes and Inner Deep Bay Sites of Special Scientific Interest (SSSIs). The Ramsar Site lie to the west about 70-80m from the closest point of the implemented WRA (**Figure 1**) and it is separated from the Application Site by Palm Springs. The nearest 10-storey within the Application Site will be approximately 360m away from the Ramsar Site.

Wetland Conservation Area (WCA)

3.2.2 Wetlands mainly the fishponds continuous and adjoining to the Deep Bay Area are designated under TPB PG-No.12C, as the Wetland Conservation Area (WCA) with the planning intention of protecting the integrity of the Deep Bay wetland ecosystem. Any development within the WCA should comply with the principle of “No-Net-Loss in Wetland”. New development within the WCA would not be allowed unless it is required to support the conservation of the ecological value of the area or the development is an essential infrastructural project with overriding public interest. Any such development should be supported by an ecological impact assessment to demonstrate that the development would not result in a net loss in wetland function and negative disturbance impact. The Application Site is not within the WCA and only abuts the WCA.

Wetland Buffer Area (WBA)

3.2.3 The Wetland Buffer Area (WBA) is also designated under TPB PG-No. 12C to include a buffer of about 500m on the landward side of the WCA. Developments within the WBA are required to demonstrate that ecological impacts on the WCA will be minimized and any negative ecological impacts will be fully mitigated through positive measures. “No-net-loss in wetland” principle also applies to WBA. Residential developments which seek to replace existing open storage areas and/or include pond restoration projects may be given sympathetic consideration by the Board subject to satisfactory ecological and other impact assessments. The Application Site lies within the WBA.

Site of Special Scientific Interest (SSSI)

3.2.4 The Mai Po Village SSSI contains 5.3 ha of fung shui woodland located to the east of Mai Po Village. This site was designated an SSSI in 1979 on the basis of an egretry containing several hundred pairs of Little Egret, Cattle Egret and Chinese Pond Heron. Egrets no longer breed within the boundaries of the SSSI. The Mai Po Village Egretry in recent years has been recorded opposite to this SSSI, at the intercept of Tam Kon Chau Road and Castle Peak Road.

Egretries

3.2.5 Two active egretries lie within potential foraging distance of breeding egrets (Young 1993), including Mai Po Village egretry (approximately 620m from the Application Site) and Mai Po Lung egretry (approximately 1.3km from the Application Site).

Sam Po Shue Wetland Conservation Park (SPS WCP)

3.2.6 SPS WCP is located north of the Application Site and falls within 500m AA. SPS WCP is first Park to be developed under the WCPs System proposed under the Northern Metropolis Development Strategy. The Park shall be approximately 338ha, covering fishponds and wetlands in the Lok Ma Chau, SPS and Mai Po areas. The SPS WCP shall serve multiple functions: 1) enhance the ecological quality and biodiversity of the Northern Metropolis; 2) compensate for ecological and fisheries impacts arising from development of San Tin Technopole, to achieve no-net-loss in ecological function; 3) provide quality outdoor eco-education and recreation facilities for public enjoyment; and 4) introduce ecologically friendly and modernized aquaculture in the Park. The Park will be developed in phases, with development of Phase 1 of the park to commence in 2026/27 the earliest for completion in 2031. The development of the entire park is scheduled for completion by 2039 to align with the estimated time for full operation of San Tin Technopole.

4 Literature Review

4.1 Approved Environmental Impact Assessment Report (AEIAR-120/2008)

4.1.1 The WRA was proposed in AEIAR-120/2008 as mitigation to compensate for the loss of wetland habitats in accordance with "No-net-loss in Wetland" principle under Town Planning Board Guideline 12B (TPB PG-No. 12B). Implementation of the WRA followed the approved Wetland Restoration and Creation Scheme (WRCS). The wetland area was consolidated into a single unit and located immediately adjacent to the Wetland Conservation Area (WCA), which reduced fragmentation of wetland habitat and maximised ecological connectivity with existing wetland habitats in the WCA. The WRA also serves to buffer the WCA from potential impacts created by the residential component of the Project.

Table 1 Total Number of Species and Number of Species of Conservation Importance recorded within the Project Area (April 2005 – June 2006)

No. of Species / Fauna Group	Mammals	Birds*	Amphibians	Reptiles	Butterflies	Odonates
Number of Species of Conservation Importance	2^	14 (19)	0	0	1	1
Total Number of Species recorded	5	49	5	1#	21	18

Notes: The Project Area included the residential component and the WRA.

* Number in parentheses indicates the number of wetland-dependent or wetland-associated species

Considered to be escaped individual

^ Not considered as species of conservation importance in AEIAR-120/2008

Mammals

4.1.2 A total of five mammal species were recorded within the Project Area. One bat species, Japanese Pipistrelle, which is considered to be Very Common (AFCD 2020) in Hong Kong, was recorded during night-time surveys. All bat species are protected in Hong Kong under Cap. 170; however, no bat roosts were present within the Project Area. Four small mammal species were recorded by trapping; Musk Shrew, House Mouse, Ryukyu Mouse and Brown Rat. These are common and widespread in Hong Kong, especially in anthropogenic habitats except for Ryukyu Mouse, which is assessed as Rare (AFCD 2020) due to restricted distribution in Hong Kong but has been recorded nearby from Mai Po Nature Reserve. None of them were considered as species of conservation importance in AEIAR-120/2008, based on the low occurrence and low number of individuals recorded.

Birds

4.1.3 A total of 49 bird species were recorded within the Project Area. Of these, 14 species are of conservation importance: Black-crowned Night Heron (0.2 mean per survey; 4 = maximum number recorded), Chinese Pond Heron (1.3; 4), Eastern Cattle Egret (1.3; 14), Grey Heron (0.1; 2), Great Egret (Y = species recorded outside the transect surveys), Little Egret (5.5; 48), Great Cormorant (0.5; 5), Black Kite (1.2; 5), Little Ringed Plover (0.1; 1), Oriental Pratincole (Y), Pacific Swift (Y), Zitting Cisticola (0.1; 1), Red-billed Starling (0.9; 15) and White-shouldered Starling (0.1; 2). Black-crowned Night Heron, Chinese Pond Heron, Eastern Cattle Egret, Great Egret and Little Egret are common in Hong Kong, with winter, migrant and breeding populations (HKBWS 2021). Grey Heron is common mainly in the Deep Bay area, with highest numbers in winter. Great Cormorant is an abundant winter visitor, mainly in the Deep Bay area. Black Kite is common and widespread in Hong Kong, with increased numbers in winter. Little Ringed Plover is common and present all year in lowland areas near water. Oriental Pratincole is a passage migrant, common in spring and uncommon in autumn, to lowland areas of New Territories. Pacific Swift is uncommon spring passage migrant and summer visitor. Zitting Cisticola is common passage migrant and winter visitor to grassy and reedmarsh areas. Red-billed Starling is an abundant winter visitor to open-country areas, mainly in the northwest New Territories. White-shouldered

Starling is a locally common passage migrant and breeding species, and uncommon winter visitor to open-country and village edge habitats mainly in the northwest New Territories.

Herpetofauna

4.1.4 Five amphibian species were recorded within the Project Area; Asian Common Toad, Ornate Pigmy Frog, Paddy Frog, Günther's Frog and Brown Tree Frog. All are common and widespread in Hong Kong. None are species of conservation importance.

4.1.5 One reptile was recorded within the Project Area, Chinese Striped Terrapin which is not considered to be native to Hong Kong and was therefore considered to be an escape.

Butterflies

4.1.6 A total of 21 butterfly species were recorded within the Project Area. All are Common in Hong Kong (AFCD 2020), except Common Jay, Yellow Orange Tip and Danaid Egg-fly which are Uncommon. Only Danaid Egg-fly is of Local Concern (Fellowes *et al.* 2002).

Odonates

4.1.7 A total of 18 odonate species were recorded within the Project Area. All are common and widespread species in Hong Kong (AFCD 2020). Only Scarlet Basker is of Local Concern (Fellowes *et al.* 2002).

4.2 Recent 12-months EM&A Reports (December 2023 – November 2024) – Ecology

4.2.1 Mott MacDonald Hong Kong Ltd. ("MMHK") has been commissioned to conduct Environmental Monitoring and Audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development. A summary of EM&A requirements for ecology is presented in **Table 2** below.

Table 2 Summary of EM&A Requirements – Ecology

Parameters	Locations	Frequencies
Birds	Within the Project Area and Assessment Area of 500m	Weekly
Dragonflies & Butterflies	Within the Project Area and Assessment Area of 500m	Once per month (Mar, Sep-Nov); Twice per month (Apr-Aug)
Herpetofauna	Within the Project Area and Assessment Area of 500m	Daytime: Once per month (Apr-Nov); Night-time: Once per month (Mar-Aug)
Water quality of WRA	WRA	In situ: Monthly Laboratory Testing: Every six months (end of wet season and end of dry season)
Site Inspection	Within the Project Area and Assessment Area of 500m	Weekly

4.2.2 The EM&A monitoring findings indicated that the WRA, has induced ecological gain within the Project Area). The total number of mammals, birds, amphibians, reptiles, butterflies and odonates species and those of conservation importance recorded within Assessment Area (excluding Application Site) and WRA, for the 12 months between December 2023 to November 2024 are summarised in **Table 3** and **Table 4** respectively below. Comparing **Table 4** with **Table 1**, all fauna group have been recorded increase in total number of species and species of conservation importance, utilising the WRA; except mammal, which is less detectable due to the low occurrence and the trapping conducted in EIA study is not required for the EM&A monitoring. Comparing **Table 4** with **Table 3**, higher number of species in herpetofauna, butterflies and odonates have been recorded within the WRA managed for wildlife, than the fishpond areas.

Table 3 Total Number of Species and Number of Species of Conservation Importance recorded within Study Area (excluding Application Site) between December 2023 – November 2024

Fauna Group	Species of Conservation Importance	Total no. of species recorded
Mammals	1	1
Birds*	31 (40)	80
Amphibians	0	3
Reptiles	0	2
Butterflies	1	14
Odonates	0	18

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

Table 4 Total Number of Species and Number of Species of Conservation Importance recorded within WRA between December 2023 – November 2024

Fauna Group	Species of Conservation Importance	Total no. of species recorded
Mammals	3	4
Birds*	28 (36)	75
Amphibians	1	7
Reptiles	3	6
Butterflies	3	26
Odonates	1	31

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

4.2.3 Three target species, Chinese Pond Heron, Eastern Cattle Egret and Little Egret, have been monitored monthly. Mean number and occurrence of the target species within WRA recorded between December 2023 – November 2024, are summarized in **Table 5** below. Except Chinese Pond Heron, other two target species have been recorded in lower number than the baseline value. However, the baseline information (April 2005 – June 2006) in the approved EIA has been twenty years ago. The target levels should be reviewed and agreed with EPD and AFCD, in the corresponding EP submission.

Table 5 Monthly Mean Number and Occurrence of Target Species recorded within WRA between December 2023 – November 2024

Species	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Annual Mean
Chinese Pond Heron	1.8 (3)	1.4 (4)	2.8 (3)	1.3 (3)	1.6 (5)	1.0 (3)	1.5 (4)	2.0 (4)	3.0 (4)	2.0 (4)	3.4 (5)	1.8 (4)	2.0
Eastern Cattle Egret	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0.3 (1)	0.2 (1)	0 (0)	<0.1
Little Egret	1.0 (3)	2.0 (5)	2.3 (4)	0.8 (2)	2.2 (5)	1.5 (4)	1.3 (4)	1.2 (4)	1.3 (2)	1.0 (3)	1.4 (4)	1.0 (4)	1.4

* Number in parentheses indicates the occurrence, i.e. the number of surveys recorded within the reporting month.

4.3 Recent 12-months bi-annual EM&A Reports (November 2023 – April 2024 and May 2024 – October 2024) – Ecology

4.3.1 Mott MacDonald Hong Kong Ltd. (“MMHK”) has been commissioned undertake the Environmental Team (ET) services to carry out Environmental Monitoring and Audit (EM&A) for both pre-construction and construction phases of the Proposed Comprehensive Development. According to the EP Condition 4.6, the EM&A results on ecological aspects during the construction phase should be reported to the EIA Subcommittee of the Advisory Council on the Environment (ACE), EPD and Agriculture, Fisheries and Conservation Department (AFCD) on a biannual basis.

4.3.2 The two bi-annual EM&A reports documented surveys and management conducted in the Survey Area and WRA from 1 November 2023 to 30 April 2024 and from 1 May 2024 to 31 October 2024 respectively, which were based on ecological surveys and advice on management undertaken and provided by the appointed Non-Government Organisation (Eco-Institute) during the reporting periods.

4.3.3 The total number of mammals, birds, amphibians, reptiles, butterflies and odonates species and those bird species of conservation importance recorded within Assessment Area (excluding Application Site) and WRA, for the 12 months between November 2023 to October 2024 are summarised in **Table 6** and **Table 7** respectively below.

Table 6 Total Number of Species recorded within Survey Area (excluding WRA) and WRA between November 2023 – April 2024

Fauna Group	Survey Area (excluding WRA)	WRA
Mammals	1	4 (3)
Birds*	68 (35)	69 (28)
Amphibians	2	3
Reptiles	1	2
Butterflies	9	21 (1)
Odonates	10	18

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

Table 7 Total Number of Species recorded within Survey Area (excluding WRA) and WRA between May 2024 – October 2024

Fauna Group	Survey Area (excluding WRA)	WRA
Mammals	1	1 (1)
Birds*	58 (28)	57 (27)
Amphibians	3	7
Reptiles	2	6
Butterflies	16	26
Odonates	13	26 (3)

* Number in parentheses indicates the number of species of conservation importance and/or wetland-dependent.

5 Ecological Surveys

5.1.1 12-month ecological surveys conducted are summarised in the table below. Survey transects and flightline vantage points are presented in **Figure 2**.

Table 8 Ecological Survey Programme

Survey Group	2024									2025		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Habitat and Flora		✓						✓				
Bird Transect Survey	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
Flightline Survey	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mammal	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
Herpetofauna	✓*	✓*	✓*	✓*	✓*	✓*	✓*					✓*
Odonates and Butterflies	✓	✓	✓	✓	✓	✓	✓	✓				✓
Aquatic Fauna	✓*		✓*		✓*		✓*					
Fireflies (Night-time)	✓	✓	✓			✓	✓	✓	✓			
* Both daytime and night-time surveys have been conducted.												

Habitat and Flora

5.1.2 Habitat within the Application Site and Assessment Area was preliminarily identified by reference to recent aerial photographs and confirmed the existing habitat types by ground-truthing.

5.1.3 Floral survey was conducted once in wet season and once in dry season during the survey period. General characteristics of the floral community present in each habitat were noted for use in habitat descriptions.

Bird Transect Survey

5.1.4 Bird transect surveys were conducted monthly within the Application Site and Assessment Area. The surveys started during the early morning, at the period of peak bird activity, and all birds seen or heard were recorded. Night-time surveys were conducted in parallel with herpetofauna surveys, started shortly after sunset (i.e. dusk).

Wet Season Flightline Survey

5.1.5 Wet season flightline surveys were conducted monthly between April 2024 and October 2024. A vantage point (see **Figure 2**) was located at the middle of the Application Site, where is slightly elevated, allowing overview of fishponds to the north. Another vantage point was located near the Mai Po Village Egretry, at the Tam Kon Chau Road.

5.1.6 The species, number of individuals, location of flightlines, time of observation and (relative) height above ground were recorded. Surveys commenced 15 minutes before sunrise to cover the period of maximum egret activity and lasted for two hours. Flightlines were marked onto a map.

Dry Season Flightline Survey

5.1.7 Dry season flightline surveys were conducted monthly between November 2024 and March 2025. A vantage point (see **Figure 2**) was located at the middle of the Application Site, where is slightly elevated, allowing overview of fishponds to the north. Another vantage point was located near the Mai Po Village Egretry, at the Tam Kon Chau Road.

5.1.8 The species, number of individuals, location of flightlines, time of observation and (relative) height above ground were recorded. Surveys commenced 15 minutes before sunrise to cover the period of maximum egret activity and lasted for two hours. Flightlines were marked onto a map.

Mammals

5.1.9 Monthly transect surveys were conducted along with herpetofauna daytime and night-time surveys. In addition to any observations of mammals, evidence of mammal activity (footprints, scats, burrows or food remains) was searched at suitable locations. Night-time survey started shortly after sunset (i.e. dusk) and hand-held bat detector was used.

Herpetofauna

5.1.10 Herpetofauna surveys were conducted monthly between April and October 2024 both during the day and at night. The transects followed were the same as for terrestrial fauna survey. During the surveys all individuals seen foraging or basking in the open were recorded and appropriate microhabitats and potential refugia were inspected for more cryptic species. Hand or head torches were used as necessary during night-time surveys. Amphibians were also recorded by identification of advertising calls.

Odonates and Butterflies

5.1.11 Odonates and Butterflies surveys were conducted monthly between April and November 2024 and March 2025 along the same transect, with species mainly detected by direct observation. All species observed were identified to species level and quantified.

Aquatic fauna

5.1.12 Aquatic fauna surveys were conducted within the Application Site twice (one in daytime and one in night-time) every two months between April 2024 and November 2024. Aquatic fauna was identified by direct observation and active searching by nets as appropriate. Any nocturnal species found during night-time surveys were recorded.

Fireflies

5.1.13 Firefly surveys were conducted monthly from April to June 2024 and September to December 2024, following the survey transect for terrestrial fauna. The night-time surveys started shortly after sunset (i.e. dusk), covering the active periods of crepuscular and nocturnal species. During the surveys, any adult firefly observed were identified to the species level, where possible.

6 SURVEY FINDINGS

6.1 Habitats and Vegetation

6.1.1 The Application Site was categorized into five habitat types, grassland, bare ground, drainage channel and seasonal marsh within the development site, and mitigation wetland (i.e. the completed WRA), which have been modified and are under regular management. The Assessment Area was categorized into eleven habitat types, including agricultural land, drainage channel/ditch, fishpond, pond/open water, reedbed, marsh, *Leucaena* woodland, secondary woodland, plantation, managed grassland, developed area. Habitat map is presented in **Figure 3**. No flora species of conservation importance was recorded in the Application Site and 500m Assessment Area.

Table 9 Area of habitats in the Application Site and 500m Assessment Area

Habitat	Application Site (including the completed WRA)	500m Assessment Area (excluding the Application Site)
Mitigation Wetland	4.74	-
Fishpond	-	59.83
Pond/Open Water	-	4.67
Marsh	-	1.22
Seasonal Marsh	0.86	-
Drainage Channel/Ditch	0.19	4.24
Reedbed	-	10.84
Agricultural Land	-	0.20
Managed Grassland	-	0.59
Leucaena Woodland	-	2.24
Grassland	6.89	-
Secondary Woodland	-	0.77
Plantation	-	7.61
Bare Ground	8.06	-
Developed Area	-	90.11
Total	**20.74**	**182.32**

6.2 Faunal Survey Findings

Bird Transect Survey

6.2.1 Total of 77 bird species have been recorded within the Assessment Area (excluding the Application Site); 35 of these are species of conservation importance.

6.2.2 Total of 42 bird species have been recorded within the Application Site (including the WRA), 13 of these are species of conservation importance.

Wet Season Flightline Survey

6.2.3 Across the seven surveys in the wet season, a total of 1041 individuals of six species (Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Great Egret, Little Egret and Great Cormorant) were recorded within a total of 14 survey hours. These were subsequently ascribed to individual flightlines over or near the Application Site. The flight paths that were used by very small proportion of the birds were not considered to be significant and were excluded from further analysis.

6.2.4 9 flightlines were identified from the analysis (see **Figure 4**). Only one flightline (Flightlines No. 5) was defined as major flightlines (defined here as being used by over 15% of total individuals). The other 6 flightlines were defined as minor flightlines. Flightlines No.5, located to the west of the Application Site, had the highest usage with 400 individual birds (38.42% of total individuals).

Table 10 Summary of wet season flightline data showing number of birds using individual flightlines

Flightline No.	Total no. of Birds	Mean no. of birds per survey hour	%	Mean no. of birds by species per survey hour #					
				CPH	CE	GH	GE	LE	GC
1	155	11.07	14.89	2.36	0.29	0.07	2.71	5.64	
2	123	8.79	11.82	2.50	0.21	0.07	0.14	5.50	0.36
3	105	7.50	10.09	0.64	0.29	0.07	0.57	2.21	3.71
4	63	4.50	6.05	0.29			0.07	0.57	3.57
5*	400	28.57	38.42			0.07	3.36	0.07	25.07
6	65	4.64	6.24	0.36			1.93	1.86	0.50
7	34	2.43	3.27	0.07		0.07	0.64	1.36	0.29
8	19	1.36	1.83	0.57			0.71	0.07	
9	77	5.5	7.40	0.79		0.07	0.14	0.93	3.57
Grand Total	**1041**	**74.36**	**100%**	**7.57**	**0.79**	**0.43**	**10.29**	**18.21**	**37.07**

Notes:
(1) * Indicates the major flightlines.
(2) # CPH = Chinese Pond Heron; CE = Eastern Cattle Egret; GH = Grey Heron; GE = Great Egret; LE = Little Egret; GC = Great Cormorant.

Table 11 Summary of wet season flightline data showing number and percentage of birds using individual flightlines in each height category

Flightline No.	Relative Height						Grand Total	Overall % (Flightline usage)
	0 – 1X	≥1-2X	≥2-3X	≥3-4X	≥4-5X	≥5-6X		
	Approximate Height							
	0-10m	≥10-20m	≥20-30m	≥30-40m	≥40-50m	≥50-60m		
1		71	65	13	6		155	14.89%
2		65	34	17	7		123	11.82%
3		16	36	47	3	3	105	10.09%
4		1	3	54	5		63	6.05%
5*		14	295	91			400	38.42%
6		30	32	3			65	6.24%
7		14	12	5	1	2	34	3.27%
8		7	2	10			19	1.83%
9		7	68	1	1		77	7.40%
Grand Total		**225**	**547**	**241**	**10**	**23**	**1041**	**100.00%**
Overall % (Height)	**0.00%**	**21.61%**	**52.55%**	**23.15%**	**2.21%**	**0.48%**	**100.00%**	**N/A**

Notes:
(1) * indicates the major flightlines.
(2) Relative Height 1X = 10m temporary noise barrier along the perimeter of Application Site.

6.2.5 Major flightlines comprised birds travelled across wetland habitats adjacent to but outside the Application Site. Flightline No.3 was the only minor flightline across the residential portion of the Application Site (see **Figure 4**). Only approximately 7 bird individuals per survey hour were recorded utilizing the Flightline No. 3 at height of 40m or below. The number of potentially impacted individuals are anticipated to be insignificant as the surveys have been conducted during the peak activity of the day.

Dry Season Flightline Survey

6.2.6 Across the five surveys in the dry season, a total of 1870 individuals of six species (Black-faced Spoonbill, Chinese Pond Heron, Grey Heron, Great Egret, Little Egret and Great Cormorant) were recorded within a total of 10 survey hours. These were subsequently ascribed to individual flightlines over or near the Application Site. The flight paths that were used by very small

proportion of the birds were not considered to be significant and were excluded from further analysis.

6.2.7 Seven flightlines were identified from the analysis (see **Figure 5**). Two flightline (Flightline No. 1 and 4) were defined as major flightline (defined here as being used by over 15% of total individuals). The other 5 flightlines were defined as minor flightlines. Flightline No.4 located to the north of the Application Site, had the highest usage with 1012 individual birds (54.12% of total individuals).

Table 12 Summary of dry season flightline data showing number of birds using individual flightlines

Flightline No.	Total no. of Birds	Mean no. of birds per survey hour	%	Mean no. of birds by species per survey hour #					
				BFS	CPH	GH	GE	LE	GC
1*	288	28.8	15.40%	0.4	0.4	0.4	2.4	1.2	24
2	183	18.3	9.79%		0.5		0.4	1.1	16.3
3	66	6.6	3.53%		0.2		0.2	0.6	5.6
4*	1012	101.2	54.12%	0.3	0.7	0.6	7.4	8.8	83.4
5	65	6.5	3.48%				0.5	2.3	3.7
6	103	10.3	5.51%				0.9	0.5	8.9
7	153	15.3	8.18%	1.8	0.5	0.2	0.9	1.6	10.3
Grand Total	**1870**	**187**	**100.00%**	**2.5**	**2.3**	**1.2**	**12.7**	**16.1**	**152.2**

Notes:
(1) * Indicates the major flightlines.
(2) # BFS = Black-faced Spoonbill; CPH = Chinese Pond Heron; GH = Grey Heron; GE = Great Egret; LE = Little Egret; GC = Great Cormorant.

Table 13 Summary of dry season flightline data showing number and percentage of birds using individual flightlines in each height category

Flightline No.	Relative Height						Grand Total	Overall % (Flightline usage)
	0 – 1X	≥1-2X	≥2-3X	≥3-4X	≥4-5X	≥5-6X		
	Approximate Height							
	0-10m	≥10-20m	≥20-30m	≥30-40m	≥40-50m	≥50-60m		
1*		84	182	22			288	15.40%
2			2	121	60		183	9.79%
3		14	12	40			66	3.53%
4*		201	783	28			1012	54.12%
5		9	24	32			65	3.48%
6		60	32	11			103	5.51%
7		91	62				153	8.18%
Grand Total		**459**	**1097**	**254**	**60**		**1870**	**100.00**
Overall % (Height)	**0.00%**	**24.55%**	**58.66%**	**13.58%**	**3.21%**	**0.00%**	**100.00%**	**N/A**

Notes:
(1) * indicates the major flightline.
(2) Relative Height 1X = 10m temporary noise barrier along the perimeter of Application Site.

6.2.8 Major flightlines comprised birds travelled across wetland habitats adjacent to but outside the Application Site. Flightline No. 2 was the only minor flightline across the residential portion of the Application Site (see **Figure 5**). Only approximately 12 bird individuals per survey hour were recorded utilizing the Flightline No. 2 at height of 40m or below. The number of potentially impacted individuals are anticipated to be insignificant as the surveys have been conducted during the peak activity of the day.

Mammals

6.2.9 Short-nosed Fruit Bat and Japanese Pipistrelle have been recorded both within the Assessment Area and the Application Site. Both are species of conservation importance and are protected under Cap.170 in Hong Kong.

Herpetofauna

6.2.10 Within the Assessment Area (excluding the Application Site), a total of 5 amphibian species and 4 reptile species were recorded. None of these is species of conservation importance.

6.2.11 Within the Application Site (including WRA), a total of 5 amphibian species and 4 reptile species were recorded. None of these is species of conservation importance.

Odonates and Butterflies

6.2.12 A total of 28 odonate species was recorded within the Assessment Area (excluding the Application Site). Two species of conservation importance were recorded within the AA, namely Coastal Glider and Ruby Darter, both considered to be Local Concern (Fellowes *et al.* 2002).

6.2.13 Within the Application Site (including WRA), a total of 22 odonate species was recorded. None of these is species of conservation importance.

6.2.14 A total of 32 butterfly species have been recorded within the Assessment Area (excluding the Application Site). One species of conservation importance was recorded within the AA, namely Common Awl, which is considered to be Local Concern (Fellowes *et al.* 2002)

6.2.15 Within the Application Site (including WRA), a total of 15 butterfly species was recorded. None of these is species of conservation importance.

Aquatic fauna

6.2.16 Exotic fish including Snakehead Murrel was observed in the drainage channels. Larvae and exuviae of a total of 10 odonate species were also observed. None of these is species of conservation importance.

Fireflies

6.2.17 Only one species *Pyrocoelia analis*, was recorded within the Assessment Area, with very low abundance. This is a commonly seen species in agricultural land and fishpond area in Hong Kong.

6.2.18 Special attention to Mai Po Bent-winged Firefly during the surveys, this species of conservation importance was not recorded.

Species of Conservation Importance

6.2.19 Faunal species of conservation importance recorded during the 12-month surveys are summarized in **Table 14** below.

Table 14 Faunal Species of Conservation Importance

Species	Conservation and Protection Status[1]	Local Distribution[2]	Status in HK[2]
Mammals			
Japanese Pipistrelle	Cap.170	Widespread	Very Common
Short-nosed Fruit Bat	Cap.170	Widespread	Very Common
Birds			
Northern Shoveler	RC	Localized	Uncommon
Tufted Duck	LC	Localized	Abundant
Eurasian Coot	RC	Localized	Uncommon
Little Grebe	LC	Localized	Common
Great Crested Grebe	RC	Localized	Common

Species	Conservation and Protection Status[1]	Local Distribution[2]	Status in HK[2]
Black-winged Stilt	RC	Localized	Common
Little Ringed Plover	(LC)	Localized	Common
Temminck's Stint	LC	Localized	Uncommon
Common Redshank	RC	Localized	Abundant
Wood Sandpiper	LC	Localized	Common
Common Greenshank	RC	Localized	Abundant
Greater Coucal	CSMPS(II)	Widespread	Common
Oriental Stork	GC; RLCV(EN); IUCN(EN); CSMPS(I); CITES(I)	Localized	Rare
Great Cormorant	PRC	Localized	Common
Yellow Bittern	(LC)	Localized	Uncommon
Cinnamon Bittern	LC	Localized	Uncommon
Black-crowned Night Heron	(LC)	Widespread	Common
Chinese Pond Heron	PRC (RC)	Widespread	Common
Eastern Cattle Egret	(LC)	Widespread	Common
Grey Heron	PRC	Localized	Common
Purple Heron	RC	Localized	Uncommon
Great Egret	PRC (RC)	Localized	Common
Intermediate Egret	RC	Localized	Uncommon
Little Egret	PRC (RC)	Widespread	Common
Black Kite	(RC); CSMPS(II); CITES(II); Cap.586	Widespread	Common
White-throated Kingfisher	(LC); CSMPS(II)	Localized	Common
Pied Kingfisher	(LC)	Localized	Uncommon
Black-naped Oriole	LC	Widespread	Uncommon
Collared Crow	LC; IUCN(VU)	Localized	Common
Zitting Cisticola	LC	Widespread	Common
Red-billed Starling	GC	Localized	Abundant
White-cheeked Starling	PRC	Localized	Uncommon
White-shouldered Starling	(LC)	Localized	Common
Bluethroat	LC; CITES(III); CSMPS(II)	Localized	Uncommon
Red-throated Pipit	LC	Localized	Common
Odonates			
Coastal Glider	LC	Localized	Common
Ruby Darter	LC	Widespread	Common
Butterflies			
Common Awl	LC	Localized	Very Rare

1. Conservation and protection status refers to Fellowes et al. (2002), RLCV (Jiang et al. 2016), China State Major Protection Status, IUCN (2024), CITES (2024), Cap.170 and Cap.586.

a. Conservation status by Fellowes et al. (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern; PGC = Potential Global Concern. Letters in parentheses indicate assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

b. Conservation Status by Red List of China's Vertebrates (RLCV) (Jiang et al. 2016): NT = Near Threatened; EN = Endangered.

c. Conservation status by IUCN (2024): NT = Near Threatened; EN = Endangered; VU = Vulnerable; CR = Critically Endangered.

d. Protection status by China State Major Protection Status (CSMPS): II = Class II Protected Species in China.

e. Protection status by CITES (2024): I = Listed in Appendix I; II = Listed in Appendix II

f. All wild birds in Hong Kong are protected under Cap. 170 Wild Animals Protection Ordinance.

g. Cap.586 Protection of Endangered Species of Animals and Plants Ordinance.

2. Distribution and rarity refer to AFCD (2024a), Chan et al. (2011), Tam et al. (2011). Distribution and status of bird species refers to The Avifauna of Hong Kong, (G.J.Carey, Editor), HKBWS (2023).

7 EVALUATION OF HABITATS

7.1 Habitats within the Application Site

Table 15 Ecological evaluation of mitigation wetland within the Application Site

Criteria	Mitigation Wetland
Naturalness	Artificially created wetland under management and monitoring as approved EIA mitigation measures to mitigate the wetland loss and to provide suitable habitats for wildlife
Size	4.74ha, approximately one fourth of the Application Site. Loss of 0.69ha seasonal marsh and 4ha freshwater marsh/reedbed are fully compensated according to approved EIA report (AEIAR-120/2008)
Diversity	Moderate diversity of fauna
Rarity	12 bird species of conservation importance Greater Coucal, Yellow Bittern, Black-crowned Night Heron, Chinese Pond Heron, Eastern Cattle Egret, Grey Heron, Purple Heron, Great Egret, Little Egret, White-throated Kingfisher, Pied Kingfisher, Zitting Cisticola 3 mammal species of conservation importance Japanese Pipistrelle, Short-nosed Fruit Bat, Leopard Cat (scat)
Re-creatability	Could be recreated.
Fragmentation	Not fragmented.
Ecological linkage	Ecological linkage to WCA and Deep Bay
Potential value	Value could be enhanced by suitable management
Nursery/ breeding ground	Potentially breeding ground for some waterbirds, amphibian, reptile and odonates
Age	More than ten years. Construction works completed in November 2010 and established by October 2012.
Abundance/ Richness of wildlife	Moderate abundance of wildlife
Ecological value	**MODERATE TO HIGH**

Table 16 Ecological evaluation of seasonal marsh within the Application Site

Criteria	Seasonal Marsh
Naturalness	Two small patches. The low-lying area at the western portion has yet to be bulldozed but invaded by *Leucaena leucocephala*. The small area at the eastern portion was formerly the area of open storages. Rainwater retained at the elevation difference due to the disposal of inert C&D material from Express Rail Link (XRL).
Size	0.86ha
Diversity	Low
Rarity	Common species
Re-creatability	Easily re-creatable.
Fragmentation	N/A
Ecological linkage	Limited ecological linkage
Potential value	N/A
Nursery/ breeding ground	Potentially breeding ground for some amphibian, reptile and odonates
Age	Few decades
Abundance/ Richness of wildlife	Low
Ecological value	**LOW**

Table 17 Ecological evaluation of drainage channel within the Application Site

Criteria	Drainage Channel
Naturalness	Concreted, temporary drainage channel for the development site.
Size	0.19ha

Criteria	Drainage Channel
Diversity	Low
Rarity	Common species
Re-creatability	Easily re-creatable.
Fragmentation	N/A
Ecological linkage	Limited ecological linkage
Potential value	N/A
Nursery/ breeding ground	Potentially breeding ground for some amphibian, reptile and odonates
Age	Few decades
Abundance/ Richness of wildlife	Low
Ecological value	**LOW**

Table 18 Ecological evaluation of grassland within the Application Site

Criteria	Grassland
Naturalness	Semi-natural succession. Under management including grass-cutting and removal of weedy *Leucaena leucocephala*.
Size	6.89ha
Diversity	Low
Rarity	Common species
Re-creatability	Easily re-creatable.
Fragmentation	N/A
Ecological linkage	Limited ecological linkage
Potential value	N/A
Nursery/ breeding ground	Nil.
Age	Few decades
Abundance/ Richness of wildlife	Low
Ecological value	**LOW**

Table 19 Ecological evaluation of bare ground within the Application Site

Criteria	Bare Ground
Naturalness	Paved vehicular access. Disposal of inert C&D materials from XRL. Site formation works in progress.
Size	8.06ha
Diversity	Low
Rarity	Common species
Re-creatability	Easily re-creatable.
Fragmentation	N/A
Ecological linkage	Limited ecological linkage
Potential value	N/A
Nursery/ breeding ground	Nil.
Age	Few decades
Abundance/ Richness of wildlife	Low
Ecological value	**LOW**

7.2 Habitats within 500m Assessment Area (excluding the Application Site)

Table 20 Ecological evaluation of fishpond within the Assessment Area

Criteria	Fishpond
Naturalness	Man-made wetland habitat
Size	59.83ha, relatively large
Diversity	Limited floral diversity. Moderate diversity of avifauna species.

Criteria	Fishpond
Rarity	35 bird species of conservation importance 2 mammal species of conservation importance 1 odonate species of conservation importance
Re-creatability	Readily re-creatable
Fragmentation	Not fragmented.
Ecological linkage	Highly connected with Deep Bay ecosystem
Potential value	High
Nursery/ breeding ground	Wetland-dependent bird species utilising fishpond habitat, such as Little Grebe and White-breasted Waterhen have been recorded breeding.
Age	Long established for decades.
Abundance/ Richness of wildlife	Abundant for wetland-dependent species.
Ecological value	**MODERATE TO HIGH**

Table 21 Ecological evaluation of pond/open water within the Assessment Area

Criteria	Pond/Open water
Naturalness	Man-made, derived from abandoned fishponds
Size	4.67ha
Diversity	Low to moderate
Rarity	Conservation Area for the ponds within Palm Springs, however low usage by species of conservation importance, such as Little Egret and Chinese Pond Heron.
Re-creatability	Readily re-creatable
Fragmentation	Fragmented by developed area.
Ecological linkage	Limited linkage for the ponds within Palm Springs; Pond/open water to the west of Palm Springs are connected with Deep Bay wetlands.
Potential value	Limited for ponds within Palm Springs
Nursery/ breeding ground	Wetland-dependent bird species utilising pond habitat, such as White-breasted Waterhen have been recorded breeding.
Age	Few decades after abandonment
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**MODERATE**

Table 22 Ecological evaluation of marsh within the Assessment Area

Criteria	Marsh
Naturalness	Naturally derived from abandoned fishpond, overgrown with wetland plants
Size	1.22ha
Diversity	Low diversity
Rarity	Low 1 odonate species of conservation importance
Re-creatability	Readily re-creatable
Fragmentation	Located at the fringe of continuous fishponds area, abutting village development.
Ecological linkage	Limited as much less favourable than adjacent wetland
Potential value	Could be enhanced with vegetation management or resumed into pond habitat.
Nursery/ breeding ground	Nil.
Age	at least 20 years since abandonment.
Abundance/ Richness of wildlife	Low abundance
Ecological value	**LOW TO MODERATE**

Table 23 Ecological evaluation of drainage channel/ditch within the Assessment Area

Criteria	Drainage Channel/Ditch
Naturalness	Man-made
Size	4.22ha, small in Hong Kong context.
Diversity	Low to moderate
Rarity	Species of conservation importance was not recorded.
Re-creatability	Readily re-creatable.
Fragmentation	Not fragmented within the fishpond area.
Ecological linkage	Linked with wetland habitats
Potential value	Could be enhanced with vegetation management.
Nursery/ breeding ground	Nil.
Age	Long established with fishponds
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**LOW TO MODERATE**

Table 24 Ecological evaluation of reedbed within the Assessment Area

Criteria	Reedbed
Naturalness	Semi-natural, derived from abandoned fishponds.
Size	10.84ha
Diversity	Low floral diversity, dominated by reed; Low to moderate diversity of fauna
Rarity	Low to moderate
Re-creatability	Readily re-creatable
Fragmentation	Not fragmented.
Ecological linkage	Connected with Deep Bay wetlands.
Potential value	Could be enhanced with proper vegetation management.
Nursery/ breeding ground	Nil.
Age	Few decades after abandonment
Abundance/ Richness of wildlife	Low to moderate.
Ecological value	**MODERATE**

Table 25 Ecological evaluation of agricultural land within the Assessment Area

Criteria	Agricultural Land
Naturalness	Man-made
Size	0.2ha, very small patches scattered within the Assessment Area.
Diversity	Very Low
Rarity	N/A
Re-creatability	Re-creatable
Fragmentation	Fragmented by surrounding developed area
Ecological linkage	Limited to adjacent hillslope habitat
Potential value	Low
Nursery/ breeding ground	Nil.
Age	Within past few years
Abundance/ Richness of wildlife	Very Low
Ecological value	**VERY LOW**

Table 26 Ecological evaluation of managed grassland within the Assessment Area

Criteria	Managed Grassland
Naturalness	Man-made
Size	0.59ha, very small.
Diversity	Very low
Rarity	N/A

Re-creatability	Re-creatable
Fragmentation	Fragmented
Ecological linkage	Limited
Potential value	Very low
Nursery/ breeding ground	Nil.
Age	Past few decades.
Abundance/ Richness of wildlife	Very low
Ecological value	**VERY LOW**

Table 27 Ecological evaluation of *Leucaena* woodland within the Assessment Area

Criteria	***Leucaena* Woodland**
Naturalness	Semi-natural, derived from wasteland, overgrown with *Leucaena leucocephala*
Size	2.24ha
Diversity	Low
Rarity	N/A
Re-creatability	Re-creatable
Fragmentation	Fragmented
Ecological linkage	Limited
Potential value	Very low, unless entirely replaced with native species through management
Nursery/ breeding ground	Nil.
Age	Past few decades.
Abundance/ Richness of wildlife	Very Low
Ecological value	**VERY LOW**

Table 28 Ecological evaluation of secondary woodland within the Assessment Area

Criteria	**Secondary Woodland**
Naturalness	Semi-natural woodland habitat, derived from *Fung Shui* woodland
Size	0.77ha, small.
Diversity	Moderate floral diversity. Faunal diversity lower than in woodlands elsewhere in Hong Kong, due to relative isolation of this patch.
Rarity	Secondary woodland is common in Hong Kong but Fung Shui woods and egretries are rare.
Re-creatability	Could be recreated in long-term if suitable resources are available. Fung shui wood would be difficult to recreate. Recolonisation by egrets would be difficult to achieve.
Fragmentation	Not fragmented within the Assessment Area, but this single block is isolated from similar habitats.
Ecological linkage	Some ecological linkage to Deep Bay via foraging egrets. Otherwise, poor linkage due to presence of villages and major road.
Potential value	Value could be enhanced by suitable management, especially if the number of breeding egrets could be increased.
Nursery/ breeding ground	Previously egretry record.
Age	Fairly old due to *fung shui* functions.
Abundance/ Richness of wildlife	Moderate abundance of wildlife, but lower than in other woodland areas.
Ecological value	**MODERATE**

Table 29 Ecological evaluation of plantation within the Assessment Area

Criteria	**Plantation**
Naturalness	Manmade habitat, mainly roadside planting.
Size	Medium within AA.
Diversity	Low to moderate.
Rarity	Species of conservation importance was not recorded.

Criteria	Plantation
Re-creatability	Readily re-creatable.
Fragmentation	Fragmented by developed areas.
Ecological linkage	Not connected to the fishpond areas.
Potential value	Potential ardeid roost for mature trees relatively closer to the wetland habitats.
Nursery/ breeding ground	Nil.
Age	Several decades
Abundance/ Richness of wildlife	Low to moderate
Ecological value	**LOW TO MODERATE**

Table 30 Ecological evaluation of developed area within the Assessment Area

Criteria	Developed Area
Naturalness	Man-made
Size	Relatively large
Diversity	Low to moderate
Rarity	Low
Re-creatability	Re-creatable
Fragmentation	N/A
Ecological linkage	Abutting Deep Bay wetland areas.
Potential value	N/A
Nursery/ breeding ground	Nil.
Age	Several decades.
Abundance/ Richness of wildlife	Low
Ecological value	**VERY LOW**

8 POTENTIAL ECOLOGICAL IMPACTS

8.1 Identification of Potential Ecological Impacts

8.1.1 The proposed changes to the project involve only the residential portion of the Application Site. However, since the WRA is designed as a mitigation measure for three target bird species, increased disturbance to the WRA which renders the site less suitable for these species could have a significant adverse impact to the WRA. Therefore, any proposed changes at the interface or to predicted disturbance levels with the WRA are evaluated.

8.1.2 Revised MLP of the residential portion were reviewed and potential ecological impacts in the absence of mitigation measures were identified and quantified where appropriate. Ecological impacts were categorized as follows:

- Direct Impact to the WRA
- Direct Impact to Fauna Species of Conservation Importance
- Indirect Impact to the WRA
- Indirect Impact to Fauna Species of Conservation Importance
- Impact to Bird Flightlines
- Impact of Bird Collision
- Indirect Impact to the WCA and proposed SPS WCP

8.1.3 The potential to reduce adverse ecological impacts by design changes following the principle of Avoidance elucidated in EIAO TM Annex 8 was considered with respect to (a) their technical feasibility and (b) their necessity, given the extent of the predicted impacts.

8.1.4 Mitigation measures in the approved EIA report will be listed out. Additional measures for minimization and compensation of remaining ecological impacts during the project detailed design and construction stage are also described. Predicted unavoidable residual impacts, assuming implementation of all proposed mitigation measures were detailed and quantified wherever possible.

8.2 Potential Direct Impact to the WRA

8.2.1 Since there are no changes proposed to the WRA or at the boundary between the residential area and WRA, no additional direct impact to the ecological function and area of the WRA is anticipated.

8.3 Potential Direct Impact to Fauna Species of Conservation Importance

8.3.1 Since no changes are proposed to the WRA, no additional impact is anticipated to the fauna species of conservation importance within the WRA.

8.3.2 The WRA has also been implemented as buffer area between the residential development and the WCA; no additional direct impact is anticipated to the fauna species of conservation importance in the WCA.

8.4 Potential Indirect Impact to the WRA

8.4.1 An increase in building height may result in higher visibility of human activities at the boundary and within the WRA. According to the approved EcoIA, all of the three target bird species are considered to be species which are prone to human disturbance. Potential indirect impact to the WRA might result from human activities at the residential area of the site are primarily noise and visual disturbance.

8.4.2 Based on literature review and ecological surveys, there is no significant ecological light-sensitive receiver within the WRA and fishponds to the north abutting the Application Site, i.e. significant population of fireflies and ardeid night roosts. Leopard Cat is primarily nocturnal but also active in daytime. Only scats have been recorded within the WRA. WRA has provided suitable habitat and foraging opportunities for this mammal species. Its occurrence is more likely prone to the presence of human or feral dogs. Light/glare impact to this species is not anticipated. Black-crowned Night Heron is widely distributed in Hong Kong, with numerous records of foraging in urban setting. Light/glare impact to this species is not anticipated. Greater Painted-snipe is primarily crepuscular and nocturnal while hides in dense vegetation during daytime. Light/glare impact to this species is not anticipated due to their preference on microhabitats, i.e. dense aquatic vegetation. Many-banded Krait is nocturnal species often found near water sources. This species primarily eats other snakes but also consume rodents and frogs. WRA has provided suitable habitat and foraging opportunities for this reptile species. Light/glare impact to this species is not anticipated as they are moving at ground level or in water, where will be entirely screened by the vegetation. For most of the amphibians and reptiles (herpetofauna) being nocturnal, is due to effect of temperature and humidity on their anatomy, instead of light. As no lighting will be directly shining towards the wetland or onto these fauna individuals, no potential impact is anticipated. Unlike commercial centres, the proposed residential buildings will not have extensive exterior lighting or reflective coverings. For a single light source straightly pointing at the target area, light intensity decreases as the square of the distance increases. If a light source has an intensity of 100 lux at a distance of 1 meter, then at a distance of 2 meters, the intensity would be 25 lux ($100 / 2^2 = 25$). For a living room generally need 150 lux, from ceiling to floor around 3m in height; from a 30m distance, the light intensity is already less than 1 lux. All measures in the approved EIA are retained. Night-time light disturbance will be minimised by limiting the amount of lighting in the construction site, and by situating this away from the WCA fishponds. The lighting units will be directional and hooded where appropriate to minimize unnecessary light spill. Therefore, light impact to the WRA is anticipated to be insignificant.

8.4.3 The total number of residential units abutting the WRA remains unchanged as 37 in the revised MLP. Increased from 2-storey houses in the approved S16 scheme (A/YL-MP/344), to 3-storey detached/semi-detached houses are proposed in this location. All measures to screen the WRA from the residential proportion of the project included in the approved EIA are retained. Orientation of these 3-storeys abutting the WRA, is such that all will face towards the residential area, eliminating the need for public access next to the WRA. As human activity will be greatest at the front of the buildings, the potential sources of impacts to waterbirds (including noise and night-time lighting) will be concentrated away from the WRA and impacts to waterbirds will be minimised.

8.4.4 As accepted in the approved EIA report, the WRA will act as buffer area between the WCA, and the construction works for residential areas. The potential disturbance impact to the WRA during construction phase of residential portion is less substantial to the disturbance impact to the WCA. However, in the revised MLP, the proposed buildings (6-storey, 8-storey and 10-storeys) have been considered carefully the alignment and orientation. As shown in **Figure 7**, all have been located with at least 50m setback from the WRA, to offset the potential additional disturbance impact to the implemented WRA. As stated in the approved EIA report, other methods to reduce potential sources of disturbance will continue to be employed, including good site practice within the construction site, selection of quiet equipment to minimise noise disturbance, minimisation of night-time lighting and location of this away from the wetlands and prevention of dogs from accessing the construction site.

8.4.5 Most of the wildlife utilising the WRA, will be at ground level or lower. The habitat design of the WRA has been considered the minimization of disturbance impact from residential portion, that reedbed are established along the southern boundary of all four cells within the WRA. Reedbed, with its dense vegetation, is particularly effective of providing cover for disturbance-sensitive species. Hence, 3m hoarding during construction phase and 2m solid wall during operation, are considered effective measures to screen off the potential disturbance from residential portion to the WRA.

Table 31 Potential Indirect Impact to WRA

Criteria	WRA
Habitat Quality	Moderate to High man-made wetland
Species	During 12-month ecological surveys, 42 bird species with 13 species of conservation importance have been recorded. 5 amphibian species, 4 reptile species, 22 odonate species and 15 butterfly species.
Size/Abundance	4.74ha, approximately one fourth of the Application Site.
Duration	Construction phase disturbance would be temporary, operational phase would be permanent but minor.
Reversibility	Would be largely reversed during the operational phase as most of the source of noise disturbance will be removed.
Magnitude	The magnitude would be large during construction, especially during piling for the high-rise buildings. Operational impacts would be of lower magnitude.
Overall Impact Severity	Impacts to WRA of **Moderate to High** Severity during construction of the residential area. However, as in approved EIA report, the WRA itself is the buffer between the WCA and the construction works of residential area. During operation impacts would be **Low to Moderate** Severity because of lower magnitude and smaller area of impact (**Figure 6b** & **6c**).

8.4.6 Therefore, the potential additional disturbance impact to the WRA is considered insignificant. For those disturbance-sensitive species, the potential indirect impact has been evaluated in **Section 8.5** below.

8.5 Potential Indirect Impact to Fauna Species of Conservation Importance

8.5.1 Making reference to the approved EIA Report of San Tin/Lok Ma Chau Development Node, ≤35mPD has been considered as low-rise buildings. High-rise buildings under this Application only refer to the 10-storeys, which have been located further away from the WCA. Figure 7 illustrated the distance between these blocks and the WCA.

8.5.2 Within the exclusion zones (EZ) and reduced density zones (RDZ) of the species under consideration lies an area of fishponds that have been exposed to anthropogenic disturbances for decades, including fishpond operation and adjacent village development (**Figure 6a** and **Figure 6b).** There will be no direct impact from this Project to those fishponds to the north of the Project Site; hence, it is anticipated wildlife utilisation will remain in place where wetland habitats are available; waterbirds have been recorded in these ponds close to the villages. In addition, there is anticipated enhancement in habitat quality after the implementation of SPS WCP.

8.5.3 Considering the current Application alone, there will be increase in disturbance during construction of high-rise buildings (only those 10-storeys in this Application). One of the additional measures, the 10-storeys have been located further away from the WRA, as well as the WCA (also the proposed SPS WCP); also, those at the eastern portion of Project Site have been considered at less ecologically sensitive area (i.e. farthest away from Deep Bay) and located at least 80m away from the fishponds.

8.5.4 Disturbance sensitive bird species of conservation importance recorded during 12-month surveys, have been summarized based on the disturbance distance estimate methodology originally generated to assess construction phase disturbance impacts of the Lok Ma Chau Spur Line.

8.5.5 Within the RDZ, 50% of the disturbance sensitive bird are predicted to be excluded. From the 12-month surveys, total of 27 bird species of conservation importance have been recorded; approximately 40 bird individuals were recorded per survey while 21 out of 27 species have been recorded less than 1 bird per survey. The five most abundant species recorded within the RDZ are Tufted Duck (mean number to be excluded= 17.58; number of surveys recorded= 3), Little

Grebe (3.54; 11), Great Cormorant (7.83; 5), Chinese Pond Heron (2.25; 11) and Little Egret (2.92; 11).

8.5.6 Within the EZ, where all relevant species are excluded, total of 16 bird species of conservation importance have been recorded; less than 20 bird individuals were recorded per survey while 10 out of 16 species have been recorded less than 1 bird per survey. The five most abundant species recorded within the EZ are Tufted Duck (6.00; 2), Little Grebe (2.67; 8), Chinese Pond Heron (2.00; 8), Little Egret (1.58; 8) and Pied Kingfisher (1.17; 6).

8.5.7 When comparing the predicted number of individuals displaced for these species with the mean number per month in Deep Bay reported by Hong Kong Bird Watching Society (HKBWS) (Winter Count in Oct 2022-Mar 2023), in which 2037 Tufted Duck, 420 Little Grebe, 6269 Great Cormorant, 414 Chinese Pond Heron, 1039 Little Egret and 25 Pied Kingfisher were recorded, the potentially impacted number of individuals are low or very low. The two fishponds fall within predicted Exclusion Zone (EZ) are inactive. Disturbance-sensitive waterbirds foraging in the adjacent fishponds may temporarily visit these inactive ponds due to flushing. For Tufted Duck, the potentially impacted number of individuals are approximately 1% of Deep Bay population; however, this species generally occurs in large flocks. It was only recorded in two occasions, which fall within the predicted Exclusion Zone. For Little Grebe, as presented in **Appendix C**, the maximum distance is only half of the maximum predicted zones during construction phase (**Figure 6a**); the potentially impacted number of individuals would be less than 1% of Deep Bay population. For Pied Kingfisher, as presented in **Appendix C**, the maximum distance is only one-fourth of the maximum predicted zones during construction phase (**Figure 6a**); this species utilising the fishponds is therefore anticipated to be unimpacted. Hence, the disturbance impacts to these species of conservation importance from this Project are anticipated to be minimal. Therefore, potential additional impacts due to the increase in building height is anticipated to be insignificant.

8.5.8 Other than the disturbance-sensitive bird species, non-avian species of conservation importance utilising the wetland habitats, will be near water, at ground level or lower. It is anticipated there is no additional impact from the increase in building height and population density, as their presence is more prone to habitat preference and foraging opportunities. Leopard Cat, which was not recorded in the EIA study, when the Application Site was partly degraded wetland disturbed by sporadic open storage and container vehicles, is now recorded utilising the WRA where feral dogs and most of human disturbance are excluded. Japanese Pipistrelle and Short-nosed Fruit Bat have been recorded widely distributed within the 500m Assessment Area, where they are actually foraging around residential lighting, fishpond operational light and roadside lighting. For amphibians and reptiles, as long as the wetland habitats are not fragmented, both breeding and foraging activities will remain connected across the WRA and the WCA. For butterflies, the presence is more prone to presence of suitable host plant. For odonates, the presence is more prone to suitable waterbodies.

8.5.9 **Figure 6d** and **6e** have been supplemented to illustrate the maximum predicted extent of potential disturbance impacts under approved scheme of A/YL-MP/344, in the absence of mitigation measures. Comparing **Figure 6a** with **Figure 6d**, the potential increase in maximum predicted extent during the construction phase is only due to the proposed 10-storeys buildings; however, the potentially impacted wildlife is assessed to be minimal as above. As summarized in **Section 4**, the number of species of conservation importance (**Table 4**), especially avifauna, has been doubled within the WRA when compared to the number recorded within the entire Application Site during EIA surveys (**Table 1**). The number of species (and of conservation importance) including amphibians, reptiles, butterflies and odonates are higher in WRA than fishponds (**Table 6** and **Table 7**). For avifauna species of conservation importance, the number utilizing the WRA which is closer to the developed area (**Table 6** and **Table 7**), are similar to the active fishponds within the predicted RDZ, where daily on-site human disturbance occurs; The increase in wildlife utilization within the WRA suggests that those disturbance-sensitive species are more prone to on-site human disturbance than off-site disturbance. The minor disturbance impact during the construction phase is well compensated by the ecological gain within the implemented WRA.

8.5.10 Comparing **Figure 6b** with **Figure 6e**, the maximum predicted extent is almost the same. As the potential additional impact is anticipated to be insignificant, the approved mitigation measures during construction phase and operation phase are considered sufficient to minimize the disturbance impacts. Hence, no change is proposed to the design or operation of the WRA. Nonetheless, additional mitigation measures have been proposed in **Section 8.9**, to further minimize potential disturbance.

8.5.11 A 3m site hoarding will be placed between the WRA and the construction works for residential areas so that a visual barrier is maintained between the construction work and wetland habitats. Other methods to reduce sources of disturbance will be employed, including good site practice within the construction site, selection of quiet equipment to minimise noise disturbance, minimisation of night-time lighting and location of lighting away from the wetlands, and prevention of feral dogs from accessing the construction site. Implementation of the ecological mitigation measures stated, will continue to be checked as part of the EM&A procedures during the construction period. No additional disturbance impact is anticipated to the fauna species of conservation importance in the WRA.

Table 32 Potential Indirect Impact to Fauna Species of Conservation Importance

Criteria	Fauna Species of Conservation Importance
Habitat Quality	Moderate to High fishpond habitats
Species	Total of 27 bird species of conservation importance, potentially displaced by 50% within the RDZ; total of 16 bird species of conservation importance, potentially excluded from the EZ. Mammal: Japanese Pipistrelle, Short-nosed Fruit Bat, Leopard Cat Odonate: Coastal Glider, Ruby Darter Butterfly: Common Awl
Size/Abundance	Most abundant species recorded utilizing the wetland habitats within predicted RDZ and EZ, including Tufted Duck, Little Grebe, Great Cormorant, Chinese Pond Heron, Little Egret and Pied Kingfisher, are very low in number when comparing with the mean number per month in entire Deep Bay reported by HKBWS.
Duration	Temporary impacts would be greatest during the construction phase, especially that of the high-rise housing, but there would be some ongoing impact during operation.
Reversibility	Would be largely reversed during the operational phase as most of the source of noise disturbance will be removed.
Magnitude	The magnitude would be large during construction, especially during piling for the high-rise buildings. Operational impacts would be of lower magnitude.
Overall Impact Severity	In absence of mitigation measures, impacts to wetland habitats and their fauna of **Moderate to High** Severity during construction of the residential area but the number of affected individuals would be small. During operation impacts would be reduced to **Moderate** Severity because of lower magnitude and smaller area of impact.

8.6 Potential Impact to Bird Flightline

8.6.1 During the wet season flightline surveys (**Table 10**, **Table 11** & **Figure 4**), approximately 8 bird individuals per survey hour were recorded flying above the Application Site (flightline no. 3). The number of bird individuals utilising this flightline is very minor when compared to the Deep Bay population. The highest proposed building is 10-storey (+42mPD) which is about 35m in height. Only approximately 4 bird individuals per survey hour were recorded flying across the Application Site at 30m or below.

8.6.2 During the dry season flightline surveys (**Table 12**, **Table 13** & **Figure 5**), approximately 18 bird individuals (mainly Great Cormorant) per survey hour were recorded flying above the Application Site (flightline no.2). However, as shown in **Table 12**, most of the Great Cormorant (approximately 108 individuals per survey hour) were recorded flying across the fishponds to the north of the Application Site (flightline no.1 and flightline no.4). Furthermore, during the survey, the majority of Great Cormorant was observed flying close to the Shen Zhen River, from Mai Po, across Lin

Barn Tsuen fishponds, towards the north; hence, the flightline is outside the 500m Assessment Area. This observation matches with Figure 2.3 of the Strategic Feasibility Study on the Development of Wetland Conservation Parks System under the Northern Metropolis Development Strategy (AFCD 2024), major flightline across the WCPS system. Impedance of Great Cormorant flightlines is therefore not expected.

8.6.3 Therefore, potential impacts to flightlines as a whole are not considered to be significant.

8.7 Potential Bird Collision Impact with Buildings

8.7.1 With reference to the revised MLP, the stepped design has been considered the orientation. High-rise buildings (only the 10-storeys, +42mPD) are all proposed in the middle and the eastern portion of the Application, as far away from the wetland habitat as possible (see **Figure 7)**.

8.7.2 Collisions also occur in daytime, though the causes are generally related to the nature of the building exterior (glass being the prime culprit), and the key risk factors are transparency and reflectivity. Building façades that constitute transparent glass may appear not to present an obstacle to flight and birds may strike windows as they attempt to access potential perches, plants, food and water sources or other lures seen through the glass. Design features such as glass walls around planted atria and windows installed perpendicularly at building corners are potentially dangerous, as birds may perceive these as an unobstructed flight path.

8.7.3 The bird species occurring within the Assessment Area routinely travel around extensive low-rise residential areas including Fairview Park, Palm Springs, Royal Palms and villages. The mitigation measures to avoid bird collisions (i.e. visually unobtrusive and non-reflective building materials etc.) in the approved EcoIA apply here. The current proposed development within the Application Site would not have extensive reflective surfaces. Therefore, the potential impact of bird collision with any buildings is not anticipated.

8.8 Potential Indirect Impact to the WCA and SPS WCP

8.8.1 No change is proposed to the design or operation of the WRA with reference to the Wetland Restoration Plan (WPR) in the approved EIA. Access will only be required to facilitate monitoring and management. Monitoring activities will be undertaken at an appropriate time of the day to minimize the disturbance to bird activity. Routine management works (e.g. grass-cutting) will be conducted on a monthly basis to avoid the need for large scale and/or intensive vegetation management. The WRA will be secured to prevent unauthorised human access and exclude dogs from the site as far as possible. The WRA will continue to function as a buffer between the residential development and the fishponds in the WCA.

8.8.2 The mitigation measures to avoid night-time lighting and glare in the approved EcoIA apply here. The proposed residential buildings will not have extensive exterior lighting or glass or reflective coverings. Night-time light disturbance will be minimised by limiting the amount of lighting in the construction site, and by situating this away from the WCA fishponds. The lighting units will be directional and hooded where appropriate to minimize unnecessary light spill. As mentioned in S.8.5.3, the proposed 10-storeys have been located further away from the WCA (also the proposed SPS WCP); also, those at the eastern portion of Project Site have been considered at less ecologically sensitive area (i.e. farthest away from Deep Bay) and located at least 80m away from the fishponds. With reference to noise impact assessment, there will be no adverse impacts due to the increase in building height during construction; while in operation, the domestic noise at distant is anticipated to be insignificant. Human activities and traffic will be restricted within the residential portion, at lower level would be entirely screened off by the buffer planting and perimeter wall while at high level would be minimized by the distance (and the setback). Hence, no additional impact is predicted to the wetland habitats in the WCA.

8.8.3 The proposed SPS WCP within the 500m AA, have already been assessed, as these wetland habitats are all in the WCA. As discussed in Section 8.5, the disturbance impacts to the bird species of conservation importance from this Project are anticipated to be minimal. The first phase of SPS WCP is suggested to start with fishponds in the northern part, which is close to Lok Ma

Chau, approximately 2km from this Project Site. The Government expects to commence the construction works of the first phase in 2026/2027 the earliest for completion in 2031. The current Application are expected to completion by 2031. Cumulative impacts from construction works of SPS WCP and construction of this Project, are therefore not anticipated.

8.8.4 During operation, the disturbance impact is anticipated to be minimal while the wildlife utilisation is expected to increase with enhancement in habitat quality.

8.9 Additional Mitigation Measures

8.9.1 Although the WRA has been accepted to act as buffer between the WCA and construction works of residential portion and the potential disturbance impact during construction phase is less substantial, the proposed MLP has considered to further minimize the potential additional impact due to the increase in building height, by setback of at least 50m between the WRA and the 6-storey, 8-storey and 10-storeys buildings (see **Figure 7**).

8.9.2 As presented in **Figure 6a**, only two inactive fishponds (no. 51 and 52) fall within the predicted maximum exclusion zone during the construction phase of proposed 8-storey and 10-storey buildings at the eastern portion of the Application Site. These 8-storey and 10-storey buildings have been considered carefully, to locate in a less ecologically sensitive area, i.e. the farthest away from Deep Bay. The foundation works shall avoid use of percussive piling. The construction programme for foundation activities involving bore piling for Tower C2-1, will be scheduled between mid-March to mid-November only, in order to minimise the duration of this work during the dry season, when disturbance-sensitive waterbirds are present in the greatest numbers. Construction activities will be prohibited between the hours of 7pm and 7am.

8.9.3 As presented in **Figure 6c**, the nearest 10-storey buildings have been located at least 80m away from the WCA and the fishponds, such that the predicted maximum exclusion zone will no longer include the fishponds during the operation. Hence, the potential disturbance impact on the proposed SPS WCP is anticipated to be minor.

8.9.4 To further minimize the potential disturbance impact on the WRA, it is proposed the construction works of 3-storey houses abutting the WRA will be commenced first, as in the approved EIA report. The completed houses will become physical barriers between the WRA, and the remaining construction works. The buildings could adopt the design of canopies to dampen reflections (subject to detailed design), to minimize risk of bird collision and glare disturbance, maintaining native trees and shrubs, minimize direct disturbance from humans by restricting access to the WRA, and reduce unnecessary light-spill through shielding and targeted lighting.

8.9.5 At the interface between the WRA and the 3-storey houses, it is proposed increase in 2.5m width of buffer planting (standard trees as proposed in the Landscape Master Plan) within the residential area. During operation, there will be a total of 7.5m width of buffer planting plus a 2m solid wall, to screen off the disturbance from residential area.

8.10 Residual Impact

8.10.1 **Table 33** summarized the details of potential impacts of the development without mitigation, proposed mitigation measures to reduce the significance of those impacts (where required) and significance of impact after those mitigation measures have been instigated, including the extract from the approved EIA report and this assessment.

Table 33 Summary of Potential Ecological Impacts before and after adoption of Mitigation Measures

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Direct Loss of Habitats in Application Site						
Loss of Grassland Habitats	Loss of habitat of Low Significance due to low value of habitat and low abundance of species of conservation importance.	No mitigation required because impacts of low significance but design of WRA includes 0.33 ha of grassland habitats on bunds which will provide habitat for grassland species.	Impact of Low Significance.	No additional impact.	Remains valid.	No adverse impact.
Loss of Seasonal Marsh and Freshwater Marsh/Reedbed	Impacts to habitat of Low to Moderate Significance due to small size, ephemeral nature and high fragmentation of habitat. Impacts to species utilising the habitat of Low to Moderate Significance, mostly due to impacts to moderately diverse dragonfly fauna.	Loss of wetland habitats to be compensated by provision of 4.74 ha of wetland in the WRA (total area of seasonal marsh and freshwater marsh/reedbed currently 4.69 ha). This will include 1.12 ha of reedbed to compensate for reedbed loss on site, as well as a variety of other habitats (open water, short grass, trees and shrubs).	Loss of wetland area fully compensated, therefore No Significant Impact from wetland loss. No Significant Impacts to species using seasonal marsh and freshwater marsh/reedbed. Temporary wetland loss during construction of WRA of Low Significance but unavoidable and temporary. Management of WRA for wildlife presents opportunity to enhance value of Application Site for wildlife by habitat improvement, especially through provision of mature reedbed habitat.	The compensatory wetland has been implemented. No additional impact.	Remains valid.	No adverse impact.
Loss of Drainage Channels/ Ditches	Impacts of Low Significance due to low existing value of the ditches on site, and minimal impact to riparian trees used by roosting waterbirds.	Any loss of habitats for dragonflies and other fauna will be mitigated by provision of wetland habitats in WRA.	Impacts of Low Significance. Wetland habitat to be provided in WRA.	No additional impact.	Remains valid.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Direct Impacts to Species of Conservation Importance						
Impacts to Vegetation	No Significant Impact because no species of conservation importance present in the Application Site.	No mitigation required because no significant impacts predicted.	No Significant Impact.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Mammals	No Significant Impact because no species of conservation importance present in the Application Site.	No mitigation required because no significant impacts predicted.	No Significant Impact.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Roosting Waterbirds	Impacts to waterbirds roosting at the northern edge of the Application Site of Low Significance due to small numbers of birds present and existence of other suitable roosting sites.	Trees and tall shrubs included in design for WRA to provide roosting sites for waterbirds.	No Residual Impact because loss of trees fully compensated by tree planting in WRA.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Foraging Ardeids	Impacts from loss of foraging habitat of Low to Moderate Significance due to the relatively small number of individuals involved, the suboptimal quality of the habitat and the presence of other suitable foraging locations nearby.	Habitat suitable for foraging ardeids will be compensated in WRA.	No net loss of habitat, therefore No Residual Impact during operation phase. Unavoidable Low Impact during construction phase but this will be temporary, restricted to the first year of construction.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Other Bird Species	Impacts to other bird species of conservation importance (Black Kite, Oriental Pratincole, Little Ringed Plover, Pacific Swift, Zitting Cisticola, Red-billed Starling and White-shouldered Starling) of Low Significance because the Application Site does not provide habitat for locally-important populations of any of these species.	Impacts to these species considered to be of Low Significance due to low numbers of individuals present, therefore further mitigation measures not required. Design of the WRA will, however, provide habitat for these species which will compensate for habitat loss on site.	Impacts of Low Significance during construction of the WRA but No Significant Impacts to these bird species after construction completed.	No additional impact.	Remains valid.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Impacts to Herpetofauna	No Significant Impact because no species of conservation importance present in the Application Site.	None required but WRA will compensate for any habitat loss.	No Significant Impact.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Scarlet Basker	Impacts of Low Significance because of very small numbers present in Application Site and current status of the species in Hong Kong.	Mitigation not required because impacts of Low Significance, but design of WRP should provide suitable habitat to compensate for any habitat loss.	Residual impacts of Very Low Significance.	No additional impact.	Remains valid.	No adverse impact.
Impacts to Danaid Egg-fly	No Significant Impact because no evidence that the species breeds within the Application Site.	Mitigation not required but inclusion of larval food plant (Portulaca oleracea) in landscape planting will enhance value of Application Site for the species.	No Significant Impact, planting of larval food plant may provide net ecological benefit.	No additional impact.	Remains valid.	No adverse impact.
Indirect Impacts to Habitats in Assessment Area (excluding Application Site)						
Disturbance Impacts to Adjacent Fishponds	Impacts of disturbance to waterbirds in nearby fishponds of Moderate to High Significance due to the importance of these ponds to waterbirds and their proximity to the northern edge of the Application Site.	Site layout designed to prevent human disturbance at northern boundary and greatest human impacts furthest from wetlands. No public access to WRA and rest of Application Site to be screened from fishponds by landscape planting.	Operation phase impacts outside Application Site of Very Low Significance because presence of WRA will distance human activity from fishpond areas. Operation phase disturbance impacts to WRA of Low Significance.	Potentially additional impact due to the increase in building height and density.	The completed WRA will continue to be the buffer as approved. The 6-/8-/10-storeys buildings have been located with 50m setback from the WRA.	No adverse impact

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
		Barriers during construction phase to block noise and visual disturbance to fishponds. Timing of work in WRA during wet season at the start of construction period; after completion WRA will provide buffer from rest of construction work.	Impacts during construction of WRA of Low Significance but temporary. Other construction phase impacts of Very Low Significance.		Remains valid.	
Indirect Impacts to Off-site Drainage Channels	Impacts from pollution of watercourses downstream of the Application Site are considered to be of Moderate Significance. Changes in surface runoff of Low Significance because magnitude small in comparison to existing flow in the channel.	Good site practice during construction phase to avoid pollution of watercourses. Connection to trunk sewer during Operation phase to prevent discharge into watercourses and Deep Bay.	Pollution risks during construction and operation phase avoided, therefore No Significant Impact. Changes in surface runoff of Low Significance because magnitude small in comparison to existing flow in the channel.	No additional impact.	Remains valid.	No adverse impact.
Indirect Impacts to Other Habitats in Assessment Area	No Significant Impacts to other habitats because these are small and/or show no ecological linkage to the Application Site.	No mitigation measures necessary.	No Significant Impacts.	No additional impact.	Remains valid.	No adverse impact.
Pollution Impacts to Watercourses and Deep Bay	Impacts to watercourses downstream of the Application Site are considered to be of Moderate Significance. Pollution impacts to Deep Bay generally of Low Significance due to the small size of the Application Site relative to the size of the bay, but serious pollution events (especially chemical pollution) into the bay would be of Moderate to High Significance.	Good site practice during construction phase to avoid pollution of watercourses and Deep Bay. Connection to trunk sewer during Operation phase to prevent discharge into watercourses and Deep Bay.	Pollution risks during construction and operation phase avoided, therefore No Significant Impact.	No additional impact.	Remains valid.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Impacts from Habitat Fragmentation	No Significant Impacts because Application Site is on the edge of the wetland ecosystem and does not form a link between other habitats in the area.	Wetland habitats present in Application Site will be incorporated into single WRA, integrated with wetland habitats outside Application Site.	No Significant Impacts outside Application Site.	No additional impact.	Remains valid.	No adverse impact.
Cumulative Impacts of Wetland Loss	Overall impacts would be of High Significance if Deep Bay ecosystem was compromised. Contribution from the Application Site would be of Low Significance.	Loss of 4.69 ha of wetland habitats in Application Site mitigated by provision of 4.74 ha of wetland in WRA.	Loss of wetland habitat fully compensated, so No Residual Impact. Potentially a small net ecological gain due to protection of wetland habitats in WRA.	No additional impact.	Remains valid. Documented ecological gain, based on the monitoring results of implemented WRA from EM&A reports, comparing with the baseline in EIA.	No adverse impact.
Indirect Impacts to Species of Conservation Importance						
Indirect Impacts to Vegetation	No impacts to species of conservation importance because none present in Assessment Area. Impacts of Low Significance to other vegetation during construction phase due to dust deposition.	Measures to control dust emissions during construction phase.	Impacts to vegetation outside Application Site of Very Low Significance.	No additional impact.	Remains valid.	No adverse impact.
Indirect Impacts to Mammals	No Significant Impact because no species of conservation importance recorded in Assessment Area, and low-density mammal populations present.	No mitigation necessary.	No Significant Impacts.	No additional impact.	Remains valid.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Disturbance to Waterbirds of Conservation Importance	Construction-phase disturbance of Moderate to High Significance due to the importance of fishponds to waterbirds and their proximity to the northern edge of the Application Site. Post-construction disturbance impacts of Moderate Significance if human activity is present close to fishpond areas.	Site layout designed to prevent human disturbance at northern boundary and greatest human impacts furthest from wetlands. No public access to WRA and rest of the Application Site to be screened from fishponds by landscape planting. Removal of current potential disturbance from container storage adjacent to fishponds.	Operation phase impacts outside Application Site of Very Low Significance because presence of WRA will distance human activity from fishpond areas. Operation phase disturbance impacts to WRA of Low Significance. Impacts during construction of WRA of Low Significance but temporary. Other construction phase impacts of Low Significance.	Insignificant potentially additional impact due to the increase in building height and density.	Remains valid. The completed WRA will continue to be the buffer as approved. The 6-/8-/10-storeys buildings have been located with 50m setback from the WRA. Scheduling the foundation works for the nearest building (C2-1) from the WCA, between mid-March to mid-November only, to avoid the period when the number of disturbance-sensitive species is the greatest. Construction activities between the hours of 7pm and 7am will be prohibited. There are increase in building heights under current Application. Both low-rise (6-storey and 8-storey) and high-rise (10-storey) have been considered carefully the alignment and orientation. Proposed increase the buffer planting within residential portion from 2.5m to 5m for further screening effect.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
		Barriers during construction phase to block noise and visual disturbance to fishponds. Timing of work in WRA during wet season at the start of construction period; after completion WRA will provide buffer from rest of construction work.		No additional potential impact.	Remains valid. The completed WRA will continue to be the buffer as approved.	No adverse impact
Impacts to Mai Po Village Egretry	Impacts to Mai Po Village egretry of Low to Moderate Significance. Flight paths would be impacted by development in the north of the Application Site, in which case impacts would be of Low to Moderate Significance. Noise disturbance at egretry during construction considered to be of Low Significance.	Loss of wetland foraging habitat to be compensated by provision of equal area of suitable habitat in WRA. Impacts to flight paths to be minimised by location of residential area on southern side of Application Site and by MLP design involving building heights of 2.5/3 storeys and 4 storeys. Noise disturbance to be minimised by adoption of appropriate site management techniques.	No Significant Impact from loss of habitat in operation phase, but unavoidable Low Impact during construction of WRA. Low Impact to flight paths. Very Low Impact to egretry due to noise disturbance during construction phase.	No additional potential impact.	Remains valid. There are increase in building heights under current Application. Both low-rise (6-storey and 8-storey) and high-rise (10-storey) have been considered carefully the alignment and orientation. No impedance to any major flightlines. No additional impact is anticipated.	No adverse impact.
Impacts to Other Egretries	Impacts of Not Significant at the Mai Po Lung egretry, as there is no evidence that these birds forage in the Application Site or fly over to reach other foraging sites. No Significant Impact from noise disturbance.	Loss of wetland foraging habitat to be compensated by provision of equal area of suitable habitat in WRA.	No Impacts to Mai Po Lung egretry. Impacts to Tam Kon Chau due to habitat loss of Low Significance during construction of WRA, but No Net Impact during operation phase.	No additional potential impact.	Remains valid.	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
	Impacts to Tam Kon Chau Egretry of Low Significance because some birds may forage within the Application Site and a few birds fly low over the north of the Application Site. Noise disturbance considered to be of Low Significance.	Impacts to flight paths to be minimised by location of residential area on southern side of Application Site and by MLP design involving building heights of 2.5/3 storeys and 4 storeys. Noise disturbance to be minimised by adoption of appropriate site management techniques.	Low Impact to flight paths from Tam Kon Chau. Very Low Impact to Tam Kon Chau due to noise disturbance during construction phase.	Tam Kon Chau Egretry has been abandoned since 2008.	N/A	N/A
Impacts to Bird Flight Paths	Impacts of Low Significance for development in the south of the Application Site. Impacts of Moderate Significance in the northern or northwestern part of the Application Site, particularly along Flight paths 1, 2, 4 and 5.	Layout of the Application Site will restrict residential development to southern part of Application Site, with tallest buildings closest to existing residential estates. Building heights will be 2.5/3 storeys and 4 storeys and will therefore not be significantly higher than in surrounding residential estates.	Operation phase impacts of Very Low Significance because location and height of buildings will not obstruct existing flight paths.	Potentially additional impact due to the increase in building height and density.	Remains valid. There are increase in building heights under current Application. Both low-rise (6-storey and 8-storey) and high-rise (10-storey) have been considered carefully the alignment and orientation. Based on the survey findings, there is no impedance to any major flightlines. No additional impact is anticipated.	No adverse impact.
Impacts to Other Fauna	Only species of conservation importance recorded were Scarlet Basker and Danaid Egg-fly, with only single individuals recorded of each. Overall No Significant Impact to herpetofauna, dragonflies, butterflies or aquatic invertebrates.	No mitigation measures required.	No Significant Impacts.	No additional impact.	Remains valid.	No adverse impact.
Direct Impact to WRA	N/A	N/A	N/A	No additional impact.	N/A	No adverse impact.

Description of Potential Impact	Significance of Impact without Mitigation	Approved Mitigation Measures	Significance of Impact after Adoption of Mitigation Measures	Additional Potential Impact	Additional mitigation measures proposed under current Application, for any additional potential impact(s)	Residual Impact
Indirect Impact to WRA	N/A	N/A	N/A	Insignificant potentially additional impact due to the increase in building height and density.	The completed WRA will continue to be the buffer as approved. The 6-/8-/10-storeys buildings have been located with 50m setback from the WRA. Scheduling the foundation works for the nearest building (C2-1) from the WCA, between mid-March to mid-November only, to avoid the period when the number of disturbance-sensitive species is the greatest. Construction activities between the hours of 7pm and 7am will be prohibited. There are increase in building heights under current Application. Both low-rise (6-storey and 8-storey) and high-rise (10-storey) have been considered carefully the alignment and orientation. Proposed increase the buffer planting within residential portion from 2.5m to 5m for further screening effect.	No adverse impact.

9 PROPOSED EXTRA ECOLOGICAL MERITS

9.1.1 As mentioned in the Planning Statement Section 8.5.3, the following ecological merits are explored to be incorporated in the proposed development.

9.1.2 For purpose of public awareness and education, wildlife viewing points are proposed within the residential portion. Proposed viewing points at ground level will be adjoining the WRA with vegetation screening while proposed viewing points at roof-top of the buildings allow larger picture of the wetlands. These viewing points would only be allowed under registration entry via the property management in order to avoid excessive disturbance.

9.1.3 Passive recreation within the residential portion will be introduced by landscape gardens and ponds with recreational walk. Native vegetation, fruit trees and flowering plants will be considered where appropriate, for example a butterfly garden. These ponds/gardens will also provide microhabitats with some ecological linkage to the adjacent wetlands.

10 CONCLUSION

10.1.1 Since the proposed amendments include increase in building height and number of units, potential additional disturbance impact is expected to the implemented WRA and wetland habitats in the WCA and the proposed SPS WCP.

10.1.2 Based on the desktop review of EM&A monitoring data and 12-months ecological surveys, with reference to the approved EIA Report of San Tin/Lok Ma Chau Development Node, the potential additional impact due to increase in building height and number of units, have been evaluated with prediction on maximum Exclusion Zone and Zone of Reduced Density of disturbance-sensitive bird species. During construction, maximum exclusion zone covering fishponds within the WCA, have been largely avoided by careful consideration of the 10-storey buildings location. During operation, there will no exclusion zone covering any fishponds within the WCA, i.e. the future SPS WCP.

10.1.3 Those 2-storey houses abutting the WRA in the approved S16 scheme (A/YL-MP/344), are proposed increase to 3-storey detached/semi-detached houses. The buffer planting between the implemented WRA and the residential area will be completed prior to the operational phase of the Project. Compared to the previous approved scheme, the buffer planting within the residential portion has been proposed to increase from 2.5m to 5m width. The WRA design also considered the potential impact, hence the microhabitat closer to the residential portion has been planted with continuous reed.

10.1.4 The low-rise buildings (6-storey and 8-storey) and high-rise buildings (10-storey) have been considered carefully the alignment and orientation. The high-rise buildings have been located further away from the WCA, where is less ecologically sensitive. Making reference to the approved EIA Report of San Tin/Lok Ma Chau Development Node, estimation of bird species of conservation importance to be potentially impacted within predicted maximum RDZ and EZ, have been summarized. When comparing the predicted number of individuals displaced for these species with the mean number per month in Deep Bay reported by HKBWS the disturbance impacts to these species of conservation importance from this Project are anticipated to be minimal. The approved mitigation measures during construction phase and operation phase are considered sufficient to minimize the disturbance impacts.

10.1.5 No major flightlines in latest surveys is over the residential portion of the proposed development. Only one minor flightline is recorded. No impedance of flightline is expected. No additional flightline impact is predicted.

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MMHK. 2024g. Monthly EM&A Report for July 2024. Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

MMHK. 2024h. Monthly EM&A Report for August 2024. Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

MMHK. 2024i. Monthly EM&A Report for September 2024. Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

MMHK. 2024j. Monthly EM&A Report for October 2024. Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

MMHK. 2024k. Monthly EM&A Report for November 2024. Proposed Comprehensive Development at Wo Shang Wai, Yuen Long.

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Appendix

Appendix A

Fauna Species recorded in EM&A reports between December 2023 – November 2024

All survey findings summarised in Appendix A are retrieved from EM&A reports by Mott MacDonald Hong Kong Ltd.

Table A1 Mammal Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Japanese Pipistrelle	*Pipistrellus abraums*	Cap. 170	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**1**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Cap. 170 = Wild Animals Protection Ordinance.
2. Distribution and rarity follow the data of HKBIH (AFCD, 2024).

Table A2 Mammal Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Short-nosed Fruit Bat	*Cynopterus sphinx*	RLCV (NT); Cap. 170	Very widely distributed in urban and countryside areas throughout Hong Kong.
Japanese Pipistrelle	*Pipistrellus abraums*	Cap. 170	Widely distributed throughout Hong Kong.
Leopard Cat	*Prionailurus bengalensis*	RLCV (VU); CSMPS (I); CITES (II); Cap. 170; Cap. 586	Widely distributed in countryside areas throughout Hong Kong, except for Lantau Island.
Eurasian Wild Pig	*Sus scrofa*	-	Very widely distributed in countryside areas throughout Hong Kong.
No. of species of conservation importance			**3**
Total no. of species recorded			**4**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): NT = Near-threatened; VU = Vulnerable.
   b. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   c. Protection status by CSMPS (CSIS, 2019): I = Class I Protected Species in China.
   d. Cap. 170 = Wild Animals Protection Ordinance.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Distribution and rarity follow the data of HKBIH (AFCD, 2024).

Table A3 Bird Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Northern Shoveler	***Spatula clypeata***	**RC**	**Abundant winter visitor to the intertidal areas of Deep Bay typically present October to April.**
Tufted Duck	***Aythya fuligula***	**LC**	**Abundant winter visitor.**
House Swift	*Apus nipalensis*	-	Locally abundant resident and passage migrant, mainly in spring. Much lower numbers now occur on migration compared with the 1980s and 1990s.
Greater Coucal	*Centropus sinensis*	CSMPS(II)	Widespread and common resident typically present in mangroves and shrub dominated closed and open-canopy habitats, usually in lowland areas.
Asian Koel	*Eudynamys scolopaceus*	-	Very common resident, with increased numbers in autumn suggesting the presence of passage migrants.
Large Hawk-cuckoo	*Hierococcyx sparverioides*	-	Common summer visitor.
Indian Cuckoo	*Cuculus Micropterus*	-	Breeding summer visitor, which is locally common but less widespread than in the past.
Eurasian Collared Dove	*Streptopelia decaocto*	-	A locally common breeding resident in the northwest New Territories with scattered records elsewhere. First recorded in 1999 and placed on Category IIB in 2007, it is slowly increasing in numbers and range.
Red Turtle Dove	*Streptopelia tranquebarica*	-	A common passage migrant, especially in autumn, and scarce winter visitor, mainly to the Deep Bay area, with occasional summer records. Numbers appear to have increased in recent years and summer records have become more frequent, but there is no evidence that breeding has occurred.
Spotted Dove	*Spilopelia chinensis*	-	Common and conspicuous resident in all anthropogenic habitats.
Eastern Water Rail	***Rallus indicus***	-	**Scarce winter visitor to freshwater or brackish marsh.**
Common Moorhen	***Gallinula chloropus***	-	**Scarce to uncommon winter visitor, scarce at other times, in vegetated wetland habitats of the northern New Territories, though appears to be in decline due to urbanisation and more intensive management of commercial fishponds.**
White-breasted Waterhen	***Amaurornis phoenicurus***	-	**Common resident in a variety of freshwater and brackish wetland habitats, though numbers are declining probably due to urbanisation of the New Territories.**
Little Grebe	***Tachybaptus ruficollis***	**LC**	**Common in open freshwater wetlands in the northwest New Territories, though declining in marginal areas probably due to increased human disturbance and draining of wetlands.**
Black-winged Stilt	***Himantopus Himantopus***	**RC**	**Common to abundant in freshwater marsh, brackish Gei Wai and commercial fishponds. Has increased greatly since winter 2005/06 and small numbers now breed in most years.**
Little Ringed Plover	***Charadrius dubius***	**(LC)**	**Present all year. Primarily an autumn passage migrant and winter visitor to fresh and brackish water wetlands but breeds in small numbers in ephemeral freshwater wetland habitat.**
Common Snipe	***Gallinago gallinago***	-	**Common passage migrant and winter visitor to vegetated freshwater wetlands, most numerous in autumn.**
Common Sandpiper	***Actitis hypoleucos***	-	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Green Sandpiper	***Tringa ochropus***	-	**Uncommon passage migrant and winter visitor, rare in summer; occurs in a wide variety of freshwater wetlands.**
Marsh Sandpiper	***Tringa stagnatilis***	**RC**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Wood Sandpiper	***Tringa glareola***	**LC**	**Common migrant and winter visitor to freshwater wetlands, with some evidence of a decline in numbers.**
Spotted Redshank	***Tringa erythropus***	**RC**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Whiskered Tern	***Chlidonias hybrida***	**-**	**Common passage migrant, scarce in winter; occurs mainly in fishpond and freshwater wetland areas, but also in inshore and occasionally, offshore waters.**
White-winged Tern	***Chlidonias leucopterus***	**-**	**Passage migrant, common in spring and scarce in autumn; mostly seen over fishponds or freshwater marsh in the Deep Bay area but also occasionally in coastal waters. Numbers have possibly declined since the 1990s.**
Great Cormorant	***Phalacrocorax carbo***	**PRC**	**Abundant winter visitor to Deep Bay area and both inshore and offshore waters.**
Yellow Bittern	***Ixobrychus sinensis***	**(LC)**	**Common summer visitor and passage migrant to wetland areas primarily in the Deep Bay area, scarce in winter. Numbers of breeding birds and passage migrants have substantially decreased.**
Black-crowned Night Heron	***Nycticorax nycticorax***	**(LC)**	**Abundant passage migrant and winter visitor and uncommon breeding species. Occurs in variety of wetland habitats throughout Hong Kong.**
Chinese Pond Heron	***Ardeola bacchus***	**PRC (RC)**	**Common at a variety of freshwater and brackish wetlands across Hong Kong throughout the year; both migratory and resident populations occur.**
Eastern Cattle Egret	***Bubulcus ibis***	**(LC)**	**Present all year in vegetated fresh and brackish water wetland areas; highest numbers in the wet season, after breeding and during autumn migration.**
Grey Heron	***Ardea cinerea***	**PRC**	**Abundant winter visitor; scarce in summer. Has bred. Frequents wetlands throughout Hong Kong but concentrated in Deep Bay area.**
Great Egret	***Ardea alba***	**PRC (RC)**	**Present all year in larger and more open brackish and freshwater wetlands. Most numerous in late autumn and least in April. Migrants pass through mainly in autumn, and a large breeding population has established in Deep Bay in recent years.**
Intermediate Egret	***Ardea intermedia***	**RC**	**Common on passage but scarce at other times of year mainly in freshwater wetland areas. Appears to have increased in numbers over past 60 years.**
Little Egret	***Egretta garzetta***	**PRC (RC)**	**Present all year in a wide variety of fresh and non-freshwater wetland habitats. An influx of birds occurs in the winter months.**
Black-winged Kite	*Elanus caeruleus*	LC; CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, scarce at other times; occurs in open country habitats mainly in the northwest New Territories.
Crester Goshawk	*Accipiter trivirgatus*	CITES(II); CSMPS(II); Cap.586	Common resident in forest areas, but also hunts in open country.
Besra	*Accipiter virgatus*	CSMPS(II); CITES(II); Cap.586	Present all year. Numbers highest in autumn when passage migrants occur in diverse wooded areas and lowest in summer when it breeds in closed-canopy shrubland.
Black Kite	*Milvus migrans*	(RC); CSMPS(II); CITES(II); Cap.586	Present all year throughout Hong Kong, numbers lowest in summer and highest during autumn migration.
Eastern Buzzard	*Buteo japonicus*	CSMPS(II); CITES(II); Cap.586	Common autumn passage migrant and winter visitor, scarce in spring. Occurs in widespread areas of Hong Kong in most non-urban habitats.
White-throated Kingfisher	***Halcyon smyrnensis***	**(LC); CSMPS(II)**	**Present all year with numbers highest in the second half. Much declined, particularly in the breeding season. Occurs mainly in Deep Bay wetlands in the winter, but in mixed shrubland and farmland habitats in the breeding season.**
Common Kingfisher	***Alcedo atthis***	**-**	**Common in autumn and winter, scarce in spring and summer; frequents a wide variety of lowland, largely freshwater wetlands, though also forages at the coast. The migrant population is probably much declined.**
Pied Kingfisher	***Ceryle rudis***	**(LC)**	**Locally uncommon resident, mainly in freshwater and brackish wetland. In decline.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Peregrine Falcon	*Falco peregrinus*	(LC); CSMPS(II); CITES(I); Cap.586	Present all year, with the resident subspecies peregrinator breeding and birds from northerly breeding populations present in winter.
Long-tailed Shrike	*Lanius schach*	LC	Formerly a widespread and fairly common breeding species with occasional winter records. Last proven to breed in 2003 and now a scarce passage migrant and rare winter visitor.
Black-naped Oriole	*Oriolus chinensis*	-	Occurs year-round in open broadleaf woodland or forest-edge areas, most abundant during autumn passage.
Hair-crested Drongo	*Dicrurus hottentottus*	-	Common summer visitor, larger numbers on passage especially autumn, and regular in winter in low numbers. Occurs in open country areas with scattered trees or artificial perches.
Black Drongo	*Dicrurus macrocercus*	-	Common breeding resident in open-canopy shrubland and open-country with sufficient perches and nest sites.
Azure-winged Magpie	*Cyanopica cyanus*	-	Locally common breeding resident in the Deep Bay area centred around Mai Po.
Collared Crow	***Corvus torquatus***	**LC; IUCN(VU)**	**Locally common resident.**
Large-billed Crow	*Corvus macrorhynchos*	-	Largely resident, occurs throughout Hong Kong.
Japanese Tit	*Parus minor*	-	Abundant resident in diverse wooded and lightly-wooded habitats.
Chinese Bulbul	*Pycnonotus sinensis*	-	Abundant resident in nearly all habitats; HK's most widespread bird. Also occurs as a passage migrant and winter visitor.
Red-whiskered Bulbul	*Pycnonotus jocosus*	-	Abundant or common resident in nearly all habitats; Hong Kong's second most widespread bird.
Barn Swallow	*Hirundo rustica*	-	Widespread and common.
Pallas's Leaf Warbler	*Phylloscopus proregulus*	-	Uncommon to common winter visitor and passage migrant to wooded areas.
Dusky Warbler	*Phylloscopus fusccatus*	-	Common passage migrant and winter visitor to open country areas with shrubs.
Yellow-bellied Prinia	*Prinia flaviventris*	-	Common resident in grassland, reed marsh and rank or herbaceous vegetation, and thus highest densities occur in the northwest New Territories.
Plain Prinia	*Prinia inornate*	-	Locally common resident in grassy habitat mainly in the northwest New Territories.
Common Tailorbird	*Orthotomus sutorius*	-	Common widespread resident in diverse habitats of forest, shrubby grassland and landscaped urban areas.
Swinhoe's White-eye	*Zosterops simplex*	-	Widespread abundant resident.
Masked Laughingthrush	*Pterorhinus perspicllatus*	-	A common resident of anthropogenic and disturbed habitats throughout Hong Kong.
Crested Myna	*Acridotheres cristatellus*	-	Abundant and widespread resident in diverse lowland habitats.
Common Myna	*Acridotheres tristis*	-	Locally common resident population considered to derive from ex-captive birds.
Red-billed Starling	*Spodiopsar sericeus*	GC	Abundant winter visitor to open country areas though the range appears to be reducing. A few breeding records in village houses and an urban park.
White-cheeked Starling	*Spodiopsar cineraceus*	PRC	Locally common but declining winter visitor, with recent breeding records.
Black-collared Starling	*Gracupica nigricollis*	-	Common, widespread resident of lowland open-country , village and urban habitats.
White-shouldered Starling	*Sturnia sinensis*	(LC)	Locally common passage migrant and breeding species and an uncommon winter visitor to open country habitat mainly in the northwest New Territories.
Chinese Blackbird	*Turdus mandarinus*	-	Common migrant and winter visitor, scarce but increasing breeding species in northwest New Territories.
Grey-backed Thrush	*Turdus hortulorum*	-	Common winter visitor and uncommon passage migrant to diverse wooded areas.
Oriental Magpie Robin	*Copsychus saularis*	-	Abundant, widespread resident over a wide range of habitats.
Red-throated Flycatcher	*Ficedula albicilla*	-	Common passage migrant and winter visitor to open country or lightly-wooded habitats.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Daurian Redstart	*Phoenicurus auroreus*	-	Common winter visitor to lightly wooded areas.
Amur Stonechat	*Saxicola stejnegeri*	-	Common passage migrant and winter visitor to open country areas.
Eurasian Tree Sparrow	*Passer montanus*	-	An abundant resident, commensal with humans and found in all lowland anthropogenic habitats, especially in active farmland, around fishponds and in city parks.
Scaly-breasted Munia	*Lonchura punctulate*	-	Locally common resident in open country grassland, farmland, wetland and waste ground. Largely restricted to the lowland northern New Territories.
White-rumped Munia	*Lonchura striata*	-	Common in lightly wooded urban fringe and village edge habitats, largely resident but aggregations occur in seeding grassland and rice fields.
Eastern Yellow Wagtail	*Motacilla tschutschensis*	-	Common passage migrant and winter visitor.
White Wagtail	*Motacilla alba*	-	Common passage migrant and winter visitor
Olive-backed Pipit	*Anthus hodgsoni*	-	Common winter visitor and passage migrant to wooded, semi-wooded and open-country habitats with wooded areas nearby.
Little Bunting	*Emberiza pusilla*	-	Uncommon from November to April with weak passage in autumn and spring.
Black-faced Bunting	*Emberiza spodocephala*	-	Common passage migrant and winter visitor to a diverse range of vegetated often damp open-country areas. Generally, the commonest and most widespread bunting in Hong Kong. Numbers have declined however, especially in spring.
No. of species of conservation importance			**31**
No. of species of conservation importance and/or wetland-dependent			**40**
Total no. of species recorded			**80**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): GC = Global Concern; LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Protection status by CITES (2024): I = Listed in Appendix I of CITES; II = Listed in Appendix II of CITES.
   d. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of the latest version of The Avifauna of Hong Kong (HKBWS, 2024).
3. Species considered as of wetland-dependent in this study are indicated in bold type.

Table A4 Bird Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Savanna Nightjar	*Caprimulgus affinis*	-	Locally common resident in grassland and open country, with some seasonal movements.
Greater Coucal	*Centropus sinensis*	CSMPS(II)	Widespread and common resident typically present in mangroves and shrub dominated closed and open-canopy habitats, usually in lowland areas.
Asian Koel	*Eudynamys scolopaceus*	-	Very common resident, with increased numbers in autumn suggesting the presence of passage migrants.
Plaintive Cuckoo	*Cacomantis merulinus*	-	Locally fairly common summer visitor, scarce passage migrant and winter visitor, with some individuals likely to be resident. Occurs in lowland rural areas of mixed habitats, often in agricultural areas.
Large Hawk-cuckoo	*Hierococcyx sparverioides*	-	Common summer visitor
Indian Cuckoo	*Cuculus Micropterus*	-	Breeding summer visitor, which is locally common but less widespread than in the past.
Eurasian Collared Dove	*Streptopelia decaocto*	-	A locally common breeding resident in the northwest New Territories with scattered records elsewhere. First recorded in 1999 and placed on Category IIB in 2007, it is slowly increasing in numbers and range.
Red Turtle Dove	*Streptopelia tranquebarica*	-	A common passage migrant, especially in autumn, and scarce winter visitor, mainly to the Deep Bay area, with occasional summer records. Numbers appear to have increased in recent years and summer records have become more frequent, but there is no evidence that breeding has occurred.
Spotted Dove	*Spilopelia chinensis*	-	Common and conspicuous resident in all anthropogenic habitats.
Common Moorhen	***Gallinula chloropus***	**-**	**Scarce to uncommon winter visitor, scarce at other times, in vegetated wetland habitats of the northern New Territories, though appears to be in decline due to urbanisation and more intensive management of commercial fishponds.**
White-breasted Waterhen	***Amaurornis phoenicurus***	**-**	**Common resident in a variety of freshwater and brackish wetland habitats, though numbers are declining probably due to urbanisation of the New Territories.**
Little Grebe	***Tachybaptus ruficollis***	**LC**	**Common in open freshwater wetlands in the northwest New Territories, though declining in marginal areas probably due to increased human disturbance and draining of wetlands.**
Black-winged Stilt	***Himantopus Himantopus***	**RC**	**Common to abundant in freshwater marsh, brackish Gei Wai and commercial fishponds. Has increased greatly since winter 2005/06 and small numbers now breed in most years.**
Greater Painted-snipe	***Rostratula benghalensis***	**LC**	**Present all year in areas of freshwater marsh and wet agriculture; numbers in winter are higher due to presence of migrants from the north.**
Pintail/Swinhoe's Snipe	***Gallinago stenura / megala***	**LC for Swinhoe's Snipe**	**-**
Common Snipe	***Gallinago gallinago***	**-**	**Common passage migrant and winter visitor to vegetated freshwater wetlands, most numerous in autumn.**

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Sandpiper	***Actitis hypoleucos***	**-**	**Scarce passage migrant, slightly more numerous in spring, and rare summer visitor; much declined. Occurs in vegetated freshwater wetlands.**
Green Sandpiper	***Tringa ochropus***	**-**	**Uncommon passage migrant and winter visitor, rare in summer; occurs in a wide variety of freshwater wetlands.**
Wood Sandpiper	***Tringa glareola***	**LC**	**Common migrant and winter visitor to freshwater wetlands, with some evidence of a decline in numbers.**
Common Greenshank	***Tringa nebularia***	**RC**	**Abundant passage migrant and common winter visitor to Deep Bay area, with scattered records elsewhere.**
Whiskered Tern	***Chlidonias hybrida***	**-**	**Common passage migrant, scarce in winter; occurs mainly in fishpond and freshwater wetland areas, but also in inshore and occasionally, offshore waters.**
Great Cormorant	***Phalacrocorax carbo***	**PRC**	**Abundant winter visitor to Deep Bay area and both inshore and offshore waters.**
Yellow Bittern	***Ixobrychus sinensis***	**(LC)**	**Common summer visitor and passage migrant to wetland areas primarily in the Deep Bay area, scarce in winter. Numbers of breeding birds and passage migrants have substantially decreased.**
Black-crowned Night Heron	***Nycticorax nycticorax***	**(LC)**	**Abundant passage migrant and winter visitor and uncommon breeding species. Occurs in variety of wetland habitats throughout Hong Kong.**
Chinese Pond Heron	***Ardeola bacchus***	**PRC (RC)**	**Common at a variety of freshwater and brackish wetlands across Hong Kong throughout the year; both migratory and resident populations occur.**
Eastern Cattle Egret	***Bubulcus ibis***	**(LC)**	**Present all year in vegetated fresh and brackish water wetland areas; highest numbers in the wet season, after breeding and during autumn migration.**
Grey Heron	***Ardea cinerea***	**PRC**	**Abundant winter visitor; scarce in summer. Has bred. Frequents wetlands throughout HK but concentrated in Deep Bay area.**
Purple Heron	***Ardea purpurea***	**RC**	**Present all year in vegetated wetlands almost exclusively in the Deep Bay area. Most numerous during autumn passage. Peak counts have decreased since the early 1980s.**
Great Egret	***Ardea alba***	**PRC (RC)**	**Present all year in larger and more open brackish and freshwater wetlands. Most numerous in late autumn and least in April. Migrants pass through mainly in autumn, and a large breeding population has established in Deep Bay in recent years.**
Intermediate Egret	***Ardea intermedia***	**RC**	**Common on passage but scarce at other times of year mainly in freshwater wetland areas. Appears to have increased in numbers over past 60 years.**
Little Egret	***Egretta garzetta***	**PRC (RC)**	**Present all year in a wide variety of fresh and non-freshwater wetland habitats. An influx of birds occurs in the winter months.**
Black-winged Kite	*Elanus caeruleus*	LC; CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, scarce at other times; occurs in open country habitats mainly in the northwest New Territories.
Crester Goshawk	*Accipiter trivirgatus*	CITES(II); CSMPS(II); Cap.586	Common resident in forest areas, but also hunts in open country.
Besra	*Accipiter virgatus*	CSMPS(II); CITES(II); Cap.586	Present all year. Numbers highest in autumn when passage migrants occur in diverse wooded areas and lowest in summer when it breeds in closed-canopy shrubland.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Eastern Marsh Harrier	***Circus spilonotus***	**LC; CSMPS(II); CITES(II); Cap.586**	**Common winter visitor and passage migrant, most numerous in autumn. Mainly occurs in Deep Bay area wetlands.**
Black Kite	*Milvus migrans*	(RC); CSMPS(II); CITES(II); Cap.586	Present all year throughout Hong Kong, numbers lowest in summer and highest during autumn migration.
Eastern Buzzard	*Buteo japonicus*	CSMPS(II); CITES(II); Cap.586	Common autumn passage migrant and winter visitor, scarce in spring. Occurs in widespread areas of Hong Kong in most non-urban habitats.
White-throated Kingfisher	***Halcyon smyrnensis***	**(LC); CSMPS(II)**	**Present all year with numbers highest in the second half. Much declined, particularly in the breeding season. Occurs mainly in Deep Bay wetlands in the winter, but in mixed shrubland and farmland habitats in the breeding season.**
Common Kingfisher	***Alcedo atthis***	-	**Common in autumn and winter, scarce in spring and summer; frequents a wide variety of lowland, largely freshwater wetlands, though also forages at the coast. The migrant population is probably much declined.**
Pied Kingfisher	***Ceryle rudis***	**(LC)**	**Locally uncommon resident, mainly in freshwater and brackish wetland. In decline.**
Common Kestrel	*Falco tinnunculus*	CSMPS(II); CITES(II); Cap.586	Common passage migrant in autumn, uncommon winter visitor, scarce passage migrant in spring and very rare in summer; occurs in open country areas.
Long-tailed Shrike	*Lanius schach*	-	Occurs year-round in open broadleaf woodland or forest-edge areas, most abundant during autumn passage.
Hair-crested Drongo	*Dicrurus hottentottus*	-	Common summer visitor, larger numbers on passage especially autumn, and regular in winter in low numbers. Occurs in open country areas with scattered trees or artificial perches.
Black Drongo	*Dicrurus macrocercus*	-	Common breeding resident in open-canopy shrubland and open-country with sufficient perches and nest sites.
Red-billed Blue Magpie	*Urocissa erythrorynchа*	-	Common resident, particularly in shrubland, forest edge, large parks and the urban fringe.
Collared Crow	***Corvus torquatus***	**LC; IUCN(VU)**	**Locally common resident.**
Large-billed Crow	*Corvus macrorhynchos*	-	Largely resident, occurs throughout Hong Kong.
Japanese Tit	*Parus minor*	-	Abundant resident in diverse wooded and lightly-wooded habitats.
Chinese Bulbul	*Pycnonotus sinensis*	-	Abundant resident in nearly all habitats; Hong Kong's most widespread bird. Also occurs as a passage migrant and winter visitor.
Red-whiskered Bulbul	*Pycnonotus jocosus*	-	Abundant or common resident in nearly all habitats; Hong Kong's second most widespread bird.
Barn Swallow	*Hirundo rustica*	-	Widespread and common.
Yellow-browed Warbler	*Phylloscopus inornatus*	-	Common and widespread winter visitor and passage migrant.
Dusky Warbler	*Phylloscopus fusccatus*	-	Common passage migrant and winter visitor to open country areas with shrubs.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Oriental Reed Warbler	***Acrocephalus orientalis***	**-**	**Passage migrant, common in autumn, uncommon in spring, and scarce to rare in winter and summer. Mainly occurs in reed marsh and tall grass associated with wetlands.**
Yellow-bellied Prinia	*Prinia flaviventris*	-	Common resident in grassland, reed marsh and rank or herbaceous vegetation, and thus highest densities occur in the northwest New Territories.
Plain Prinia	*Prinia inornate*	-	Locally common resident in grassy habitat mainly in the northwest New Territories.
Common Tailorbird	*Orthotomus sutorius*	-	Common widespread resident in diverse habitats of forest, shrubby grassland and landscaped urban areas.
Swinhoe's White-eye	*Zosterops simplex*	-	Widespread abundant resident.
Masked Laughingthrush	*Pterorhinus perspicllatus*	-	A common resident of anthropogenic and disturbed habitats throughout Hong Kong.
Crested Myna	*Acridotheres cristatellus*	-	Abundant and widespread resident in diverse lowland habitats.
Common Myna	*Acridotheres tristis*	-	Locally common resident population considered to derive from ex-captive birds.
Black-collared Starling	*Gracupica nigricollis*	-	Common, widespread resident of lowland open-country , village and urban habitats.
Chinese Blackbird	*Turdus mandarinus*	-	Common migrant and winter visitor, scarce but increasing breeding species in northwest New Territories.
Grey-backed Thrush	*Turdus hortulorum*	-	Common winter visitor and uncommon passage migrant to diverse wooded areas.
Oriental Magpie Robin	*Copsychus saularis*	-	Abundant, widespread resident over a wide range of habitats.
Siberian Rubythroat	*Calliope calliope*	CSMPS(II)	Common winter visitor and passage migrant to open- and closed-canopy shrubland, reed marsh, mangrove edge and open country areas with shrubs.
Red-throated Flycatcher	*Ficedula albicilla*	-	Common passage migrant and winter visitor to open country or lightly-wooded habitats.
Daurian Redstart	*Phoenicurus auroreus*	-	Common winter visitor to lightly wooded areas.
Amur Stonechat	*Saxicola stejnegeri*	-	Common passage migrant and winter visitor to open country areas.
Fork-tailed Sunbird	*Aethopyga christinae*	-	Abundant resident species in diverse wooded habitats.
Scaly-breasted Munia	*Lonchura punctulate*	-	Locally common resident in open country grassland, farmland, wetland and waste ground. Largely restricted to the lowland northern New Territories.
Eastern Yellow Wagtail	*Motacilla tschutschensis*	-	Common passage migrant and winter visitor.
White Wagtail	*Motacilla alba*	-	Common passage migrant and winter visitor

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Olive-backed Pipit	*Anthus hodgsoni*	-	Common winter visitor and passage migrant to wooded, semi-wooded and open-country habitats with wooded areas nearby.
Little Bunting	*Emberiza pusilla*	-	Uncommon from November to April with weak passage in autumn and spring.
No. of species of conservation importance			**28**
No. of species of conservation importance and/or wetland-dependent			**36**
Total no. of species recorded			**75**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   d. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of the latest version of The Avifauna of Hong Kong (HKBWS, 2024).
3. Species considered as of wetland-dependent in this study are indicated in bold type.

Table A5 Amphibian Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Asian Common Toad	*Duttaphrynus melanostictus*	-	Widely distributed in Hong Kong.
Asiatic Painted Frog	*Kaloula pulchra*	-	Widely distributed in Hong Kong.
Brown Tree Frog	*Polypedates megacephalus*	-	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**0**
Total no. of species recorded			**3**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A6 Amphibian Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Asian Common Toad	*Duttaphrynus melanostictus*	-	Widely distributed in Hong Kong.
Asiatic Painted Frog	*Kaloula pulchra*	-	Widely distributed in Hong Kong.
Ornate Pigmy Frog	*Microhyla fissipes*	-	Widely distributed in Hong Kong.
Paddy Frog	*Fejervarya multistriata*	-	Widely distributed throughout Hong Kong.
Chinese Bullfrog	*Hoplobatrachus chinensis*	PRC; RLCV (EN); CSMPS (II)	Widely distributed in Hong Kong.
Günther's Frog	*Sylvirana guentheri*	-	Widely distributed throughout Hong Kong.
Brown Tree Frog	*Polypedates megacephalus*	-	Widely distributed throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**7**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): PRC = Potential Regional Concern.
   b. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): EN = Endangered; NT = Near-threatened.
   c. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A7 Reptile Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Bowring's Gecko	*Hemidactylus bowringii*	-	Distributed throughout Hong Kong.
Checkered Keelback	*Fowlea flavipunctata*	-	Widely distributed in streams in the New Territories and Lantau Island.
No. of species of conservation importance			**0**
Total no. of species recorded			**2**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A8 Reptile Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Long-tailed Skink	*Eutropis longicaudata*	-	Widely distributed throughout Hong Kong.
Four-clawed Gecko	*Gehyra mutilata*	RLCV (VU)	Widely distributed throughout Hong Kong.
Bowring's Gecko	*Hemidactylus bowringii*	-	Distributed throughout Hong Kong.
Common Rat Snake	*Ptyas mucosus*	PRC; RLCV (EN); CITES (II); Cap. 586	Widely distributed throughout Hong Kong.
Many-banded Krait	*Bungarus multicinctus*	PRC; RLCV (VU); IUCN (VU)	Common and widely distributed in Hong Kong.
Checkered Keelback	*Fowlea flavipunctata*	-	Widely distributed in streams in the New Territories and Lantau Island.
No. of species of conservation importance			**3**
Total no. of species recorded			**6**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): PRC = Potential Regional Concern.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016): EN = Endangered; VU = Vulnerable.
   d. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A9 Odonate Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Wandering Midget	*Agriocnemis pygmaea*	-	Widely distributed in marshes, abandoned paddy fields and weedy pond margins throughout Hong Kong.
Orange-tailed Sprite	*Ceriagrion auranticum*	-	Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.
Common Bluetail	*Ischnura senegalensis*	-	Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.
Common Flangetail	*Ictinogomphus pertinax*	-	Widely distributed in ponds and still water throughout Hong Kong.
Asian Pintail	*Acisoma panorpoides*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong.
Asian Amberwing	*Brachythemis contaminata*	-	Widely distributed in weedy ponds and sluggish streams.
Crimson Darter	*Crocothemis servilia*	-	Widely distributed in cultivated areas, ponds and marshes throughout the New Territories.
Coastal Glider	*Macrodiplax cora*	LC	Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas.
Russet Percher	*Neurothemis fulvia*	-	Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.
Pied Percher	*Neurothemis tullia*	-	Favours marshes and abandoned rice paddies. Widely distributed throughout Hong Kong.
Green Skimmer	*Orthetrum sabina*	-	Widely distributed in all wetland habitats throughout Hong Kong.
Wandering Glider	*Pantala flavescens*	-	Widely distributed all over Hong Kong.
Pied Skimmer	*Pseudothemis zonata*	-	Widely distributed in woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.
Variegated Flutterer	*Rhyothemis variegata*	-	Widely distributed in marshes, ponds and tanks throughout Hong Kong.
No. of species of conservation importance			**1**
Total no. of species recorded			**14**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A10 Odonate Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Orange-tailed Midget	*Agriocnemis femina*	-	Widely distributed in disused paddy fields, marshes, ditches and weedy ponds margins.
Wandering Midget	*Agriocnemis pygmaea*	-	Widely distributed in marshes, abandoned paddy fields and weedy pond margins throughout Hong Kong.
Orange-tailed Sprite	*Ceriagrion auranticum*	-	Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.
Common Bluetail	*Ischnura senegalensis*	-	Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.
Blue Sprite	*Pseudagrion microcephalum*	LC	Found in lowland streams and ponds; often perches on aquatic plants just above the water surface. Population scattered all over Hong Kong and established in Hong Kong Wetland Park.
Orange-faced Sprite	*Pseudagrion rubriceps*	-	Widely distributed in ponds and weedy margins of slow flowing streams.
Yellow Featherlegs	*Copera marginipes*	-	Widely distributed in lowland streams, ditches, and weedy margins of pond throughout Hong Kong.
Pale-spotted Emperor	*Anax guttatus*	-	Widely distributed in ponds and sluggish streams throughout Hong Kong.

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Flangetail	*Ictinogomphus pertinax*	-	Widely distributed in ponds and still water throughout Hong Kong.
Asian Pintail	*Acisoma panorpoides*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong.
Blue Dasher	*Brachydiplax chalybea*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong
Asian Amberwing	*Brachythemis contaminata*	-	Widely distributed in weedy ponds and sluggish streams.
Crimson Darter	*Crocothemis servilia*	-	Widely distributed in cultivated areas, ponds and marshes throughout the New Territories.
Blue Percher	*Diplacodes trivialis*	-	Widespread, especially in late summer, when it can be found almost everywhere in Hong Kong.
Forest Chaser	*Lyriothemis elegantissima*	-	Frequents marshes beside woodlands. Widespread throughout Hong Kong.
Russet Percher	*Neurothemis fulvia*	-	Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.
Pied Percher	*Neurothemis tullia*	-	Favours marshes and abandoned rice paddies. Widely distributed throughout Hong Kong.
Red-faced Skimmer	*Orthetrum chrysis*	-	Widely distributed in pools and marshy areas adjacent to flowing streams throughout Hong Kong.
Green Skimmer	*Orthetrum sabina*	-	Widely distributed in all wetland habitats throughout Hong Kong.
Wandering Glider	*Pantala flavescens*	-	Widely distributed all over Hong Kong.
Pied Skimmer	*Pseudothemis zonata*	-	Widely distributed in woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.
Ruby Darter	*Rhodothemis rufa*	LC	Widely distributed in ponds and marshes with dense floating plants.
Variegated Flutterer	*Rhyothemis variegata*	-	Widely distributed in marshes, ponds and tanks throughout Hong Kong.
Evening Skimmer	*Tholymis tillarga*	-	Widely distributed in marshes, weedy ponds and tanks throughout Hong Kong.
Saddlebag Glider	*Tramea virginia*	-	Widely distributed in trees adjacent to ponds and lakes throughout Hong Kong.
Scarlet Basker	*Urothemis signata*	LC	Common in areas with abandoned fishponds throughout Hong Kong.
No. of species of conservation importance			**3**
Total no. of species recorded			**26**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table A11 Butterfly Species Recorded within Survey Area (excluding WRA)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Straight Swift	*Parnara guttata*	-	Common
Pale Grass Blue	*Zizeeria maha*	-	Very Common
Common Hedge Blue	*Acytolepis puspa*	-	Common
Common Evening Brown	*Melanitis leda*	-	Uncommon
Dark-brand Bush Brown	*Mycalesis mineus*	-	Very Common
Common Palmfly	*Elymnias hypermnestra*	-	Common
Blue-spotted Crow	*Euploea midamus*	-	Very Common
Rustic	*Cupha erymanthis*	-	Very Common
Great Egg-fly	*Hypolimnas bolina*	-	Very Common
Common Sailer	*Neptis hylas*	-	Very Common
Common Mormon	*Papilio polytes*	-	Very Common
Spangle	*Papilio protenor*	-	Very Common
Lime Butterfly	*Papilio demoleus*	-	Uncommon
Tailed Jay	*Graphium agamemnon*	-	Common
Lemon Emigrant	*Catopsilia pomona*	-	Very Common
Common Grass Yellow	*Eurema hecabe*	-	Very Common
Red-base Jezebel	*Delias pasithoe*	-	Very Common
No. of species of conservation importance		**0**	
Total no. of species recorded		**18**	

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows Pun (2024).

Table A12 Butterfly Species Recorded within WRA

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Common Awl	*Hasora badra*	LC	Rare
Chinese Dart	*Potanthus confucius*	-	Common
Common Straight Swift	*Parnara guttata*	-	Common
Rare Swift	*Parnara ganga*	-	Uncommon
Paintbrush Swift	*Baoris farri*	-	Rare
Silver Streak Blue	*Iraota timoleon*	-	Uncommon
Tailless Line Blue	*Prosotas dubiosa*	-	Uncommon
Pale Grass Blue	*Zizeeria maha*	-	Very Common

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Lesser Grass Blue	*Zizina otis*	-	Common
Common Hedge Blue	*Acytolepis puspa*	-	Common
Common Evening Brown	*Melanitis leda*	-	Uncommon
Dark Evening Brown	*Melanitis phedima*	-	Common
Dark-brand Bush Brown	*Mycalesis mineus*	-	Very Common
Common Palmfly	*Elymnias hypermnestra*	-	Common
Plain Tiger	*Danaus chrysippus*	-	Uncommon
Blue-spotted Crow	*Euploea midamus*	-	Very Common
Great Egg-fly	*Hypolimnas bolina*	-	Very Common
Common Mapwing	*Cyrestis thyodamas*	-	Common
Angled Castor	*Ariadne ariadne*	-	Common
Common Archduke	*Lexias pardalis*	-	Uncommon
Common Sailer	*Neptis hylas*	-	Very Common
Common Mormon	*Papilio polytes*	-	Very Common
Paris Peacock	*Papilio paris*	-	Very Common
Common Bluebottle	*Graphium sarpedon*	-	Very Common
Tailed Jay	*Graphium agamemnon*	-	Common
Lemon Emigrant	*Catopsilia pomona*	-	Very Common
Common Grass Yellow	*Eurema hecabe*	-	Very Common
Three-spot Grass Yellow	*Eurema blanda*	-	Common
Red-base Jezebel	*Delias pasithoe*	-	Very Common
No. of species of conservation importance		**1**	
Total no. of species recorded		**31**	

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows Pun (2024).

Appendix B

Fauna Species recorded during 12-month ecological surveys (April 2024 – March 2025)

Table B1 Mammal Species Recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Japanese Pipistrelle	*Pipistrellus abraums*	Cap. 170	Widely distributed throughout Hong Kong.	✓	✓
Short-nosed Fruit Bat	*Cynopterus sphinx*	IUCN(LC); Cap.170	Widely distributed throughout Hong Kong.	✓	✓
No. of species of conservation importance				**2**	**2**
Total no. of species recorded				**2**	**2**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Cap. 170 = Wild Animals Protection Ordinance.
   b. IUCN (2024): LC = Least Concern
2. Distribution and rarity follow the data of HKBIH (AFCD, 2024).

Table B2 Maximum Count of Bird Species Recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Application Site[3]					500m Assessment Area										
			SM	BG	Gr	DC	WRA	F	Po	M	DC	Rb	Ag	MG	LW	W	PI	DA
Northern Shoveler	***Spatula clypeata***	RC						2										
Tufted Duck	***Aythya fuligula***	LC						255										
House Swift	*Apus nipalensis*	-					3	50	3					4				2
Greater Coucal	*Centropus sinensis*	CSMPS(II)		1	1		2	3	1			2	1					
Asian Koel	*Eudynamys scolopaceus*	-						2				1			1			3
Eurasian Collared Dove	*Streptopelia decaocto*	-						8				5						
Spotted Dove	*Spilopelia chinensis*	-		3	4		5	6				6		5	2			12
Common Moorhen	***Gallinula chloropus***	-						5	1			1						
Eurasian Coot	***Fulica atra***	RC						6										
White-breasted Waterhen	***Amaurornis phoenicurus***	-	1				2	3	1	1	1	1						
Little Grebe	***Tachybaptus ruficollis***	LC						9	1									
Great Crested Grebe	***Podiceps cristatus***	RC						1										
Black-winged Stilt	***Himantopus himantopus***	RC						6			2	2						
Little Ringed Plover	***Charadrius dubius***	(LC)						4										
Temminck's Stint	***Calidris temminckii***	LC						2										
Common Sandpiper	***Actitis hypoleucos***	-	1			1	1	2			1	1						
Green Sandpiper	***Tringa ochropus***	-						1										
Common Redshank	***Tringa totanus***	RC						5										
Wood Sandpiper	***Tringa glareola***	LC						1										
Common Greenshank	***Tringa nebularia***	RC						1			1							
Oriental Stork	***Ciconia boyciana***	GC; RLCV(EN); IUCN(EN); CSMPS(I); CITES(I)						8										
Great Cormorant	***Phalacrocorax carbo***	PRC						54	3			7						
Yellow Bittern	***Ixobrychus sinensis***	(LC)					4	2	1			2						
Cinnamon Bittern	***Ixobrychus cinnamomeus***	LC						1										
Black-crowned Night Heron	***Nycticorax nycticorax***	(LC)					2	4	2		1	3						
Chinese Pond Heron	***Ardeola bacchus***	PRC (RC)	1				3	4	1	1	2	4				2		
Eastern Cattle Egret	***Bubulcus ibis***	(LC)			1		1	3										
Grey Heron	***Ardea cinerea***	PRC					1	3				2						
Purple Heron	***Ardea purpurea***	RC					1	1				1						
Great Egret	***Ardea alba***	PRC (RC)					1	37	1		1	1						
Intermediate Egret	***Ardea intermedia***	RC						1										
Little Egret	***Egretta garzetta***	PRC (RC)					2	23	2		1	3				2		
Black Kite	*Milvus migrans*	(RC); CSMPS(II); CITES(II); Cap.586						1				1				1	1	1

Common Name	Scientific Name	Conservation & Protection Status[1]	Application Site[3]					500m Assessment Area										
			SM	BG	Gr	DC	WRA	F	Po	M	DC	Rb	Ag	MG	LW	W	PI	DA
White-throated Kingfisher	***Halcyon smyrnensis***	(LC); CSMPS(II)					1	2	1			1						1
Common Kingfisher	***Alcedo atthis***	-				1	1	2	1		1	1						
Pied Kingfisher	***Ceryle rudis***	(LC)					1	2	1		1	1						
Black-naped Oriole	*Oriolus chinensis*	LC						1										
Black Drongo	*Dicrurus macrocercus*	-					1	3				2						2
Long-tailed Shrike	*Lanius schach*	-	1		1		1	1	1		1	1	1					
Azure-winged Magpie	*Cyanopica cyanus*	-						2				4						10
Red-billed Blue Magpie	*Urocissa erythroryncha*	-						2										3
Oriental Magpie	*Pica serica*	-						1										1
Collared Crow	***Corvus torquatus***	LC; IUCN(VU)						2				2						
Large-billed Crow	*Corvus macrorhynchos*	-						2				1				1	1	
Japanese Tit	*Parus minor*	-					2	3				2				1	1	2
Chinese Bulbul	*Pycnonotus sinensis*	-	2		3		4	6				3					4	8
Red-whiskered Bulbul	*Pycnonotus jocosus*	-	2		3		4	5				4					5	8
Barn Swallow	*Hirundo rustica*	-				3	6	20				7						24
Yellow-browed Warbler	*Phylloscopus inornatus*	-					1	1				2						
Pallas's Leaf Warbler	*Phylloscopus proregulus*	-						1										
Dusky Warbler	*Phylloscopus fuscatus*	-	1				2	2			1	2						
Oriental Reed Warbler	***Acrocephalus orientalis***	-						1				1						
Black-browed Reed Warbler	***Acrocephalus bistrigiceps***	-						2				1						
Zitting Cisticola	*Cisticola juncidis*	LC					1	1										
Yellow-bellied Prinia	*Prinia flaviventris*	-	1		1		1	2			1	4						
Plain Prinia	*Prinia inornata*	-					1	2			1	2						
Common Tailorbird	*Orthotomus sutorius*	-					1	1			2				1		1	1
Swinhoe's White-eye	*Zosterops simplex*	-					3	4			3				3		1	3
Masked Laughingthrush	*Pterorhinus perspicillatus*	-					6	4			5	5			6			4
Crested Myna	*Acridotheres cristatellus*	-		3	6		10	20			4	8			5			6
Common Myna	*Acridotheres tristis*	-					4	6			4	4			4			2
Red-billed Starling	*Spodiopsar sericeus*	GC						4										
White-cheeked Starling	*Spodiopsar cineraceus*	PRC						2										
Black-collared Starling	*Gracupica nigricollis*	-			4		8	12		2		6			6			5
White-shouldered Starling	*Sturnia sinensis*	(LC)						4				5						
Oriental Magpie Robin	*Copsychus saularis*	-		1	1	1	3	2	2	1	2		2		2			4
Bluethroat	*Luscinia svecica*	LC; CITES(III); CSMPS(II)						1										
Daurian Redstart	*Phoenicurus auroreus*	-			1		1	1	1				1					
Amur Stonechat	*Saxicola stejnegeri*	-			1		1	2	1			2						

Common Name	Scientific Name	Conservation & Protection Status[1]	Application Site[3]					500m Assessment Area										
			SM	BG	Gr	DC	WRA	F	Po	M	DC	Rb	Ag	MG	LW	W	PI	DA
Eurasian Tree Sparrow	*Passer montanus*	-			10		8	14			12	7			10			30
Scaly-breasted Munia	*Lonchura punctulata*	-	4		6		10	15			5							
Eastern Yellow Wagtail	*Motacilla tschutschensis*	-				1	1	2			1							
White Wagtail	*Motacilla alba*	-				1	1	2	1		1							1
Richard's Pipit	*Anthus richardi*	-						1					1					
Olive-backed Pipit	*Anthus hodgsoni*	-					3	4					2	4	4			6
Red-throated Pipit	*Anthus cervinus*	LC						1					1					
Black-faced Bunting	*Emberiza spodocephala*	-					1	2				2						
No. of species of conservation importance			**1**	**1**	**2**	**0**	**12**	**35**	**10**	**2**	**7**	**15**	**2**	**0**	**0**	**3**	**1**	**2**
No. of species of conservation importance and/or wetland-dependent			**1**	**0**	**2**	**0**	**15**	**42**	**13**	**2**	**10**	**20**	**2**	**0**	**0**	**2**	**1**	**2**
Total no. of species recorded			**9**	**4**	**14**	**6**	**42**	**77**	**19**	**4**	**24**	**43**	**7**	**3**	**11**	**5**	**7**	**23**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern; PRC = Potential Regional Concern; RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
   b. Conservation status by IUCN (2024): VU = Vulnerable.
   c. Protection status by CITES (2024): II = Listed in Appendix II of CITES.
   d. Protection status by CSMPS (CSIS, 2019): II = Class II Protected Species in China.
   e. Cap. 586 = Protection of Endangered Species of Animals and Plants Ordinance.
2. Species considered as of wetland-dependent in this study are indicated in bold type.
3. Habitat Type: SM = Seasonal Marsh; BG = Bare Ground; Gr = Grassland; DC = Drainage; WRA = Wetland Restoration Area; F = Fishpond; Po = Pond/Open Water; M = Marsh; Rb = Reedbed; Ag = Agricultural Land; MG = Managed Grassland; LW = *Leucaena* Woodland; W = Woodland; PI = Plantation; DA = Developed Area.

Table B3 Herpetofauna Species Recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Amphibians					
Asiatic Painted Frog	*Kaloula pulchra*	-	Widely distributed in Hong Kong.		✓
Ornate Pigmy Frog	*Microhyla fissipes*	-	Widely distributed in Hong Kong.	✓	✓
Marbled Pigmy Frog	*Microhyla pulchra*	-	Widely distributed in Hong Kong.	✓	✓
Paddy Frog	*Fejervarya multistriata*	-	Widely distributed in Hong Kong.	✓	
Günther's Frog	*Sylvirana guentheri*		Widely distributed in Hong Kong.	✓	✓
Brown Tree Frog	*Polypedates megacephalus*	-	Widely distributed in Hong Kong.	✓	✓
Reptiles					
Chinese Gecko	*Gekko chinensis*	-	Widespread	✓	✓
Bowring's Gecko	*Hemidactylus bowringii*	-	Widespread	✓	✓
Checkered Keelback	*Fowlea flavipunctata*		Localised	✓	✓
Red-necked Keelback	*Rhabdophis helleri*	-	Widespread	✓	
Taiwan Kukri Snake	*Oligodon formosanus*	-	Widely distributed throughout Hong Kong.		✓
No. of species of conservation importance				**0**	**0**
Total no. of species recorded				**9**	**9**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table B4 Odonate species recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Orange-tailed Midget	*Agriocnemis femina*	-	Widely distributed in disused paddy fields, marshes, ditches and weedy ponds margins.	✓	✓
Wandering Midget	*Agriocnemis pygmaea*	-	Widely distributed in marshes, abandoned paddy fields and weedy pond margins throughout Hong Kong.	✓	✓
Orange-tailed Sprite	*Ceriagrion auranticum*	-	Widely distributed in weedy ponds, marshes, abandoned fields or grasslands adjacent to waters.		✓
Common Bluetail	*Ischnura senegalensis*	-	Widely distributed in all wetland habitats except fast flowing rivers throughout Hong Kong.	✓	✓
Orange-faced Sprite	*Pseudagrion rubriceps*	-	Widely distributed in ponds and weedy margins of slow flowing streams.	✓	✓
Yellow Featherlegs	*Copera marginipes*	-	Widely distributed in lowland streams, ditches, and weedy margins of pond throughout Hong Kong.	✓	✓
Pale-spotted Emperor	*Anax guttatus*	-	Widely distributed in ponds and sluggish streams throughout Hong Kong.	✓	✓
Common Flangetail	*Ictinogomphus pertinax*	-	Widely distributed in ponds and still water throughout Hong Kong.	✓	✓
Asian Pintail	*Acisoma panorpoides*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong.	✓	✓
Blue Dasher	*Brachydiplax chalybea*	-	Widely distributed in marshes and weedy ponds throughout Hong Kong	✓	✓
Asian Amberwing	*Brachythemis contaminata*	-	Widely distributed in weedy ponds and sluggish streams.	✓	✓
Crimson Darter	*Crocothemis servilia*	-	Widely distributed in cultivated areas, ponds and marshes throughout the New Territories.	✓	✓
Blue Percher	*Diplacodes trivialis*	-	Widespread, especially in late summer, when it can be found almost everywhere in Hong Kong.	✓	✓
Forest Chaser	*Lyriothemis elegantissima*	-	Frequents marshes beside woodlands. Widespread throughout Hong Kong.	✓	✓
Coastal Glider	*Macrodiplax cora*	LC	Frequents marshes and ponds with dense vegetation, especially adjacent to coastal areas.		✓
Russet Percher	*Neurothemis fulvia*	-	Found in marshes, cultivated areas, streams, tanks and irrigation feeders, sometimes even found in nearly dried out marshy areas. Widely distributed throughout Hong Kong.	✓	✓
Pied Percher	*Neurothemis tullia*	-	Favours marshes and abandoned rice paddies. Widely distributed throughout Hong Kong.	✓	✓
Red-faced Skimmer	*Orthetrum chrysis*	-	Widely distributed in pools and marshy areas adjacent to flowing streams throughout Hong Kong.	✓	✓
Green Skimmer	*Orthetrum sabina*	-	Widely distributed in all wetland habitats throughout Hong Kong.	✓	✓
Wandering Glider	*Pantala flavescens*	-	Widely distributed all over Hong Kong.	✓	✓
Pied Skimmer	*Pseudothemis zonata*	-	Widely distributed in woodlands adjacent to reservoirs, sluggish streams, ponds, tanks and marshes throughout Hong Kong.	✓	✓
Ruby Darter	*Rhodothemis rufa*	LC	Widely distributed in ponds and marshes with dense floating plants.		✓
Variegated Flutterer	*Rhyothemis variegata*	-	Widely distributed in marshes, ponds and tanks throughout Hong Kong.	✓	✓
Evening Skimmer	*Tholymis tillarga*	-	Widely distributed in marshes, weedy ponds and tanks throughout Hong Kong.	✓	✓
Saddlebag Glider	*Tramea virginia*	-	Widely distributed in trees adjacent to ponds and lakes throughout Hong Kong.	✓	✓

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Crimson Dropwing	Trithemis aurora	-	Found in marshes, ponds, streams, andor even ornamental ponds in urban areas. Widely distributed throughout Hong Kong		✓
Indigo Dropwing	*Trithemis festiva*	-	Favours sluggish sections of streams with a strong current or the small rock pools inof mountain streams. Widespread in Hong Kong		✓
Dingy Dusk-darter	*Zyxomma petiolatum*	-	Widely distributed in thick undergrowth, tree foliage and shady spots near water courses throughout Hong Kong.		✓
No. of species of conservation importance				**0**	**2**
Total no. of species recorded				**26**	**28**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
   a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows the data of HKBIH (AFCD, 2024).

Table B5 Butterfly species recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Common Awl	*Hasora badra*	LC	Rare		✓
Chinese Dart	*Potanthus confucius*	-	Common	✓	
Common Straight Swift	*Parnara guttata*	-	Common	✓	✓
Rare Swift	*Parnara ganga*	-	Uncommon		✓
Formosan Swift	*Borbo cinnara*	-	Very Common	✓	✓
Chocolate Royal	*Remelana jangala*		Common	✓	✓
Green Flash	*Artipe eryx*		Uncommon		✓
Silver Streak Blue	*Iraota timoleon*	-	Uncommon	✓	✓
Tailless Line Blue	*Prosotas dubiosa*	-	Uncommon	✓	✓
Pale Grass Blue	*Zizeeria maha*	-	Very Common	✓	✓
Lesser Grass Blue	*Zizina otis*	-	Common	✓	✓
Common Hedge Blue	*Acytolepis puspa*	-	Common	✓	✓
Common Evening Brown	*Melanitis leda*	-	Uncommon		✓
Dark Evening Brown	*Melanitis phedima*	-	Common	✓	✓
Dark-brand Bush Brown	*Mycalesis mineus*	-	Very Common	✓	✓
Common Palmfly	*Elymnias hypermnestra*	-	Common	✓	✓
Plain Tiger	*Danaus chrysippus*	-	Uncommon		✓
Blue-spotted Crow	*Euploea midamus*	-	Very Common	✓	✓
Great Egg-fly	*Hypolimnas bolina*	-	Very Common	✓	✓
Common Mapwing	*Cyrestis thyodamas*	-	Common		✓
Angled Castor	*Ariadne ariadne*	-	Common	✓	✓
Common Archduke	*Lexias pardalis*	-	Uncommon	✓	
Common Sailer	*Neptis hylas*	-	Very Common	✓	✓
Common Mormon	*Papilio polytes*	-	Very Common	✓	✓
Paris Peacock	*Papilio paris*	-	Very Common	✓	✓
Swallowtail	*Papilio xuthus*	-	Uncommon		✓
Common Bluebottle	*Graphium sarpedon*	-	Very Common	✓	
Tailed Jay	*Graphium agamemnon*	-	Common	✓	✓
Lemon Emigrant	*Catopsilia pomona*	-	Very Common	✓	✓
Common Grass Yellow	*Eurema hecabe*	-	Very Common	✓	✓
Three-spot Grass Yellow	*Eurema blanda*	-	Common		✓
Red-base Jezebel	*Delias pasithoe*	-	Very Common	✓	✓
Common Gull	*Cepora nerissa*	-	Common	✓	✓
Indian Cabbage White	*Pieris canidia*	-	Very Common	✓	✓
Great Orange Tip	*Hebomoia glaucippe*	-	Common		✓
No. of species of conservation importance				**0**	**1**
Total no. of species recorded				**26**	**32**

Notes:

1. Conservation and protection status refers to Fellowes *et al*. (2002), IUCN (2024), Red List of China's Vertebrates (RLCV) (Jiang *et al*., 2016), CSIS (2019), CITES (2024), Cap. 170 and Cap. 586.
    a. Conservation status by Fellowes *et al*. (2002): LC = Local Concern.
2. Status in Hong Kong follows Pun (2024).

Table B6 Aquatic Fauna Species recorded within the drainage channel of Application Site

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]
Aquatic Invertebrate			
Blood Worm	*Chironomidae sp.*	-	-
Backswimmer	*Enithares sp.*	-	-
Common Bluetail (Larvae)	*Ischnura senegalensis*	-	Abundant
Yellow Featherlegs (Larvae)	*Copera marginipes*	-	Abundant
Pale-spotted Emperor (Larvae)	*Anax guttatus*	-	Common
Russet Percher (Larvae)	*Neurothemis fulvia*	-	Common
Red-faced Skimmer (Larvae)	*Orthetrum chrysis*	-	Abundant
Common Blue Skimmer (Larvae)	*Orthetrum glaucum*	-	Abundant
Wandering Glider (Larvae)	*Pantala flavescens*	-	Abundant
Saddlebag Glider (Larvae)	*Tramea virginia*	-	Abundant
Crimson Dropwing (Larvae)	*Trithemis aurora*	-	Abundant
Indigo Dropwing (Larvae)	*Trithemis festiva*	-	Abundant
Fish			
Snakehead Murrel	*Channa striata*	-	Exotic
Mosquito Fish	*Gambusia affinis*	-	Exotic

Table B7 Firefly Species recorded during 12-month ecological surveys (April 2024 – March 2025)

Common Name	Scientific Name	Conservation & Protection Status[1]	Status in Hong Kong[2]	Application Site	500m Assessment Area
Rimmed Window Firefly	*Pyrocoelia analis*	-	Widespread	✓	✓

Appendix C

Predicted disturbance impacts on Bird Species of Conservation Importance

Common Name	Conservation and Protection Status	Status in HK (inferred)	RDZ	EZ	Estimated number of birds to be potentially displaced	Maximum Distance of Reduced Density		Maximum Distance of Exclusion		Sensitivity to Disturbance
			mean (/12)*50%	mean (/12)		Construction Phase	Operation Phase	Construction Phase	Operation Phase	
Northern Shoveler	RC	Abundant	0.17	0.00	0.17	300	200	-	-	Moderate
Tufted Duck	LC	Abundant	17.58	6.00	23.58	300	200	100	100	Moderate
Eurasian Coot	RC	Uncommon	0.54	0.00	0.54	50	20	-	-	Low
Little Grebe	LC	Common	3.54	2.67	6.21	200	50	100	20	Moderate
Great Crested Grebe	RC	Common	0.17	0.00	0.17	50	20	-	-	Low
Black-winged Stilt	RC	Common	0.25	0.00	0.25	100	50	-	-	Moderate
Little Ringed Plover	(LC)	Common	0.17	0.00	0.17	200	30	-	-	Low - Moderate
Temminck's Stint	LC	Uncommon	0.08	0.00	0.08	100	50	-	-	Moderate
Common Redshank	RC	Abundant	0.21	0.00	0.21	100	50	-	-	Moderate
Wood Sandpiper	LC	Common	0.08	0.00	0.08	100	50	-	-	Moderate
Common Greenshank	RC	Abundant	0.08	0.00	0.08	100	50	-	-	Moderate
Great Cormorant	PRC	Abundant	7.83	0.42	8.25	400	150	200	100	High
Yellow Bittern	(LC)	Common	0.25	0.75	1.00	50	20	50	20	Low
Black-crowned Night Heron	(LC)	Abundant	0.46	0.75	1.21	100	30	50	20	Low
Chinese Pond Heron	PRC (RC)	Common	2.25	2.00	4.25	300	30	100	20	Low - Moderate
Grey Heron	PRC	Abundant	0.58	0.58	1.17	300	200	100	100	High
Purple Heron	RC	Uncommon	0.04	0.08	0.12	300	200	-	-	High
Great Egret	PRC (RC)	Abundant	1.63	1.00	2.63	400	200	200	100	High
Intermediate Egret	RC	Common	0.00	0.17	0.17	300	30	300	30	Low - Moderate
Little Egret	PRC (RC)	Abundant	2.92	1.58	4.50	400	100	100	20	Moderate - High
Black Kite	(RC); CSMPS(II); CITES(II); Cap.586	Abundant	0.04	0.25	0.29	100	30	50	20	Low
White-throated Kingfisher	(LC); CSMPS(II)	Uncommon	0.25	0.08	0.33	100	20	-	-	Low
Pied Kingfisher	(LC)	Uncommon	0.33	1.17	1.50	100	20	50	20	Low
Collared Crow	LC; IUCN(VU)	Common	0.08	0.17	0.25	200	100	100	50	Moderate
Zitting Cisticola	LC	Common	0.00	0.33	0.33	50	20	50	20	Low
Red-billed Starling	GC	Abundant	0.21	0.00	0.21	200	100	-	-	Moderate
White-cheeked Starling	PRC	Common	0.08	0.17	0.25	200	100	-	-	Moderate
White-shouldered Starling	(LC)	Common	0.46	0.00	0.46	200	100	100	50	Moderate
Bluethroat	LC; CITES(III); CSMPS(II)	Uncommon	0.04	0.00	0.04	50	20	-	-	Low
Red-throated Pipit	LC	Common	0.00	0.08	0.08	50	20	50	20	Low
Eastern Cattle Egret	(LC)	Common	0.04	0.08	0.12	100	30	50	20	Low - Moderate

Appendix D

Representative Photographs of Habitats within the Application Site and Assessment Area

Application Site

Mitigation Wetland (the implemented WRA)



Seasonal Marsh



Drainage Channel



Grassland



Bare Ground



Assessment Area

Fishpond



Pond/Open Water



Marsh



Drainage Channel/Ditch



Reedbed



Agricultural Land



Managed Grassland



***Leucaena* Woodland**



Secondary Woodland

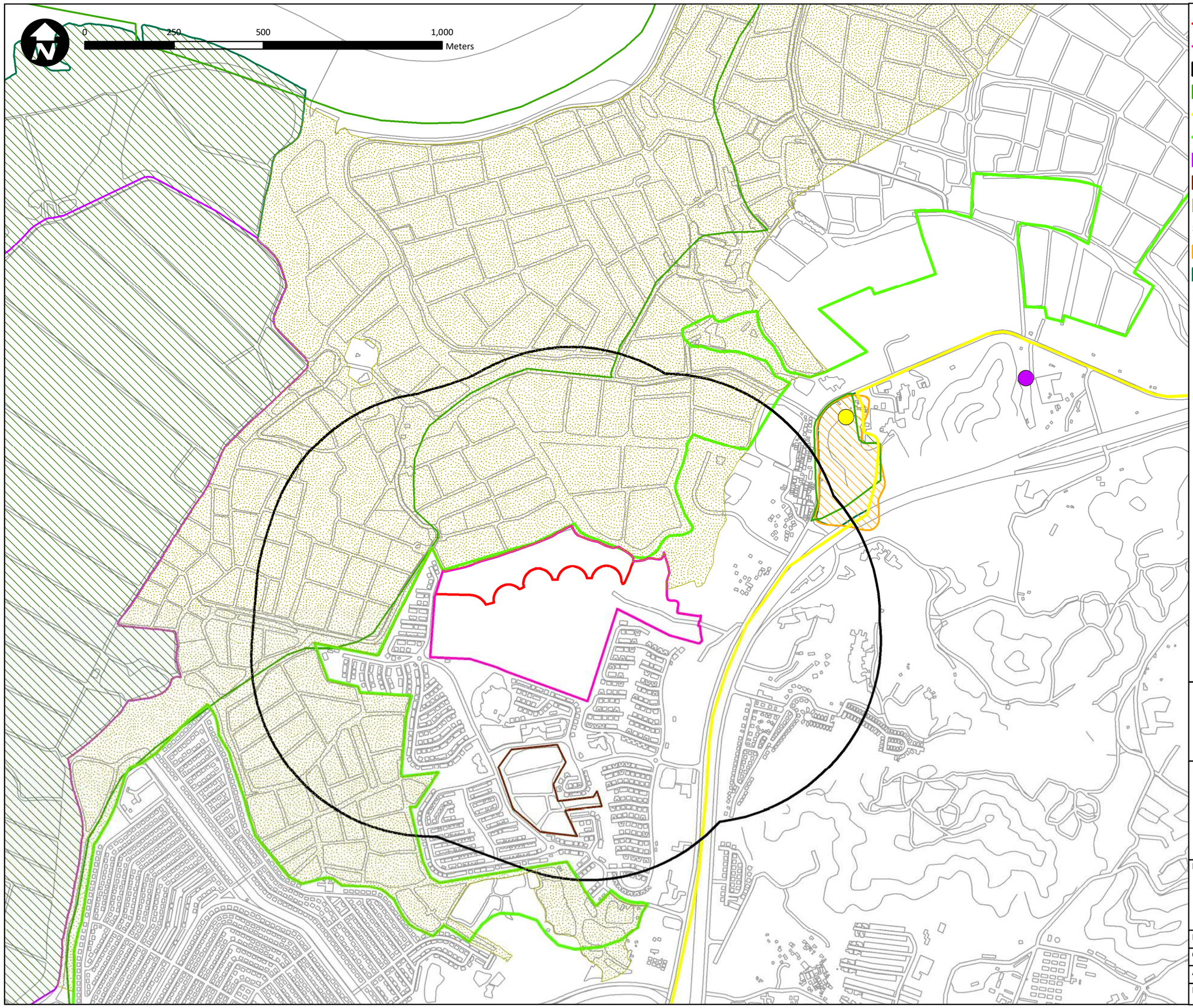


Plantation



Developed Area





Wetland Restoration Area
Application Site
500m Assessment Area
Mai Po/Inner Deep Bay Ramsar Site
Wetland Buffer Area (WBA)
Wetland Conservation Area (WCA)
Mai Po Nature Reserve
Conservation Area
Other Specified Uses (Wetland Conservation Park)

Sites of Special Scientific Interest (SSSI)

Mai Po Village
Mai Po Marshes SSSI

Egretries

Mai Po Lung Egretry
Mai Po Village Egretry

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Site of Conservation Importance

Drawn by:	PC	Scale:	1:10,000 on A3
Checked By:	MM	Date:	16 Jul 2025
Approved by:	MM		
Figure Number:	Figure 1	Revision:	0

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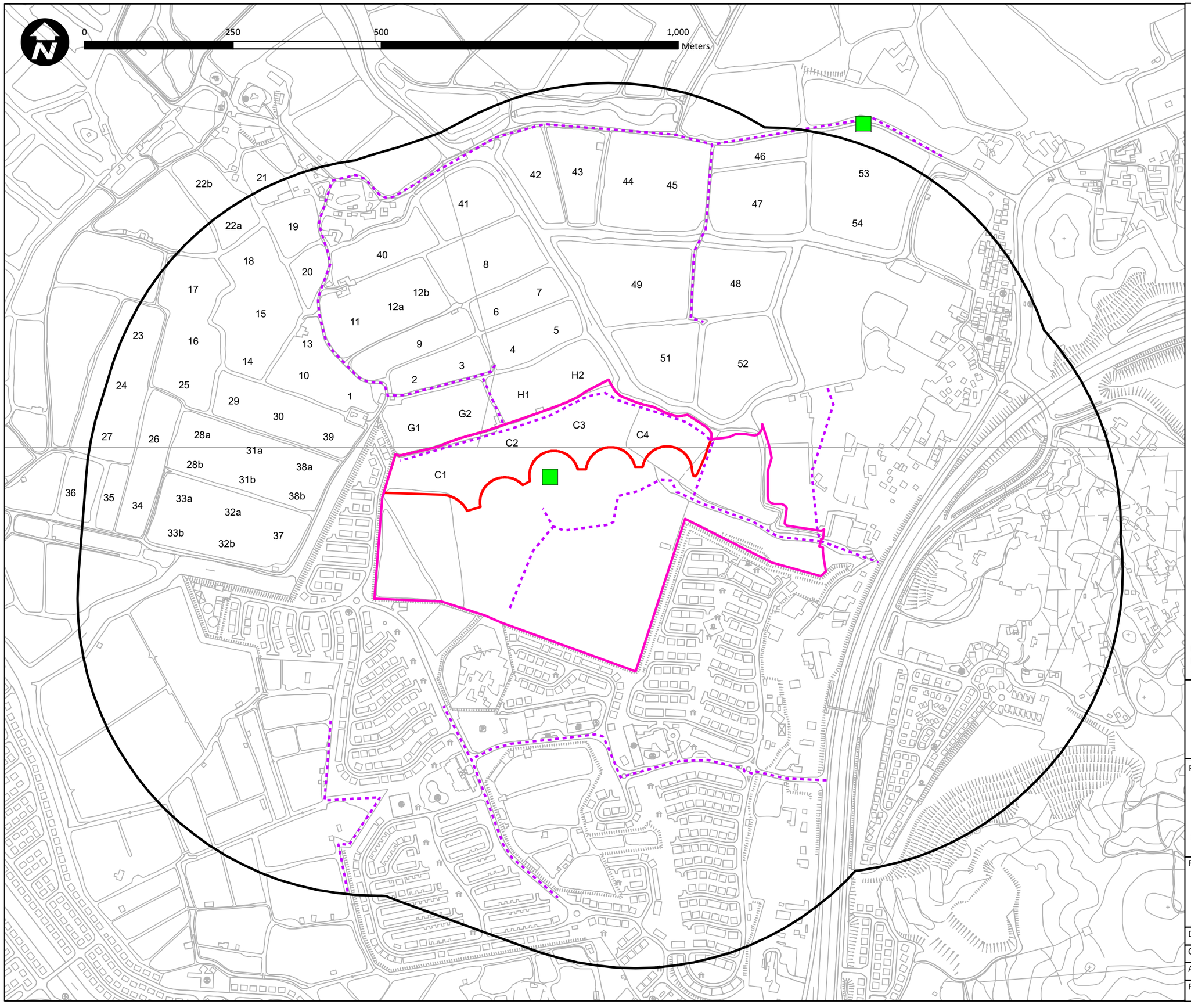

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology
biodiversity
landscape
aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Survey Transect and Vantage Point

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	2 Apr 2025
Approved by:	MM		
Figure Number:	Figure 2	Revision:	0

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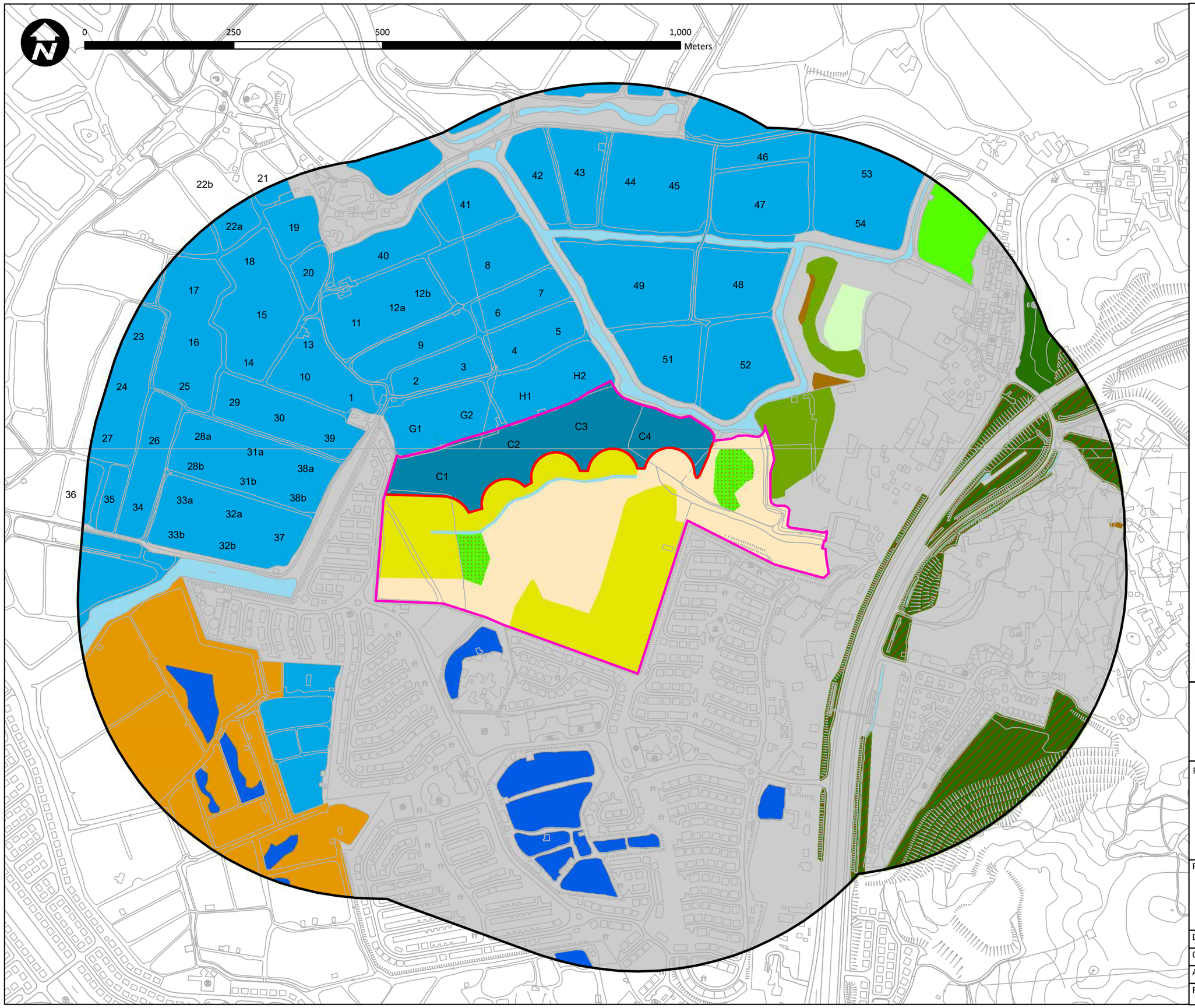

Application Site

Wetland Restoration Area

500m Assessment Area

Habitat

- Mitigation Wetland
- Fishpond
- Pond/Open Water
- Marsh
- Seasonal Marsh
- Drainage Channel / Ditch
- Reedbed
- Agricultural Land
- Managed Grassland
- *Leucaena* Woodland
- Grassland
- Secondary Woodland
- Plantation
- Bare Ground
- Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology
biodiversity
landscape
aec
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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Habitat Map

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	11 Jun 2025
Approved by:	MM		
Figure Number:	Figure 3a	Revision:	0

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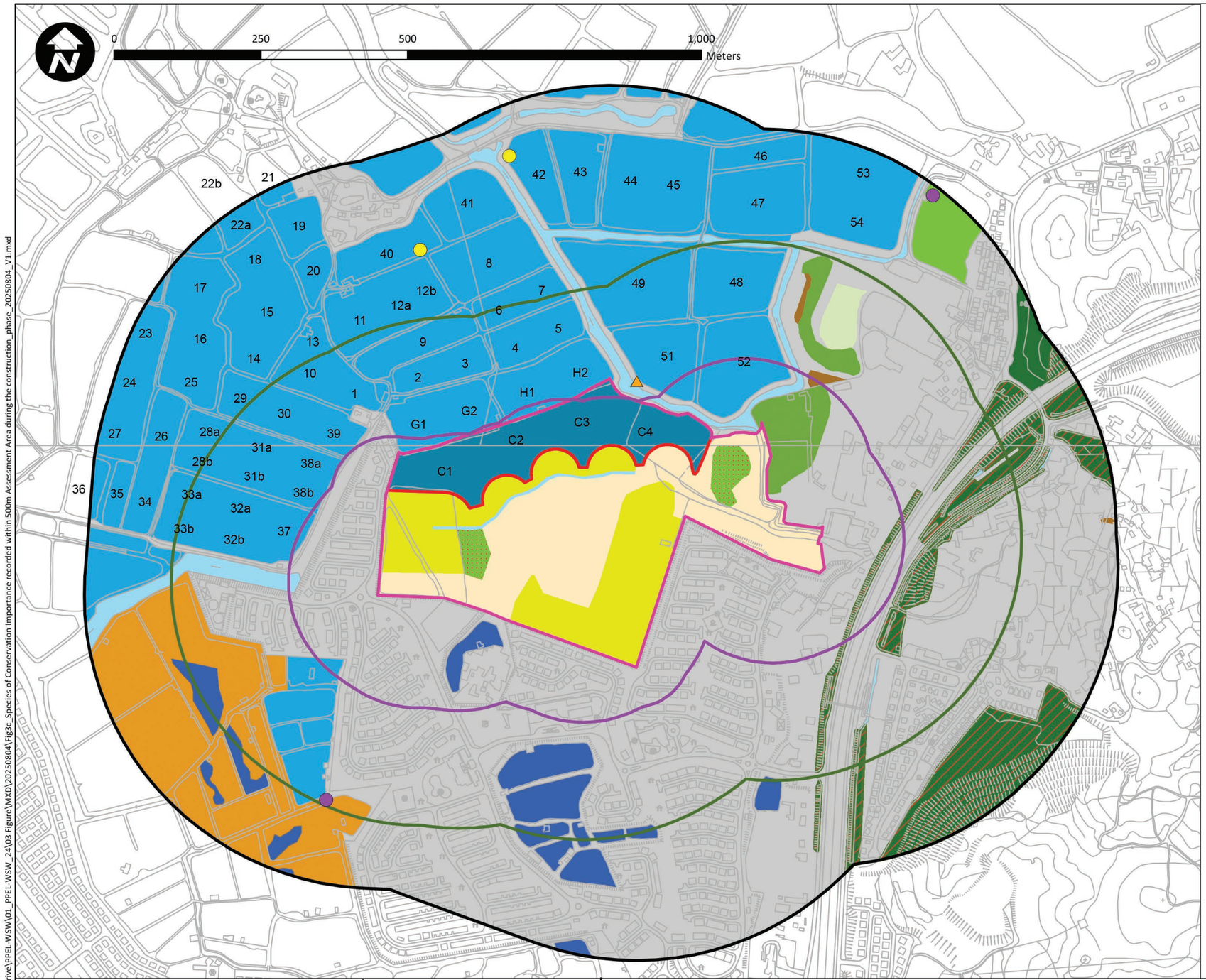

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Species of Conservation Importance

Bird

A1	Northern Shoveler
A2	Tufted Duck
A3	Greater Coucal
A4	Eurasian Coot
A5	Little Grebe
A6	Great Crested Grebe
A7	Black-winged Stilt
A8	Little Ringed Plover
A9	Temminck's Stint
A10	Common Redshank
A11	Wood Sandpiper
A12	Common Greenshank
A13	Oriental Stork
A14	Great Cormorant
A15	Yellow Bittern
A16	Cinnamon Bittern
A17	Black-crowned Night Heron
A18	Chinese Pond Heron
A19	Eastern Cattle Egret
A20	Grey Heron
A21	Purple Heron
A22	Great Egret
A23	Intermediate Egret
A24	Little Egret
A25	Black Kite
A26	White-throated Kingfisher
A27	Pied Kingfisher
A28	Black-naped Oriole
A29	Collared Crow
A30	Zitting Cisticola
A31	Red-billed Starling
A32	White-cheeked Starling
A33	White-shouldered Starling
A34	Bluethroat
A35	Red-throated Pipit

Mammal

M1	Short-nosed Fruit Bat (In Flight)
M2	Japanese Pipistrelle (In Flight)

Butterfly

- Common Awl

Odonate

- Ruby Darter
- Coastal Glider

- Application Site
- Wetland Restoration Area
- Exclusion Zone (0-100m for low-rise & 0-200m for high-rise)
- Zone of Reduced Density (100-200m for low-rise & 200-400m for high-rise)
- 500m Assessment Area

Habitat

- Mitigation Wetland
- Fishpond
- Pond/Open Water
- Marsh
- Seasonal Marsh
- Drainage Channel / Ditch
- Reedbed
- Agricultural Land
- Managed Grassland
- *Leucaena* Woodland
- Grassland
- Secondary Woodland
- Plantation
- Bare Ground
- Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

Exclusion Zone

Fishpond		Seasonal Marsh	WRA	
A2	M1	A18	A3	M1
A5	M2	Bare Ground	A15	M2
A14		A3	A17	
A18		M1	A18	
A20		M2	A19	
A22		Grassland	A20	
A24		A3	A21	
A25		A19	A22	
A27			A24	
A29			A26	
A30			A27	
			A30	

Zone of Reduced Density

Fishpond			Reedbed	
A1	A14	A27	A3	A27
A2	A15	A29	A7	A29
A3	A16	A30	A14	A33
A4	A17	A31	A15	
A5	A18	A32	A17	
A6	A19	A33	A18	
A7	A20	A34	A20	
A8	A22	A35	A21	
A9	A23	M1	A22	
A10	A24	M2	A24	
A11	A25		A25	
A12	A26		A26	

Undisturbed Zone

Fishpond		Pond	Drainage Channel/Ditch	Reedbed		Agricultural Land	Plantation
A1	A24	A3	A7	A3	A27	A3	A25
A2	A25	A5	A12	A7	A29	A35	
A3	A26	A14	A17	A14	A33	Secondary Woodland	Development Area
A5	A27	A15	A18	A15		A18	A25
A7	A28	A17	A22	A17		A24	A26
A13	A29	A18	A24	A18		A25	M1
A14	A31	A22	A27	A20			M2
A17	A33	A24		A21			
A18	M1	A26		A22			
A20	M2	A27		A24			
A21				A25			
A22				A26			

ecology biodiversity landscape aec
Member of the Aurecon Group

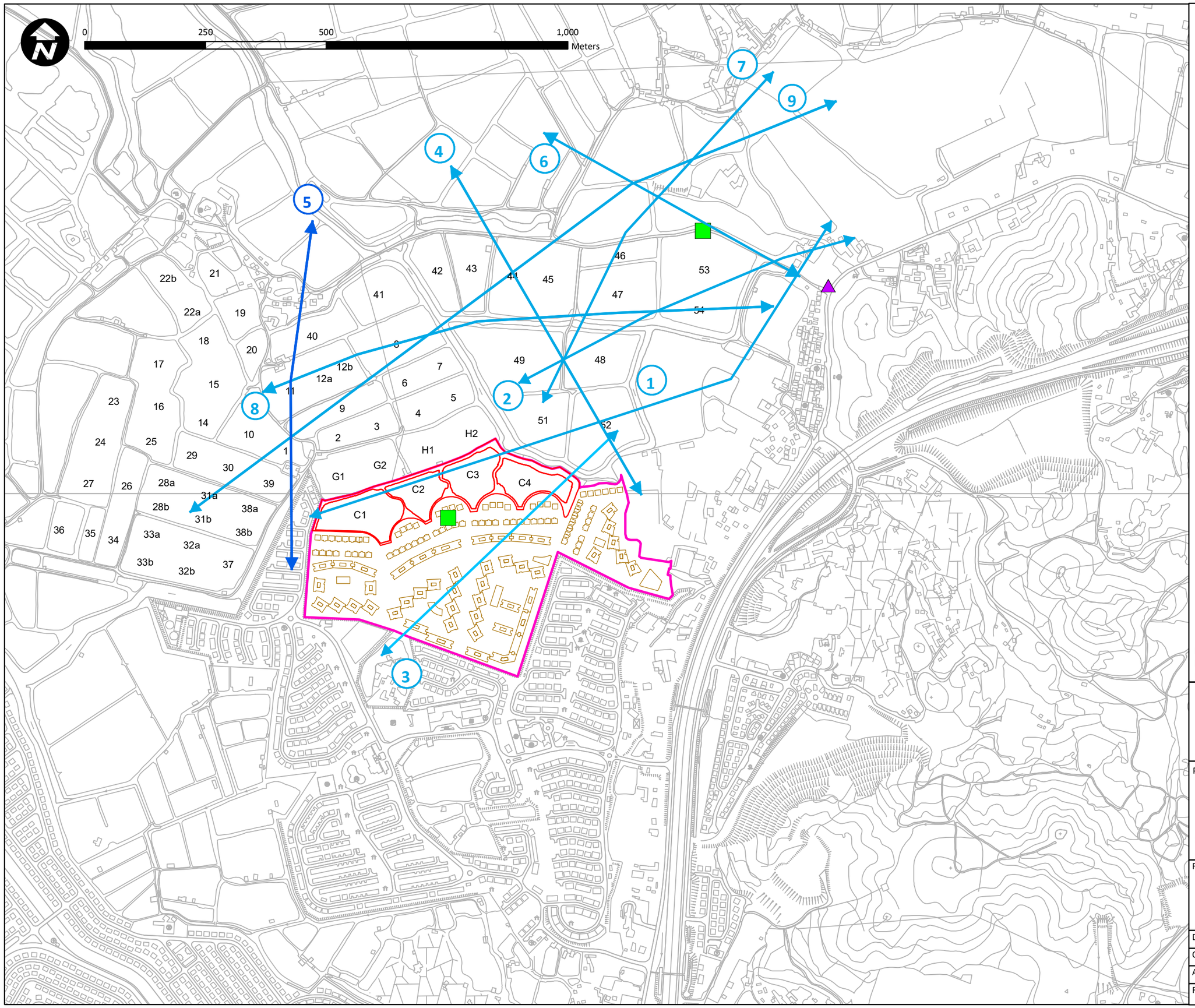
Project Title:

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Species of Conservation Importance recorded within 500m Assessment Area

Drawn by:	PC	Scale:	1:7,500 on A3
Checked By:	MM	Date:	4 Aug 2025
Approved by:	MM		
Figure Number:	Figure 3b	Revision:	0



Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Project Title:

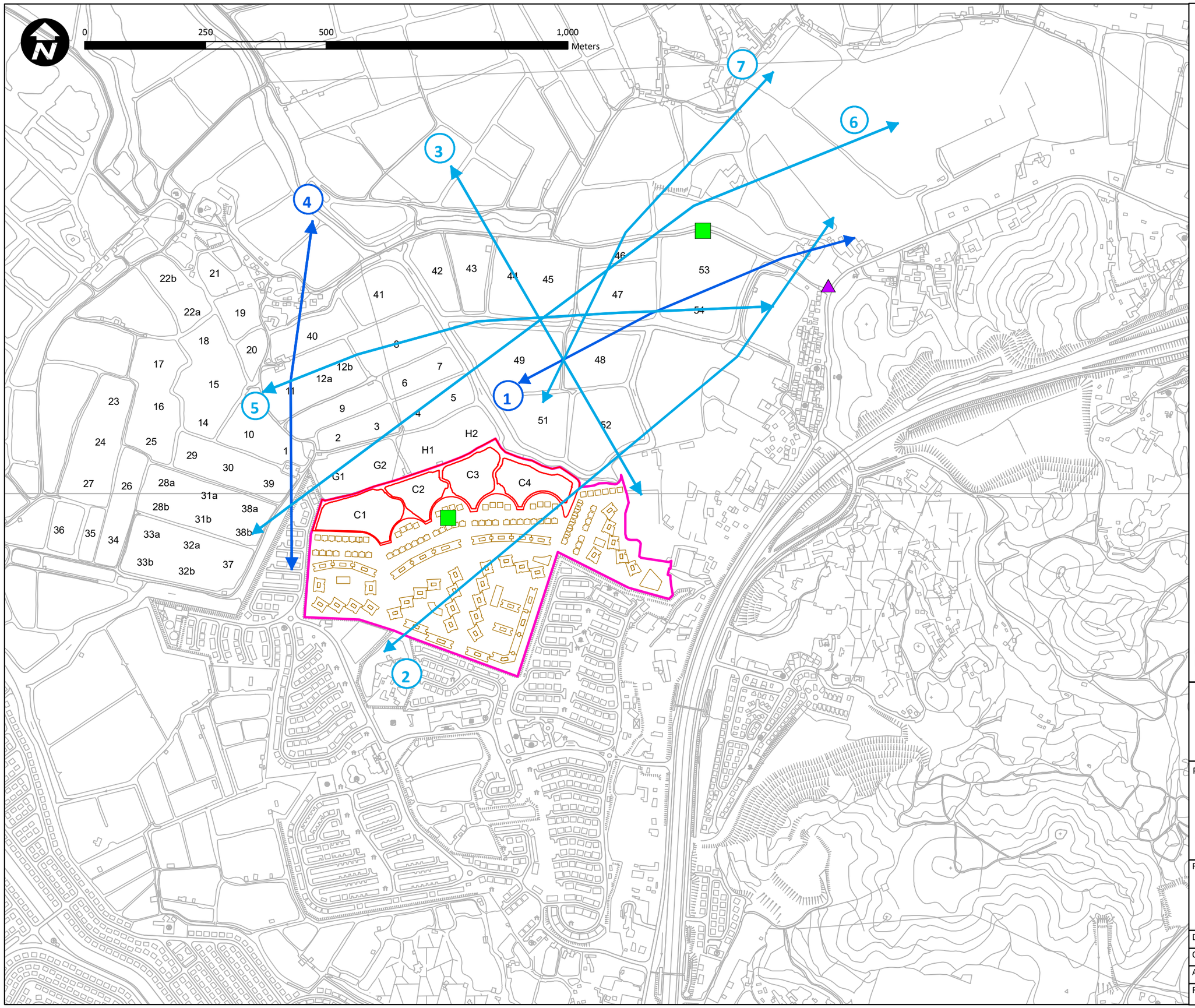
To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Flightline in Wet Season (2024)

Drawn by:	NT	Scale:	1:7,400 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	PJL		
Figure Number:	Figure 4	Revision:	0

Document Path: C:\Users\Peter.Chan\OneDrive - Aurecon Group\Y Drive\PPEL-WSW\01_PPEL-WSW_24\03 Figure\MXD\20250618\Fig4_Wet Season Flight line_20250611.mxd



Project Area
Wetland Restoration Area
MLP
Egretry Location
Observation Point
Major Flightline
Minor Flightline

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Flightline in Dry Season (2024)

Drawn by:	NT	Scale:	1:7,400 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	PJL		
Figure Number:	Figure 5	Revision:	0

Document Path: C:\Users\Peter.Chan\OneDrive - Aurecon Group\Y Drive\PPEL-WSW\01_PPEL-WSW_24\03 Figure\MXD\20250618\Fig5_Dry Season Flight line_20250618.mxd

0 250 500 1,000 Meters

Project Area
Wetland Restoration Area
2-4 storey associated facilities
3-storey buildings
6-storey buildings
8-storey buildings
10-storey buildings
Exclusion Zone
(0-100m for low-rise & 0-200m for high-rise)
Zone of Reduced Density
(100-200m for low-rise & 200-400m for high-rise)

Habitat

Mitigation Wetland
Development Site
Fishpond
Pond/Open Water
Drainage Channel / Ditch
Reedbed
Agricultural Land
Managed Grassland
Leucaena Woodland
Plantation
Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Maximum exclusion zone and zone of reduced density due to the disturbance impacts during the construction phase

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	MM		
Figure Number:	Figure 6a	Revision:	0

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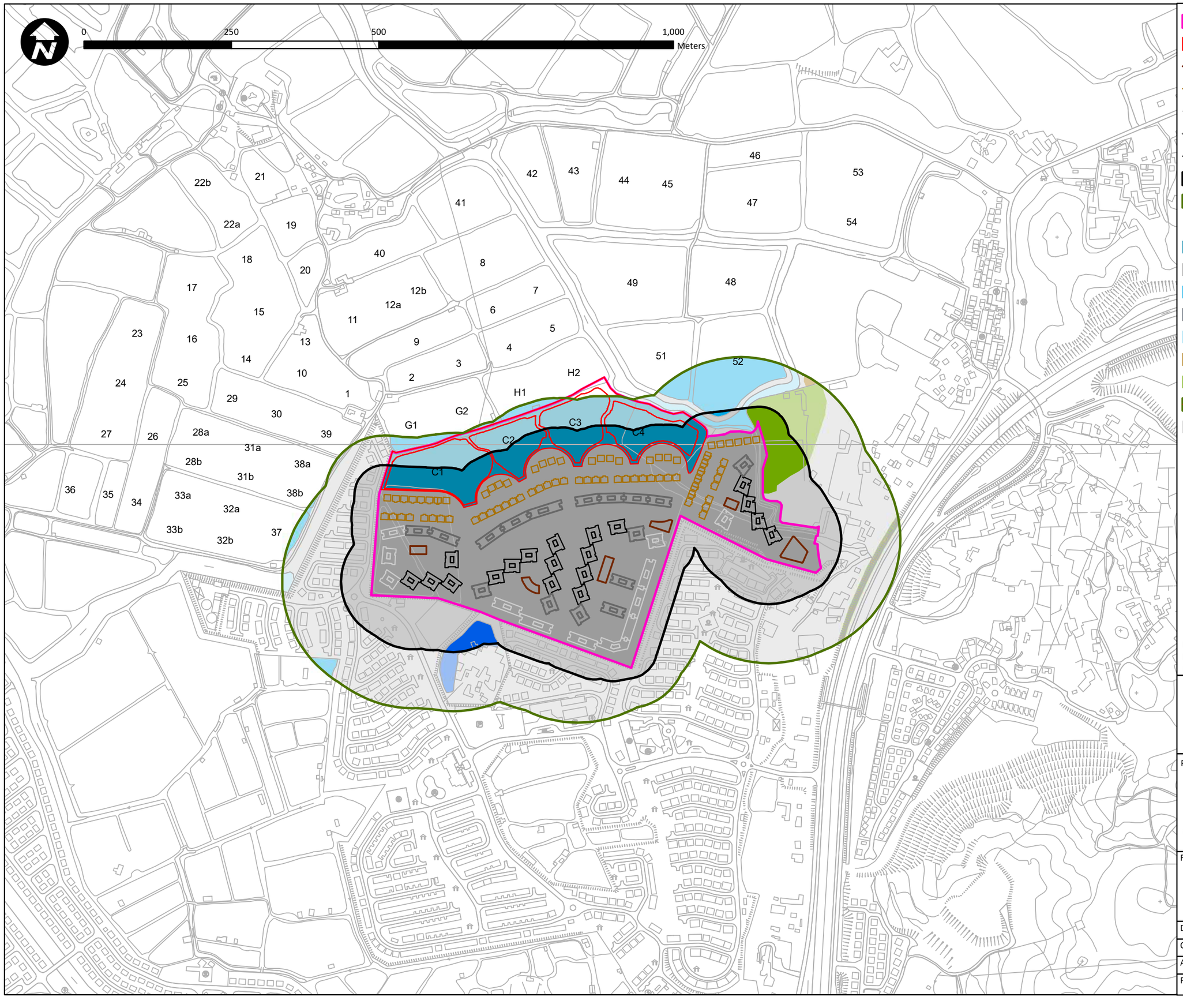

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Maximum exclusion zone and zone of reduced density
due to disturbance impacts during the operational phase

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	MM		
Figure Number:	Figure 6b	Revision:	0

Document Path: C:\Users\Peter.Chan\OneDrive - Aurecon Group\Y Drive\PPEL-WSW\01_PPEL-WSW_24\03 Figure\MXD\20250618\Fig6b_disturbance impacts during the operational phase_20250618.mxd

0 250 500 1,000 Meters

C1 C2 C3 C4 G1 G2 H1 H2

1 2 3 4 5 6 7 8 9 10 11 12a 12b 13 14 15 16 17 18 19 20 21 22a 22b 23 24 25 26 27 28a 28b 29 30 31a 31b 32a 32b 33a 33b 34 35 36 37 38a 38b 39 40 41 42 43 44 45 46 47 48 49 51 52 53 54

Project Area
Wetland Restoration Area
2-4 storey associated facilities
3-storey buildings
6-storey buildings
8-storey buildings
10-storey buildings
Exclusion Zone (0-100m)
Zone of Reduced Density (100-200m)

Habitat

Mitigation Wetland
Development Site
Fishpond
Pond/Open Water
Drainage Channel / Ditch
Agricultural Land
Leucaena Woodland
Plantation
Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Maximum exclusion zone and zone of reduced density due to disturbance impacts during the operational phase (extent from 10-storey buildings)

Drawn by:	PC	Scale:	1:5,996 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	MM		
Figure Number:	Figure 6c	Revision:	0

Document Path: C:\Users\Peter.Chan\OneDrive - Aurecon Group\Y Drive\PPEL-WSW\01_PPEL-WSW_24\03 Figure\MXD\20250618\Fig6c_disturbance impacts during the operational phase_20250618.mxd

0 250 500 1,000 Meters

Project Area
Wetland Restoration Area
MLP of approved S16 application no. A/YL-MP/344
Exclusion Zone (0-100m)
Zone of Reduced Density (100-200m)

Habitat

Mitigation Wetland
Development Site
Fishpond
Pond/Open Water
Drainage Channel / Ditch
Reedbed
Agricultural Land
Managed Grassland
Leucaena Woodland
Plantation
Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

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Member of the Aurecon Group

Project Title:

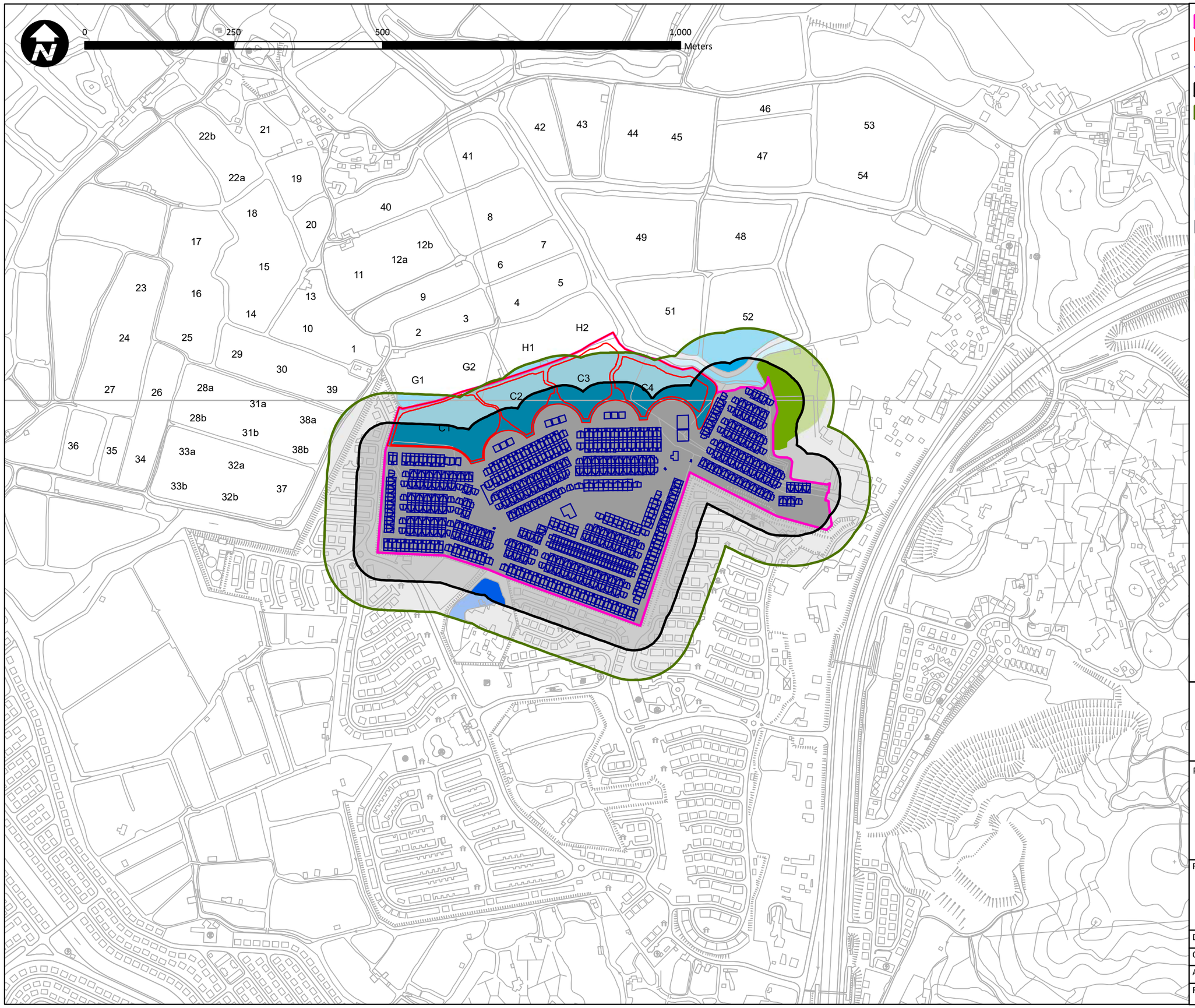
To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Maximum exclusion zone and zone of reduced density due to the disturbance impacts during the construction phase of Approved S16 application no. A/YL-MP/344

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	22 Jul 2025
Approved by:	MM		
Figure Number:	Figure 6d	Revision:	0

Document Path: C:\Users\Peter.Chan\OneDrive - Aurecon Group\Y Drive\PPEL-WSW\01_PPEL-WSW_24\03 Figure\MXD\20250618\Fig6d_Maximum exclusion zone and zone of reduced density due to the disturbance impactsduring the construction phase_20250722.mxd



Project Area

Wetland Restoration Area

MLP of approved S16 application no. A/YL-MP/344

Exclusion Zone (0-50m)

Zone of Reduced Density (50-100m)

Habitat

Mitigation Wetland

Development Site

Fishpond

Pond/Open Water

Drainage Channel / Ditch

Leucaena Woodland

Developed Area

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:
Maximum exclusion zone and zone of reduced density
due to the disturbance impacts during the
operation phase of Approved S16
application no. A/YL-MP/344

Drawn by:	PC	Scale:	1:6,000 on A3
Checked By:	MM	Date:	22 Jul 2025
Approved by:	MM		
Figure Number:	Figure 6e	Revision:	0

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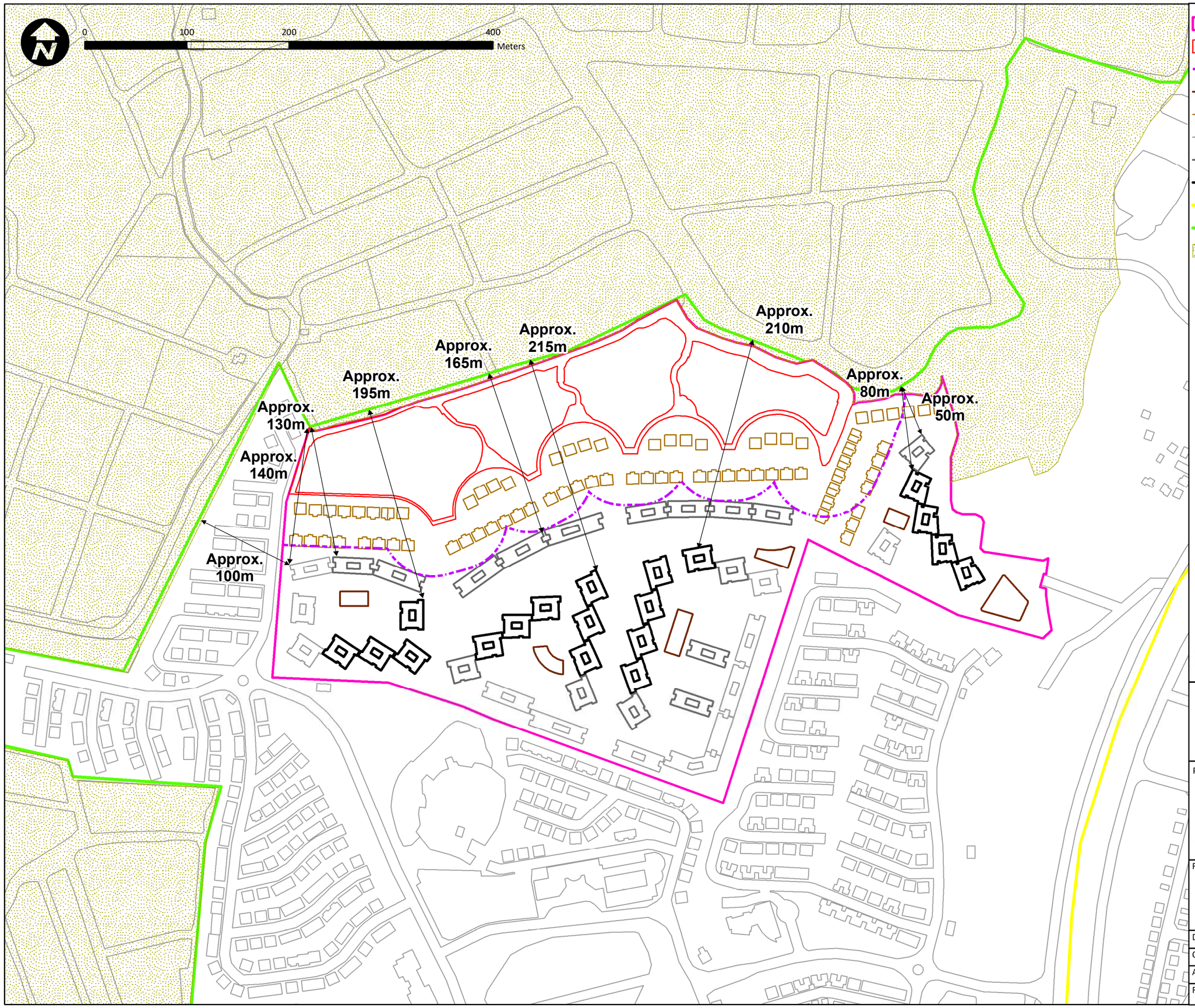

Notes.
Pond number follows the figure in EM&A Reports.
C1 to C4 represents Cell 1 to Cell 4 of WRA

ecology biodiversity landscape aec
Member of the Aurecon Group

Project Title:

To Amend the Notes of the
"Comprehensive Development to include
Wetland Restoration Area" Zone for a
Proposed Comprehensive Development
at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Figure Title:

Nearest distance between the 6-/8-/10-storeys
buildings and the WCA

Drawn by:	PC	Scale:	1:3,500 on A3
Checked By:	MM	Date:	18 Jun 2025
Approved by:	MM		
Figure Number:	Figure 7	Revision:	0

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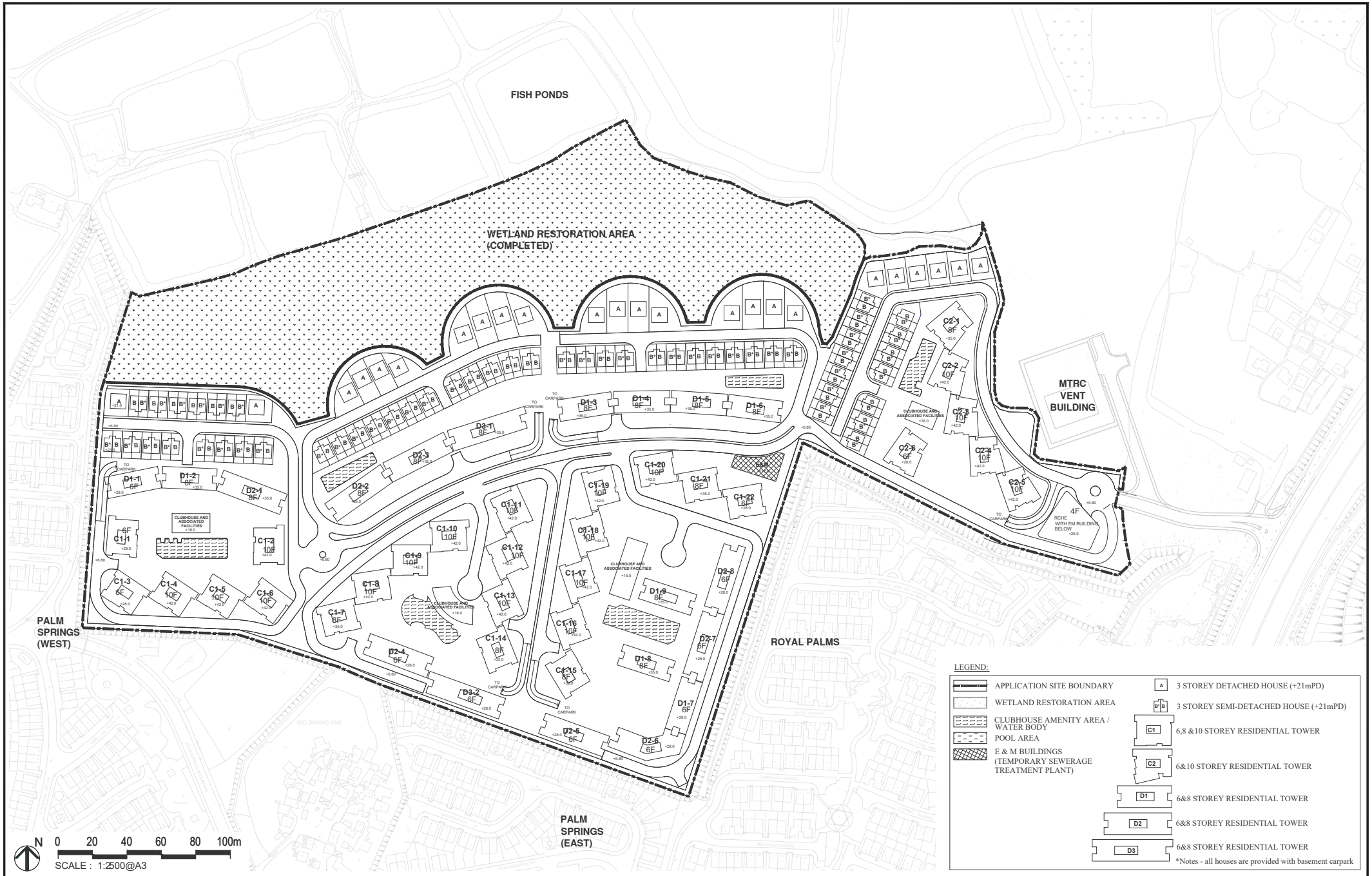

Drawing MLP-01 : Overall Master Layout Plan

LWK +PARTNERS

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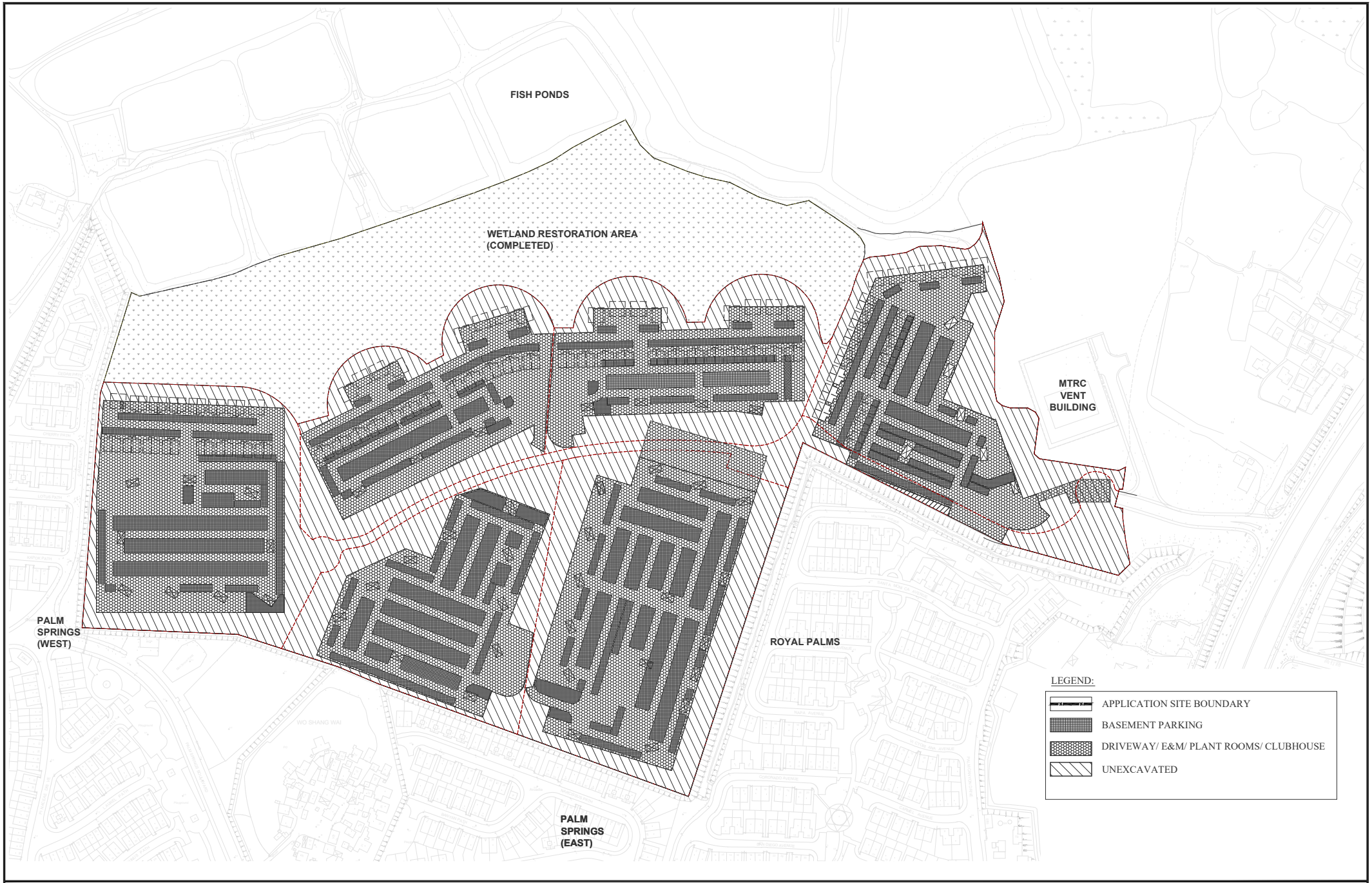

Drawing MLP-02 : Basement Floor Plan

LWK +PARTNERS

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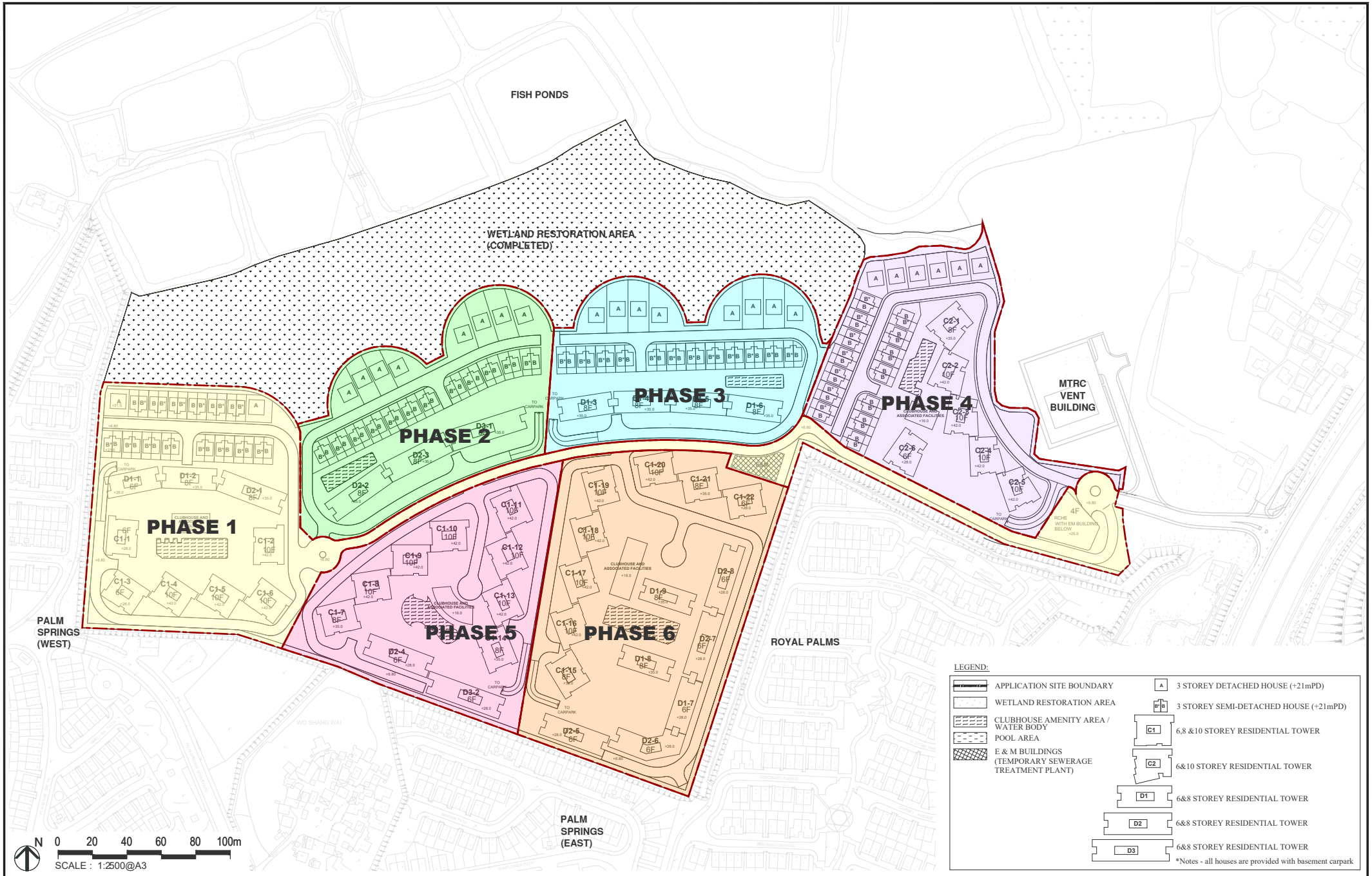

Drawing MLP-03 : Preliminary Phasing Plan

LWK +PARTNERS

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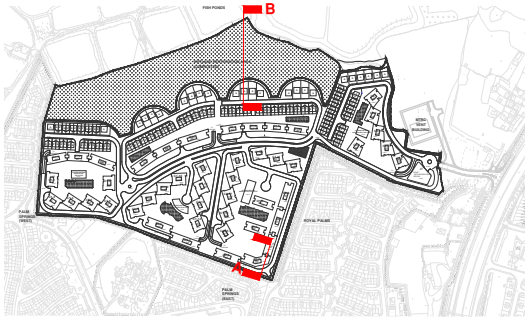
DWG. No. : 3809-003



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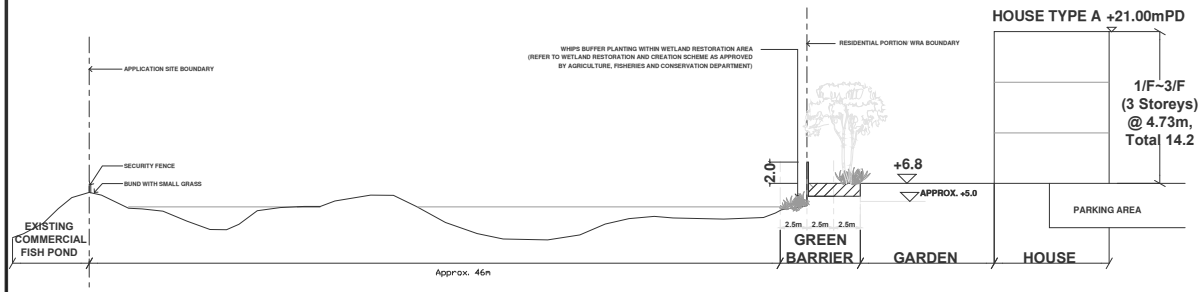
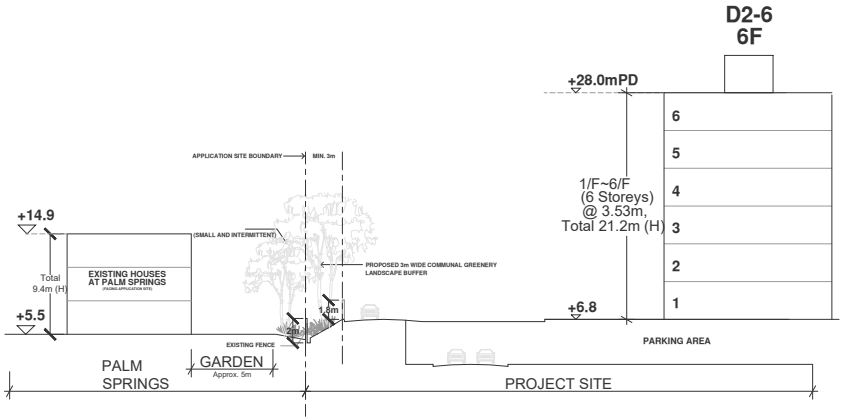


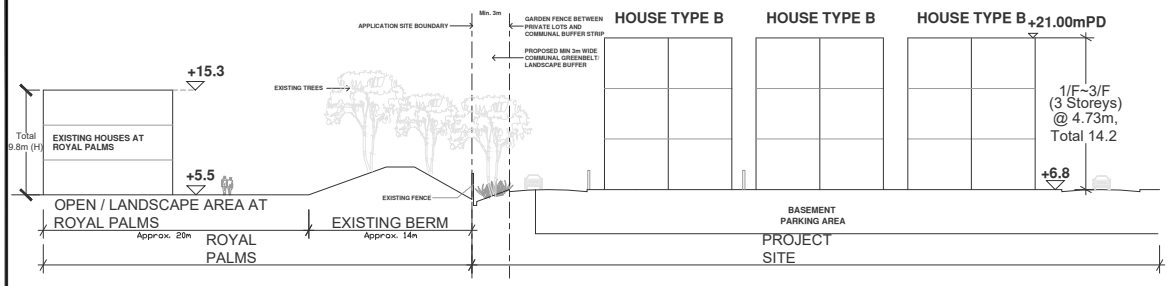
SECTION B - THROUGH INTERFACE OF WETLAND BUFFER AND RESIDENTIAL AREA (TYPICAL)



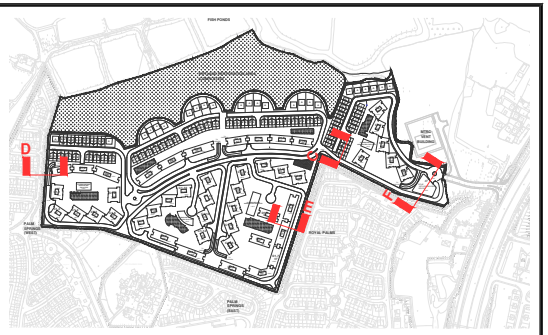
SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Drawing MLP-04 : Sections A and B
Site Sections
1:500 @ A3

LWK + PARTNERS



SECTION C - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA



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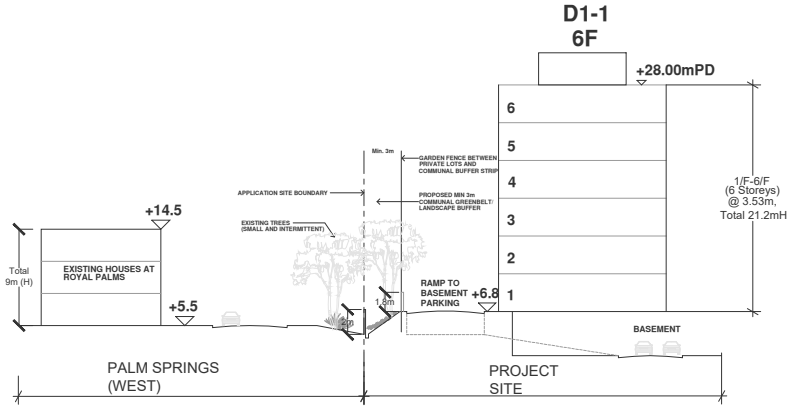
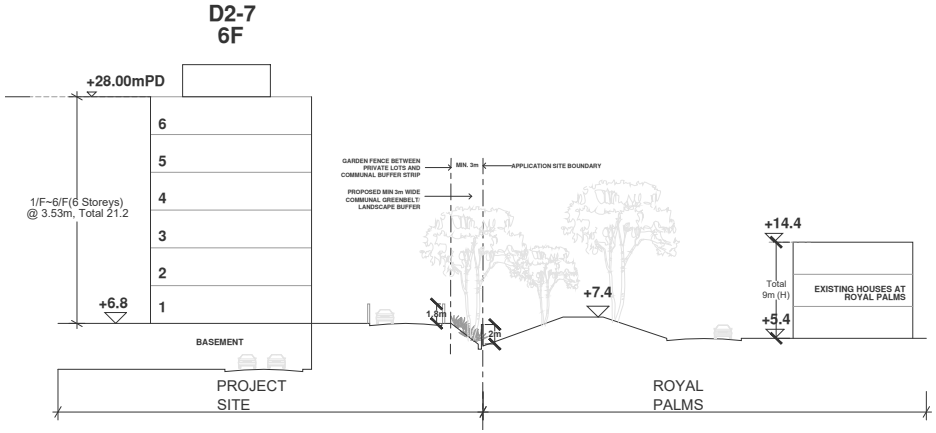
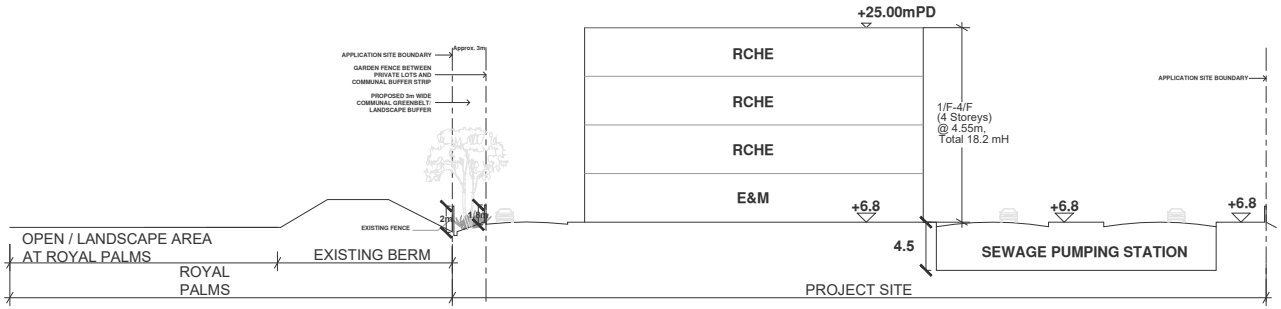


SECTION D - SECTION THROUGH PALM SPRINGS (WEST) / PROJECT AREA (APPROXIMATE)



SECTION E - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)

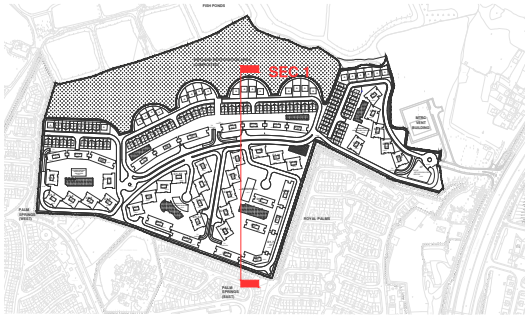


SECTION F - SECTION THROUGH ROYAL PALMS (NORTH) / PROJECT AREA

Drawing MLP-05 : Sections C, D, E and F

1:500 @ A3

LWK + PARTNERS



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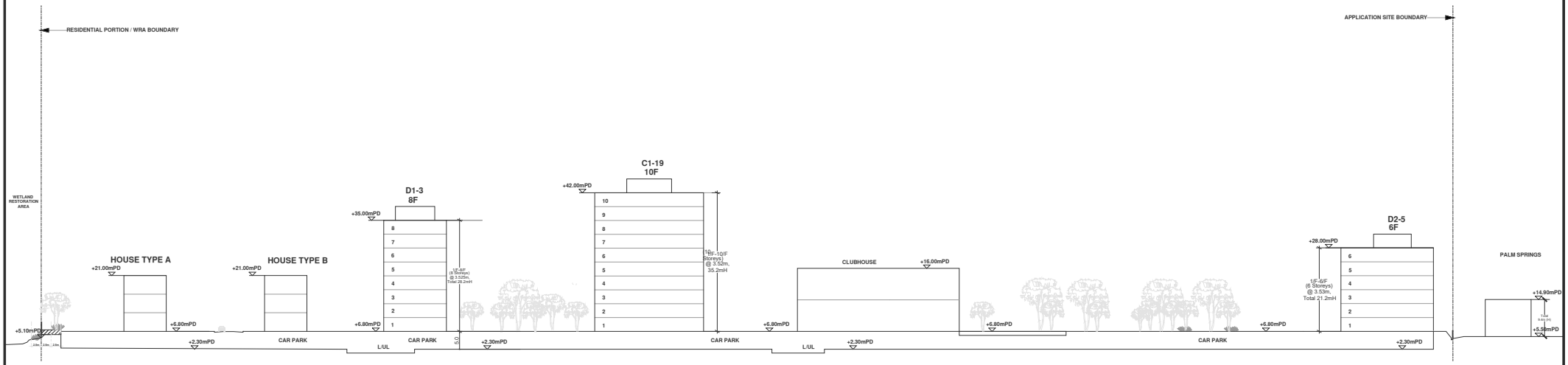
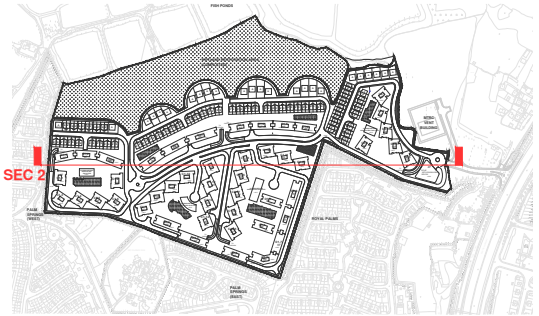


SECTION 1 - SECTION THROUGH PALM SPRINGS (EAST) / PROJECT AREA (APPROXIMATE)

Drawing MLP-06 : Section 1

1:1000 @ A3

LWK + PARTNERS



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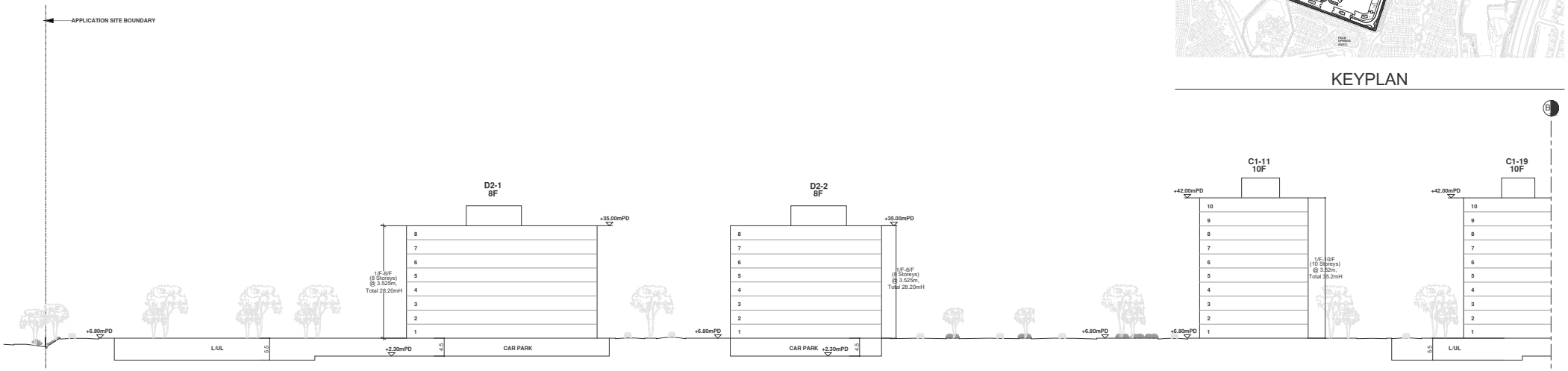
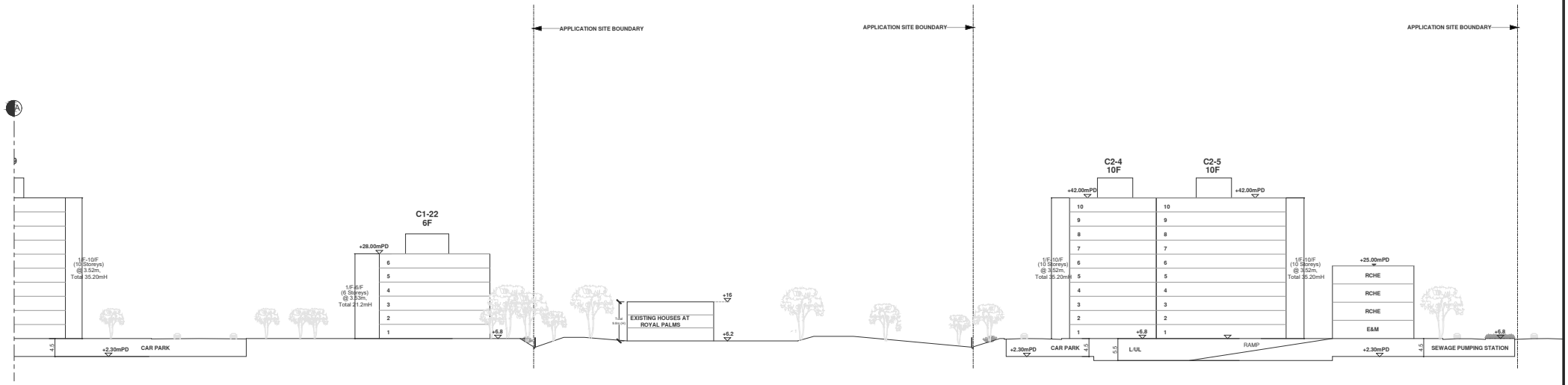


SECTION 2 (A) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)



SECTION 2 (B) - SECTION THROUGH ROYAL PALMS (WEST)/PROJECT AREA (APPROXIMATE)

Drawing MLP-07 : Sections 2(A) and 2(B)

1:1000 @ A3

LWK + PARTNERS



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Functions Analysis Plan

Dwg. No. : 2023202-LFP-01a

Date : JUL 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-07-24 S12A Tower Scheme Rev\2023202-LFP-01a

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

LANDSCAPE MASTER PLAN SUBMISSION
[Including Tree Preservation Proposal]

JULY 2025

Landscape Government Submission Consultant

Axxa Group Limited

Landscape Architects Registration Board HKSAR
LARB
TEO Yee Shun
張義舜
R-101
香港園境師註冊管理局

Mr. Jason TEO, Registered Landscape Architect (R101)

axxa group

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6.2 Landscape Lighting

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APPENDICES

APPENDIX A Landscape Master Plan

APPENDIX B Open Space Demarcation Plan

APPENDIX C Landscape Sections
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(ii) Section B
(iii) Section C & D
(iv) Section E, F & G

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APPENDIX E Tree Planting Plan

ANNEX A Greenery Demarcation Plan

ANNEX B Tree Preservation Proposal

ANNEX C EPD's Approved Wetland Restoration and Creation Scheme

1.0 Project Background and Introduction

1.1 This Landscape Master Plan (LMP) is submitted to support Section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)"("OU(CDWRA)") zone.

1.2 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.3 This Submission contains Landscape Master Plan (LMP) and **Annex B** – Tree Preservation Proposal which sets out in details in Section 4 to Section 7 (**Appendix A**), aiming to demonstrate the broad design intent of the landscape proposal for the amended comprehensive development.

2.0 Site and Existing Condition

2.1 The Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The Wetland Restoration Area (WRA) in the northern part of the Site was completed.

3.0 Assessment of the Potential Impacts on Existing Trees

3.1 According to **Annex B** – Tree Preservation Proposal, there are a total of 203 nos. of existing trees surveyed within Application Site. The following **Table 1** shows the Tree Treatment and Planting Schedule:

Table 1: Tree Treatment and Planting Proposal Schedule

Description	**S16 Approved Scheme** (approved on 15 Feb 2024)	**Current Scheme**	**Difference**
Total Nos. of Trees Surveyed	203	203	0
Nos. of Trees Proposed to be Retained	0	0	0
Nos. of Trees Proposed to be Transplanted	16	16	0
Nos. of Trees Proposed to be Felled	187	187	0
Nos. of New Trees to be Planted	1200*	1200*	0

Remarks:
* 349 nos. of perimeter buffer trees have been planted through previous planning application approvals since 2008.

3.2 It is confirmed that **no** endangered tree species identified in the tree survey under the listing in 'Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586)'. Additionally, there is **no** rare and precious plants, OVT/ potential OVT, **no** "Champion" tree, and no tree of particular interest observed within the site or its periphery during the survey.

3.3 Trees bordering the southern and western boundary outside Application Site are existing tree groups within the adjacent residential developments of 'Royal Palms' and 'Palm Springs'. Based on visual observation, these trees are mainly *Casuarina equisetifolia*, *Acacia confusa*, *Eucalyptus* species ranging from Fair to Good health, they will not be affected by works carried out within the Application Site.

4.0 Landscape Objectives

4.1 The primary landscape objectives are:

4.1.1 To integrate the proposed development with the Wetland Restoration Area to form a cohesive landscape character.

4.1.2 To enhance the quality of the environment and improve the landscape value of the existing Site.

4.1.3 To provide recreational facilities and passive amenity areas for the future residents associated with the wetland restoration objective.

4.1.4 To create a buffer tree zone along its perimeter, whilst acknowledging that the Site is also situated within the wetland buffer area.

4.1.5 To create a green sanctuary and ecologically sound environment in order to achieve a high value landscape.

5.0 Landscape Master Plan

This section provides a broad description of the design, function and amenity provisions for the landscape components. Refer to **Appendix A and C** for details.

5.1 Site Layout

5.1.1 The layout consists of two main components: northern Site which comprises the wetland restoration component and the southern Site consisting of residential development.

5.1.2 The proposed development consists of a combination of detached houses, semi-detached houses, 6 to 10 storeys residential towers.

5.2 Landscape Design Concept

5.2.1 The landscape design aims to take full advantage of the Site as a means to raise the overall landscape value and fully enhance the existing conditions (i.e. to maximize tree planting). The design takes into account the adjacent sites by creating a 3m wide greenbelt buffer zone along its perimeter, whilst acknowledging that the subject Site is also situated within the wetland buffer area.

5.2.2 In addition to the completed ponds and marshes at Wetland Restoration Area, landscape elements will include; street tree planting, buffer planting, footpaths & benches through communal greenery, feature paving, landscape garden, open lawn with seating, private residential gardens, landscape (within the clubhouse area). In addition, layers of structural planting consisting of species indigenous to the area and those that will be of benefit to the immediate ecology would also be incorporated within the planting design to create a 'green sanctuary' and ecologically sound environment in order to achieve a high value landscape.

Major landscape elements include:

5.2.3 Landscape open space to create an attractive, lush landscape setting for the buildings and to provide visual and airflow permeability.

5.2.4 Pocket open space punctuated by tree clusters throughout the Site is designed as a strong node and visual landmark within the development.

5.2.5 Green roofs and vertical greens are proposed at various locations to enhance existing greenery.

5.2.6 Landscape pond is introduced to create potential ecological habitat within the Proposed Development. Butterfly garden and lily pond garden are proposed with native vegetation and flowering plants to provide as an education area for ecological biodiversity.

5.2.7 Blue and green linkage is strengthened through enhanced streetscape planting.

5.2.8 The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimise potential visual impacts. This buffer will be on communal land to be maintained and managed by the Property Manager.

5.2.9 The clubhouse will be landscaped to provide a relaxed, resort-like atmosphere and will incorporate shade trees, ornamental shrubs and groundcovers, as well as buffer planting around the edges of the Site.

5.2.10 Private garden at individual lots will be landscaped and to be managed and maintained by future Lot owners.

5.3 Landscape Buffer Planting

5.3.1 Landscape Buffer Planting: The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimize potential visual impacts. Considering the actual planting space required for viable growth of trees, **349** trees in total are proposed to be planted in the landscape buffer and have been planted through previous planning application approvals since 2008. The proposed landscape buffer will be on communal land to be maintained and managed by the Property Manager.

5.3.2 Green Barrier: an approximately 5m wide buffer planting, i.e. 2.5m alongside the WRA and 2.5m within the residential component of the Site is proposed. Additional row of native trees is proposed at Green Barrier to harmonize and to strengthen buffering effect between the residential component of the Site and the WRA. Refer to **Appendix C** for Landscape Sections.

6.0 Hard Landscape (Paving Materials / Finishes)

This section provides a description of the hardscape design together with general information on hardscape related aspects of the design which relate to all phases, including lighting, levels and technical standards. Hardscape elements of the landscape include: paving; walls; site structures; site furniture; signage and lighting.

6.1 Hard Landscape Materials

6.1.1 Hardscape materials and design are chosen to compliment the building finishes, add character to the development and provide variety to the circulation areas.

6.1.2 Natural stone materials and/ or concrete tiles and/ or concrete unit pavers, all suitable for outdoor uses are proposed for outdoor paving materials and wall finishes.

6.1.3 Communal and private swimming pool is proposed to be paved with decorative ceramic/ mosaic tiles. Swimming pool surrounds will be paved using a non-slip paver with decorative banding. Patterning shall compliment the swimming pool tile patterns and the architectural style of the buildings.

6.1.4 The use of varied finishes to natural stone and/ or artificial tiles provide for safe application through varied textures in the paving pattern design, including ripple texture, brush and hammered finishes.

6.1.5 Natural material textures exhibit a natural variation in material colour, adding interest to the patterns and helping to highlight entrances to different functional zones.

6.1.6 A summary of the hardscape materials is listed in the Preliminary Finishes Schedule for Hardscape. Refer to **Table 2** below:

Table 2: Preliminary Finishes Schedule for Hardscape

Preliminary Finishes Schedule for Hardscape	
Footpaths / paved areas	Natural stone/ concrete tiles / concrete unit paver
Vehicular access road	Natural stone/ concrete tiles / concrete unit paver
Clubhouse surrounds	Decorative unit paver at entries, outdoor terraces and courtyard areas. Natural stone/ concrete tiles / concrete unit paver.
Swimming pool	Decorative ceramic/ mosaic swimming pool tiles
Swimming pool surrounds	Non-slip paver with decorative banding

6.2 Landscape Lighting

6.2.1 The landscape lighting design for all areas will follow an aesthetic and functional approach. Generally, lighting will be provided for the safety and security of pedestrian circulation as well as highlighting specific landscape features. Lighting will be designed in accordance to the intended use of an area, such as seating areas or play areas.

6.2.2 The desired effect for general landscape lighting in amenity areas is indirect, non-glaring and subtle, with occasional accent lighting to highlight points of interest.

6.2.3 Accent landscape lighting will be up-lights for trees. Signage and feature walls will be spot lit to give prominence. Surface mounted fixtures and burial up-lighters will be employed to highlight the entrance areas.

6.2.4 Low-level lighting, such as recessed step lights, will be incorporated into the walls beside level changes such as ramps and steps, and in some cases will be set into the riser of steps, to ensure maximum awareness of level changes that may otherwise prove unsafe.

6.3 Design Codes, Technical Standards & Safety Provision

6.3.1 Hard landscape design works and all outdoor facilities shall be in full compliance with, or better than, government ordinances, codes and regulations, and relevant international safety standards and guidelines. Criteria for the selection of hard landscape materials include: durability, sustainability, low maintenance, reasonable cost, contemporary theme and specific criteria for themed areas as necessary.

6.3.2 Criteria for the selection of soft landscape materials include: salinity tolerance, low maintenance, seasonal interest, non-toxic (safe / non- poisonous / biodegradable) and appropriately selected plant stock in good health.

6.3.3 All paved areas will have adequate gradient falls for proper drainage and positive fall to drain inlets, gullies or covered channels, in accordance with accepted surface water run-off drainage practices.

6.3.4 Light fittings to be a minimum IP55 standard, suitable for external use.

7.0 Soft Landscape (Planting Design / Materials)

This section provides a description of the soft landscape design and softscape elements together with general information on softscape related aspects of design, including covered planting, irrigation and maintenance. Softscape elements of the landscape include plantings, planting soil and sub-surface drainage materials.

7.1 Planting Strategy

7.1.1 The hierarchy of landscape planting within the development is summarized as follows:

- Tree Cluster – Tree clusters are located at key/ focal areas over the Site (e.g. main entrance, major communal open space & pocket space). Trees of various sizes will be used in combination with ornamental shrub planting to create lush greenery. Tree species will be selected carefully to ensure maximum greening effect.

- Avenue Tree Planting – A combination of specimen trees and shrub planting will be provided along the major roads within the development. These will have the most benefit with a creation of lush tree planting avenue. The design incorporates a varied planting palette to yield changing variety and seasonal interest. Evergreen trees, flowering trees and shrubs, variegated foliage plants and groundcover will be selected.

- Buffer / Perimeter Planting – Tree buffer planting has been accommodated along the perimeter in order to minimize the visual impact of the development. Buffer plantings are designed to screen out adverse visual elements on the proposed development and to mitigate any negative visual impact that the proposed development may have on its surrounding neighbours.

- Street Tree Planting – To further explore greening opportunities, trees will be planted in front of the houses in order to enhance the internal streetscape environment. These will

have the most benefit with planting softening and shading the streetscape.

7.2 Plant Material Schedule

7.2.1 Planting will comprise a mix of native as well as exotic trees and shrubs selected to rapidly form a landscape buffer to the perimeter of the Site. Planting will be selected on its ecological value for the area. Indigenous species will be chosen to enhance the ecology of the Site, while exotic species will be used in key locations as fast-growing screening plants or to provide colour and seasonal variation. Feature shade and palm trees will be provided along the access road and at selected locations as landscape features.

7.2.2 A summary of plant materials is provided in **Table 3A** and **3B** below.

Table 3A: Plant Material Schedule

Proposed Species	Chinese Name	Quantity/ Size
Acacia auriculiformis	耳果相思	851 nos. Size: Heavy Standard Size 4m High; 3-4m Spread; 4-5m Spacing; DBH 0.09m 349 nos. Size: Standard Size 2-2.5m High; 3m Spread; 3m Spacing; DBH 0.075m
Acacia mangium	大葉相思	
Araucaria heterophylla	異葉南洋杉	
*Bischofia javanica**	秋楓	
Casuarina equisetifolia	木麻黃	
Callistemon x hybridus 'Golden Ball'	黃金串錢柳	
Camellia japonica	山茶	
*Celtis sinensis**	朴樹	
Chorisia speciosa	絲木棉	
Chukrasia tabularis	麻楝	
*Cinnamomum burmannii**	陰香	
*Cinnamomum camphora**	樟	
Delonix regia	鳳凰木	
Dracontomelon duperreanum	人面子	
*Elaeocarpus decipiens**	杜英	
Elaeocarpus hainanensis	水石榕	
Eucalyptus cumini	赤桉	
Ficus benjamina	垂葉榕	
*Ficus microcarpa**	細葉榕	
*Hibiscus tiliaceus**	黃槿	
Lagerstroemia indica	紫薇	
*Liquidambar formosana**	楓香	
Mella azedarach	苦楝	
Melaleuca quinquenervia	白千層	
Michelia x alba	白蘭	
*Morella rubra**	楊梅	
Osmanthus fragrans	桂花	
*Podocarpus macrophyllus**	羅漢松	
Roystonea regia	王棕	
*Sapium sebiferum**	烏桕	
*Sterculia lanceolata**	假蘋婆	
Syzygium cumini	海南蒲桃	
Syzygium jambos	蒲桃	
Tabebuia impetiginosa	紫花風鈴木	

Terminalia mantaly	小葉欖仁	
Terminalia mantaly cv. 'Tricolor'	錦葉欖仁	
*Viburnum odoratissimum**	珊瑚樹	

Remarks: * Native Tree Species

Table 3B: Proposed Shrub, Groundcover and Lawn Species

Botanical Name	Chinese Name	Height x Spread (mm)	Spacing (mm)
Aglaia odorata	米仔蘭	600 x 500	400
Bougainvillea spectabilis	簕杜鵑	600 x 500	400
Cuphea hyssopifolia	細葉萼距花	300 x 300	250
Duranta repens	金連翹	300 x 300	250
Fagraea ceilanica	非洲茉莉	800 x 800	800
Iris spp.	水生鳶尾	500 x 400	300
*Ixora chinensi**	龍船花	500 x 400	300
Lantana montevidensis	小葉馬纓丹	300 x 300	250
Loropetalum chinense rubrum	紅花檵木	300 x 300	250
*Melastoma malabathricum**	野牡丹	500 x 400	300
Michelia figo	含笑	300 x 300	250
*Nephrolepis auriculata**	腎蕨	300 x 300	250
*Ophiopogon japonicus**	沿階草	300 x 300	250
Osmanthus fragrans	桂花	600 x 500	400
*Rhaphiolepis indica**	車輪梅	600 x 500	400
*Rhododendron simsii**	紅杜鵑	500 x 400	300
*Rhodomyrtus tomentosa**	桃金娘	600 x 500	400
Schefflera arboricola	鵝掌藤	500 x 400	300
Tibouchina semidecandra	巴西野牡丹	500 x 400	300
Zanthoxylum piperitum	胡椒木	300 x 300	250
Zoysia japonica	台灣草	N/A	N/A

Remarks: * Native Tree Species

7.2.3 All new planting will be planted at-grade and in accordance with standard horticultural practice for planting into ground. Water points or automatic irrigation will be provided with a spacing not more than 40m apart c/c and drainage will be naturally soaked away into the ground water table unless at low-lying areas, where additional drainage will cater for potential water accumulation e.g. at the 3m wide sloped buffer planting strip base.

7.3 General Planting Sizes and Densities

7.3.1 Planting sizes and densities are listed in **Table 4**.

Table 4: General Planting Sizes and Densities

General Planting Sizes and Densities		
Type / Design Function	**Size**	**Spacing**
Trees		
- to achieve screening, shade and provide amenity, ornamental, ecological and aesthetic value	Heavy Standard	As indicated on plan
Perimeter Planting		
- to achieve a buffer screen to the perimeter of the Site	Trees – Standard Palms – min. 2000 to 2500mm ht.	3m 3m
Ornamental Shrub Planting		
- to provide screening, to enhance aesthetics, to define outdoor areas	Shrubs – min.300 to 500mm ht. Groundcovers – min. 300mm ht.	between 250 and 500mm between 150 and 250mm

7.4 Tree Planting within the Development

7.4.1 Tree planting will be provided in the following areas:

- Landscape Buffer/ Green Barrier
- Remaining Landscape Area within Site

7.4.2 Considering the actual planting space required for viable growth of trees, **349** nos. of trees have been planted as Landscape Buffer/ Green Barrier through previous planning application approvals since 2008. For the remaining area within the development, **851** nos. of trees are proposed to be planted. Thus, a minimum of 1200 new trees will be planted within the Site.

7.4.3 Carefully selected species will ensure maximum greening effect with minimum maintenance requirements. Specimen trees of various sizes will be used in combination with ornamental shrub planting to create a year-round display.

7.5 Wetland Planting

7.5.1 Wetland planting has been completed to maximise habitat creation for wetland fauna by providing habitats for breeding, feeding, nesting and resting. It comprises principally of native trees and shrubs selected for their ecological value to the area. These may include; *Bridelia tomentosa*, *Cynodon dactylon*, *Cyperus malaccensis*, *Eleocharis spiralis*, *Ficus hispida*, *Ficus microcarpus*, *Ficus varigata var. chlorocarpa*, *Gardenia jasminoides*, *Ludwigia octovalvis*, *Ludwigia perennis*, *Macaranga tanarius*, *Melastoma candidum*, *Melia azedarach*, *Panicum maximum*, *Paspalum paspaloides*, *Phragmites spp.*, *Polygonum barbatum*, *Polygonum glabra*, *Raphiolepis indica*, *Syzigium jambos*, *Trema orientalis* and *Viburnum odoratissimum*.

7.6 Level of Landscaped Area Provision

7.6.1 Open Space Provision (Appendix B)

In accordance with the open space requirement in the Hong Kong Planning Standard and Guidelines, 1m^2 of open space per person is required. Not less than 9,998m^2 open space will be provided for designed population of 9,998 residents. The total open space achieves 9,998m^2.

7.6.2 Greenery Provision (for PlanD's Reference Only)

In accordance with the requirement of PNAP APP-152, an area of not less than 30% of the total greenery will be provided for the Proposed Development. Please refer to **Annex A** for Greenery Demarcation for PlanD's reference Only.

7.7 Soil Depth and Drainage Provision for the Planted Area

7.7.1 The majority planting areas occur on grade and/ or tree pits. The need for adequate soil depths to ensure proper plant growth is taken into account for all planting areas. The minimum soil depths (excluding drainage layers) are:

- Trees: 1200mm
- Shrub: 600mm
- Groundcover/ Lawn: 300mm

7.8 Future Maintenance and Management

Maintenance and establishment works to soft landscape areas shall be undertaken by the softworks contractor for an Establishment Period of a minimum of 12 months following Practical Completion. This will ensure the proper establishment of the planted material. The maintenance responsibility of completed landscape works and trees are under the future management agent of the lot owner under lease. Regular vegetation maintenance including tree risk assessment and soft landscape maintenance as stated in below "Soft Landscape Maintenance Schedule", will be conducted by the future management agent as instructed by the lot owner in accordance with the Handbook on Tree Management by Development Bureau.

Soft Landscape Maintenance Schedule (excluding Wetland Restoration Area)

Watering: Water all plants as necessary, adjusted to rainfall, to ensure adequate water supply for plant consumption during the establishment period.

Pruning: Cut back annuals after flowering period. Healthy cuttings may be used for propagation. Prune shrubs and groundcover in early March to encourage flowering. Prune woody shrubs and trees selectively according to species (annually). Remove dead fronds from palm trees. Utilise established and approved tree surgery techniques as necessary and seal all sharp cut wounds with approved material to resist decease attack.

Fertilizing: Two to three times annually, emphasis shall be in the March application. Test soil in January to analyse quality ameliorates as necessary.

Fungicide / Insecticide: Spray only as necessary with approved chemical.

Weeding: Manually or use selective non-toxic, biodegradable herbicide to keep the weed growth and its establishment under control.

Securing: Adjust tree stakes in spring and as necessary to taut up the staking. Care shall be applied to avoid chaffing of tree bark.

Mulching: Top up the mulching inside all planting beds twice a year and as necessary.

Thinning: Reduce overcrowding and transplant as necessary at selected periods:

- Evergreens: Spring
- Deciduous: Winter
- Palms: June to August

Table 5: Maintenance Schedule

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Watering	•	•	•	•	•	•	•	•	•	•	•	•
Pruning		D	GC									
Fertilizing	soil test		**X**								**X**	
Fungicide / Insecticide			**X**						**X**			**X**
Weeding		**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**		**X**
Securing			**X**									
Thinning			EG								D	

Remarks: Tree risk assessment will be conducted at appropriate time for appropriate tree as instructed by the owner in accordance with the Handbook of Tree Management by DEVB

Schedule Legend:

GC - Groundcover EG - Evergreen D - Deciduous

• - Size proportional to quantity **X** - Application

7.8.1 Structural engineers have made sufficient allowances to accommodate the necessary planting components, i.e., plant stock, soil volume and sub-surface drainage materials loading.

7.8.2 Closed bottom planters will have proper and adequate subsoil drainage system and drain outlets to the storm water drainage system.

7.8.3 The landscape works are designed to avoid obstruction of the maintenance of drainage works. Adequate clearance between drainage works and landscape works will be maintained so as to prevent any potential damage to drainage works.

7.9 Irrigation and Proposed Source of Water Supply

7.9.1 Water points (not more than 40m apart c/c) are located throughout the soft landscape area for irrigation.

APPENDIX A

Landscape Master Plan

WHIPS BUFFER PLANTING WITHIN WETLAND RESTORATION AREA
(REFER TO WETLAND RESTORATION AND CREATION SCHEME AS APPROVED BY AGRICULTURE, FISHERIES AND CONSERVATION DEPARTMENT)

UNVEGETATED

OPEN WATER > 1.5 M

OPEN WATER < 1.5 M

FISH POND

MARSH

GRASS PAVERS

SHORT GRASS

TALL GRASS & SHRUBS

REEDS

WETLAND RESTORATION AREA (COMPLETED)

+4.50 +4.00 +5.30 +5.40

MTRC VENT BLDG

RCHE WITH E&M BUILDING BELOW

ENTRANCE PLAZA

ROYAL PALMS

PALM SPRING (WEST)

WO SHANG WAI

PALM SPRING (EAST)

LEGEND

- PLANNING APPLICATION SITE BOUNDARY
- PROPOSED VERTICAL GREEN WALL
- TRANSPLANTED TREES (16 nos.)
- PROPOSED NEW TREES (851 nos.)
- PROPOSED BOUNDARY TREES (349 nos.)
- EXISTING TREE GROUPS OUTSIDE APPLICATION SITE
- PROPOSED SHRUBS AND GROUNDCOVER
- PROPOSED LAWN
- PRIVATE GARDEN OF HOUSES
- PROPOSED GREEN ROOF
- HARD LANDSCAPE AREA
- EVA / DRIVEWAY / L/UL PARKING
- SWIMMING POOL
- WATER FEATURE
- PAVILION
- +6.80 PROPOSED LEVEL
- PEDESTRIAN ACCESS/EXIT
- VEHICULAR ACCESS/EXIT

*NOTES: All houses are provided with basement carpark

N

0m 10m 25 50m 75m 125m

SCALE : 1:1250 (A1)
1:2500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Master Plan

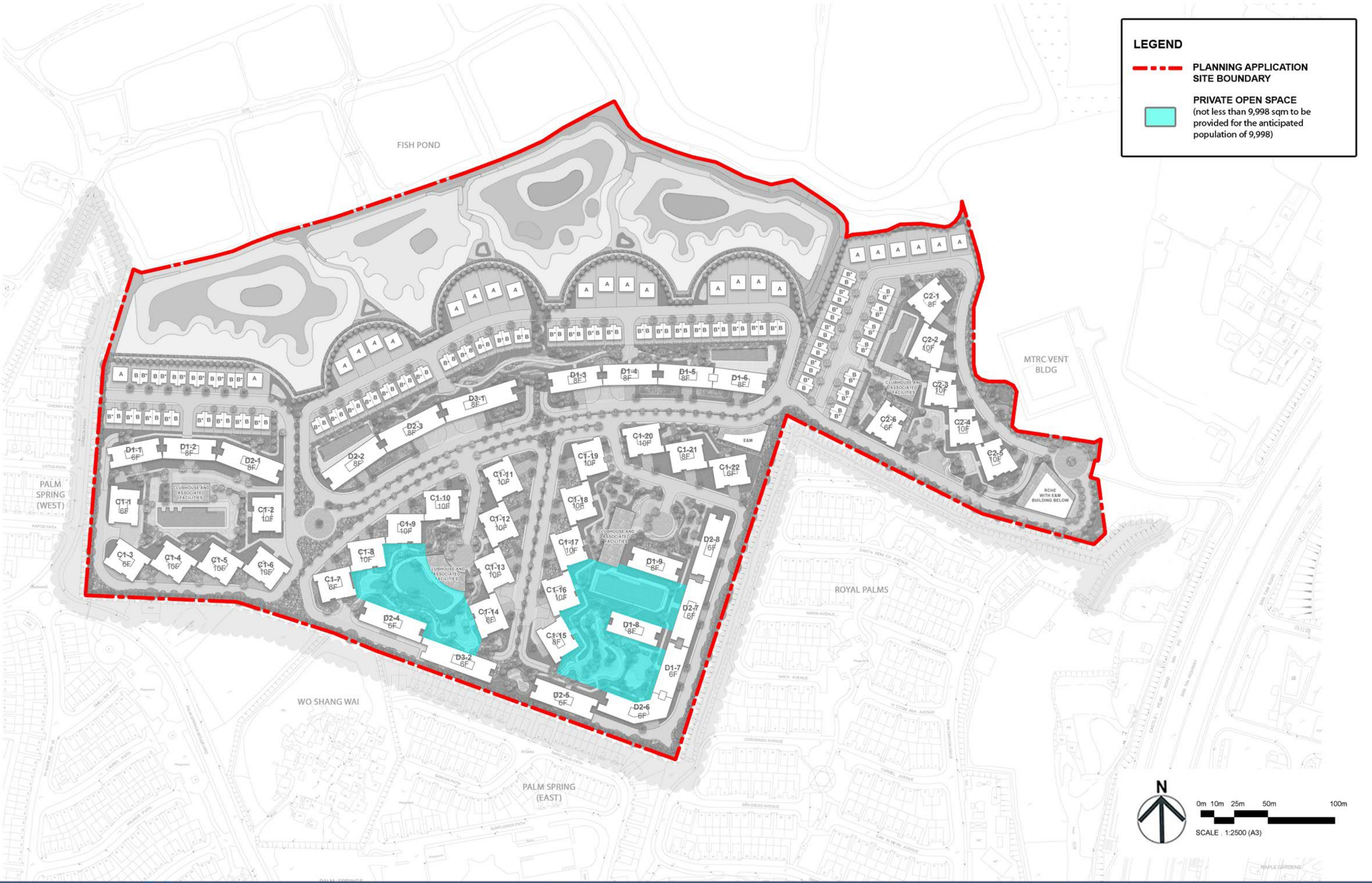
Dwg. No. : 2023202-LMP-01b

Date : JUL 2025
(A1-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-07-24 S12A Tower Scheme Rev\2023202-LMP-01b

APPENDIX B

Open Space Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Open Space Demarcation Plan

Dwg. No. : 2023202-OSP-01

Date : APR 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-07-24 S12A Tower Scheme Rev\2023202-OSP-01

APPENDIX C

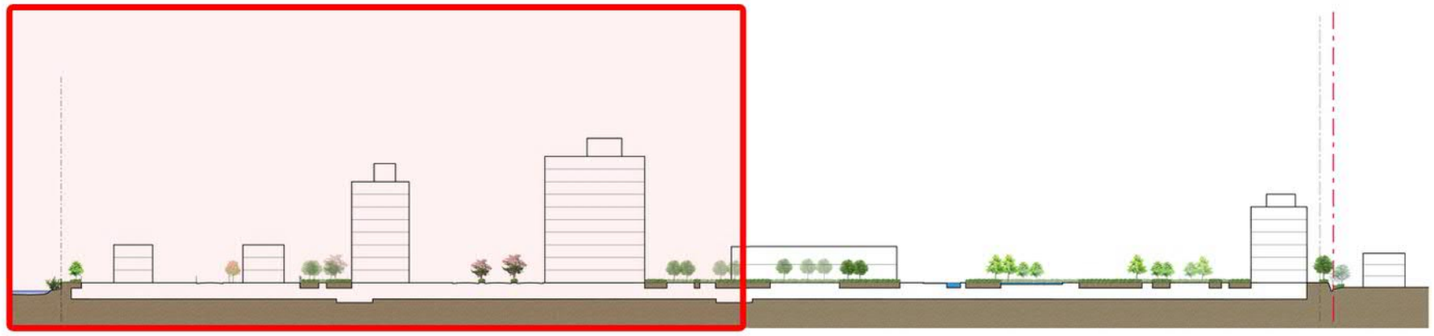
Landscape Sections

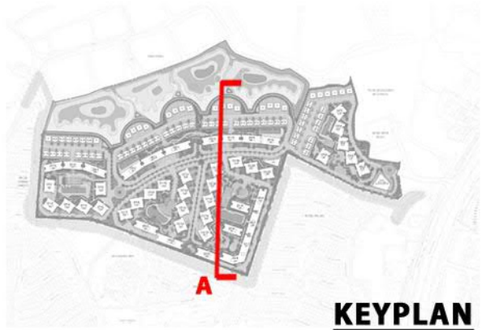
(i) Section A

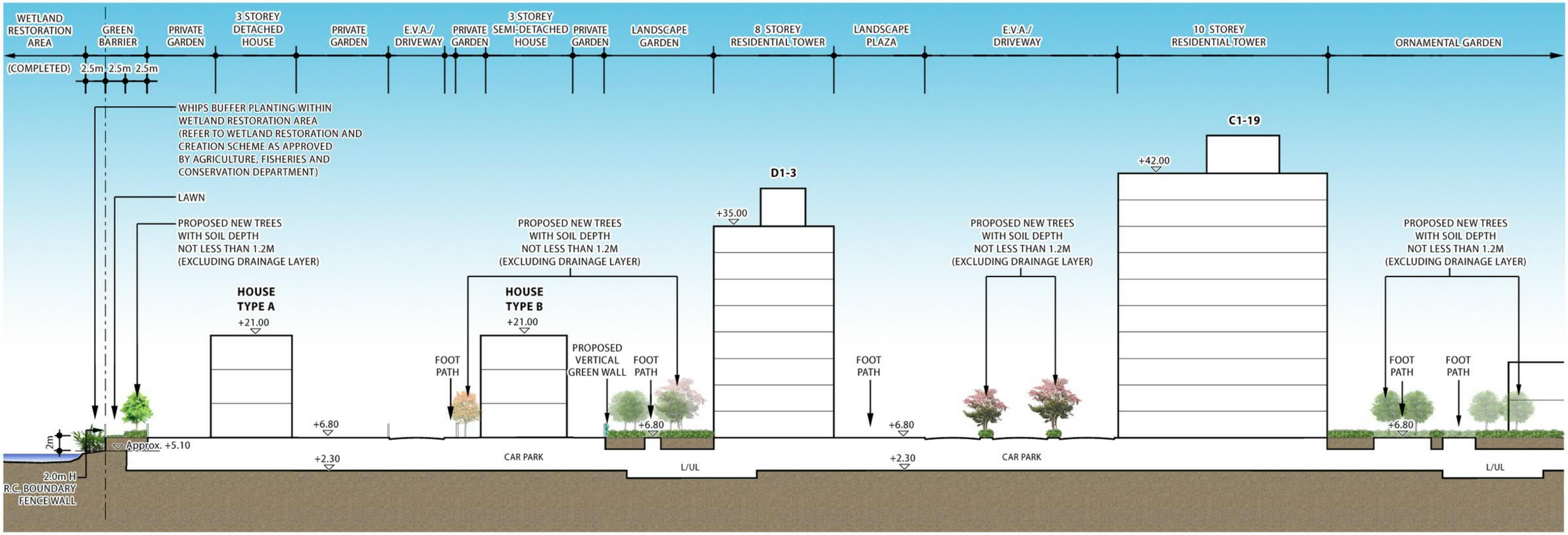
(ii) Section B

(iii) Section C & D

(iv) Section E, F & G







SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE

0m 2m 5m 10m 20m

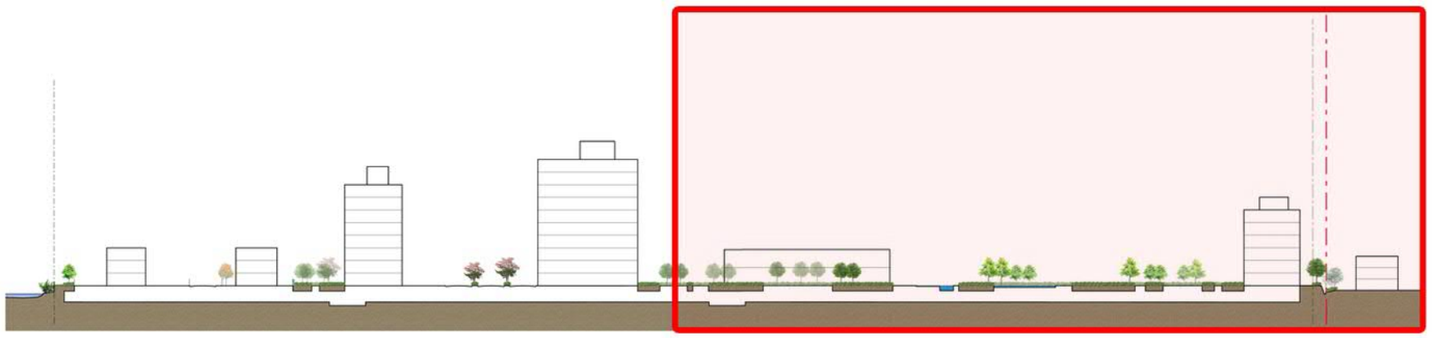
SCALE . 1:500 (A3)

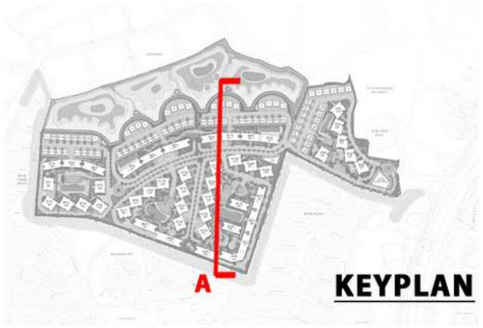
To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

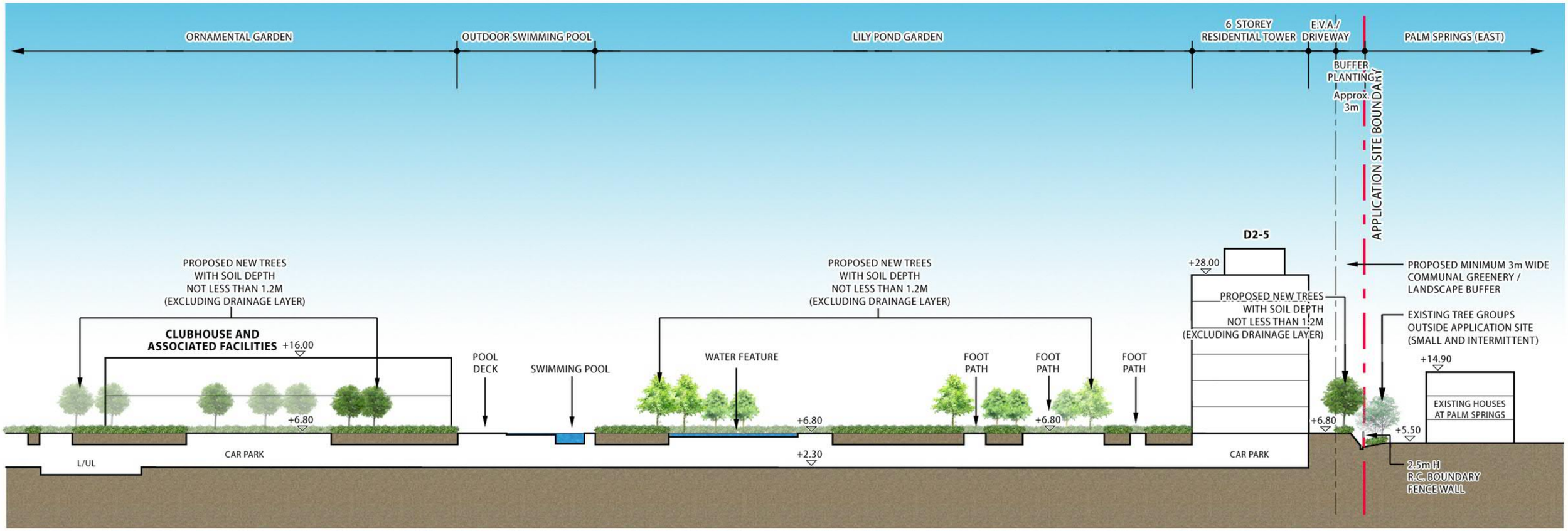
Landscape Section A

Dwg. No. : 2023202-SEC-01b

Date : JUL 2025
(A3-size)







SECTION A - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE

0m 2m 5m 10m 20m

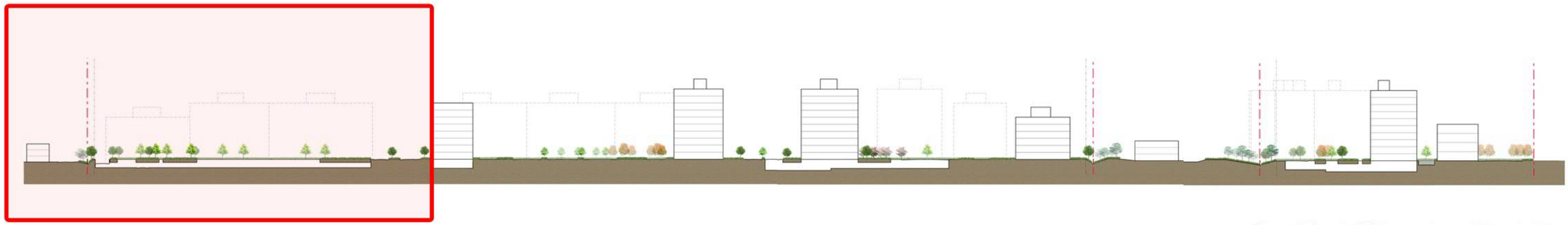
SCALE : 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section A

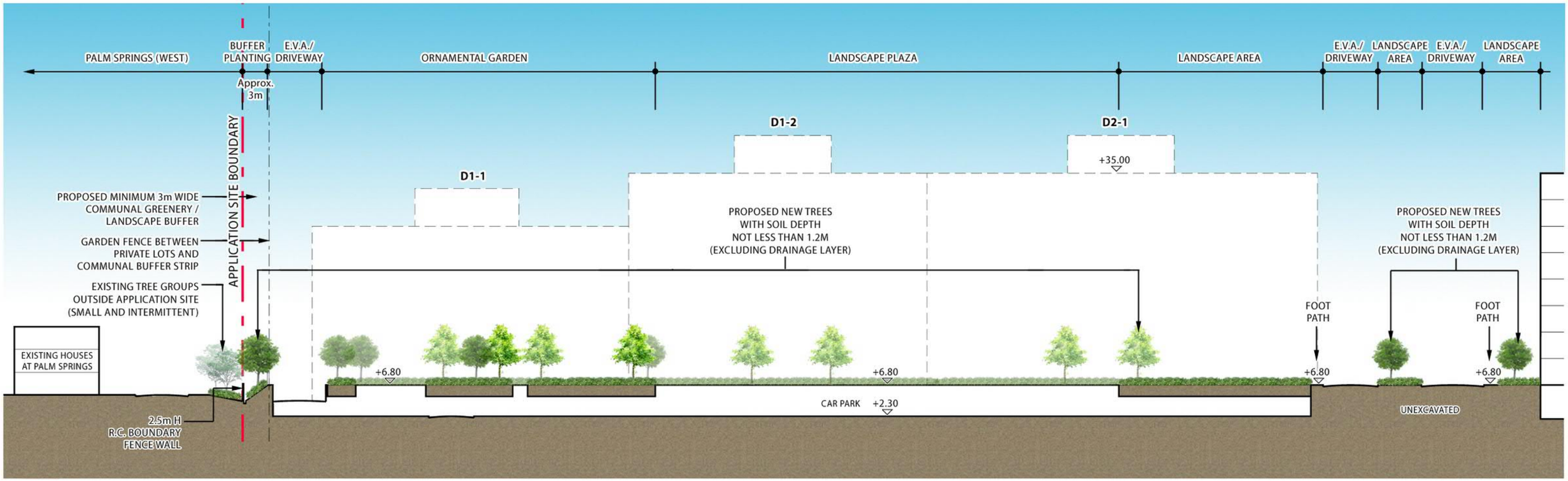
Dwg. No. : 2023202-SEC-01_1a

Date : APR 2025
(A3-size)





KEYPLAN



SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

0m 2m 5m 10m 20m

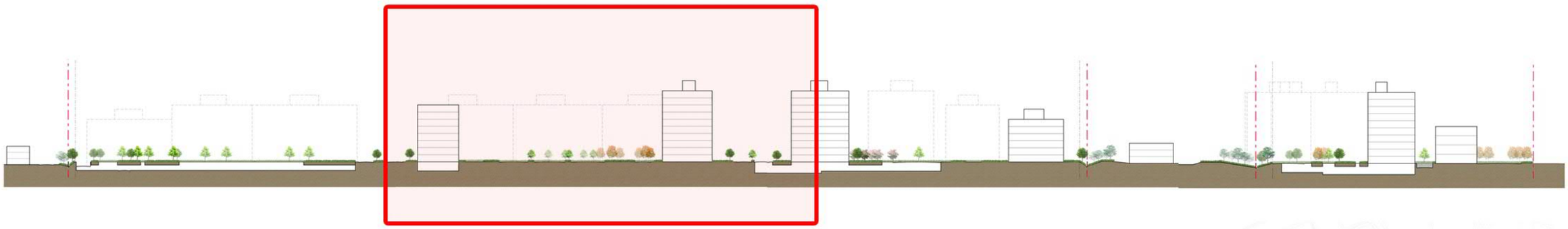
SCALE . 1:500 (A3)

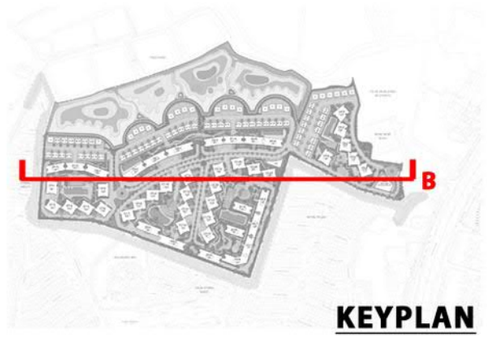
To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

Dwg. No. : 2023202-SEC-02a

Date : APR 2025
(A3-size)





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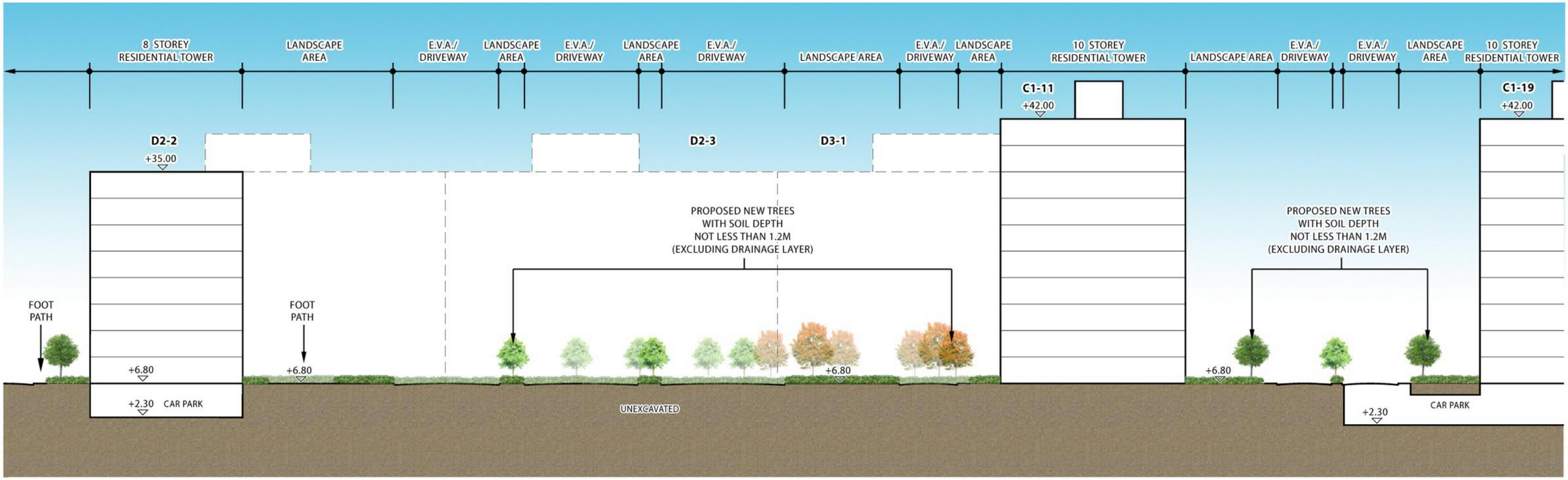

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

0m 2m 5m 10m 20m

SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

Dwg. No. : 2023202-SEC-02_1a

Date : APR 2025
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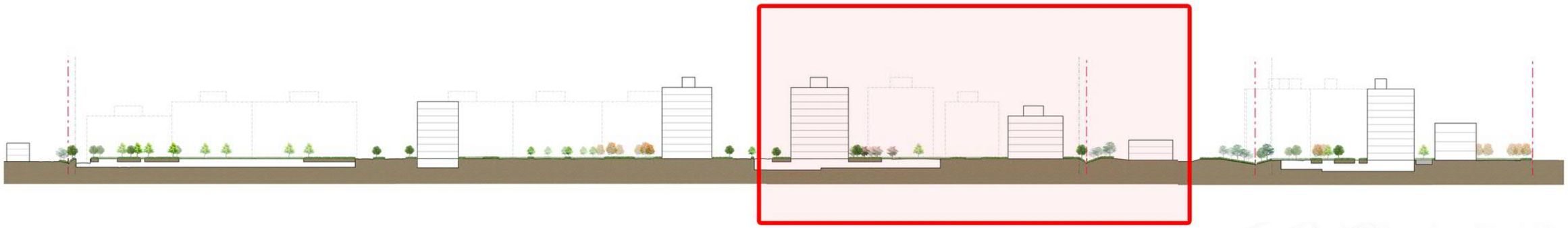

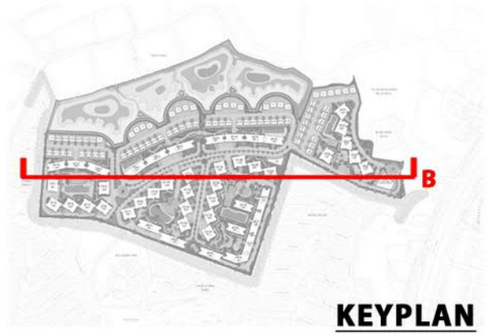

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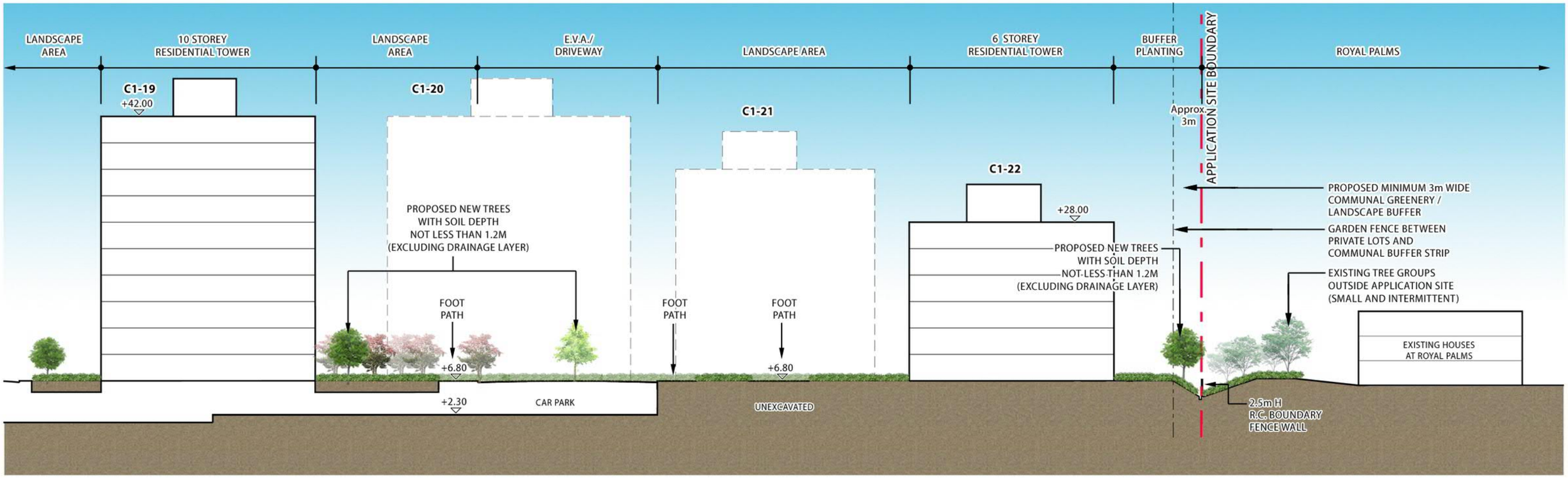

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

0m 2m 5m 10m 20m

SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

Dwg. No. : 2023202-SEC-02_2a

Date : APR 2025
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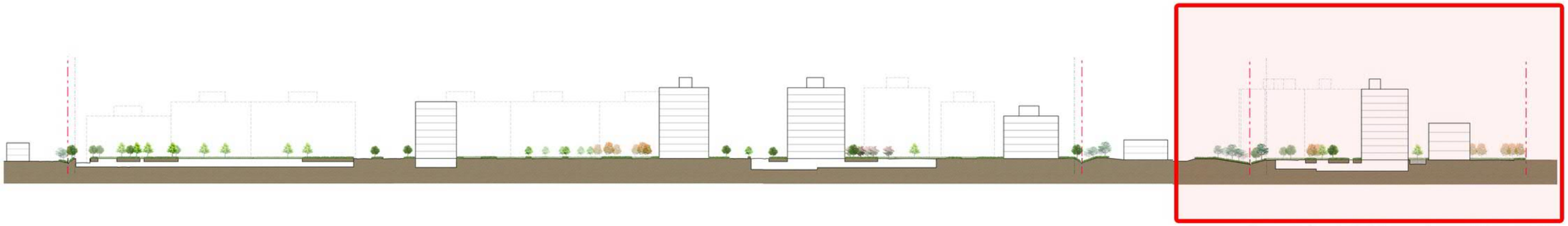



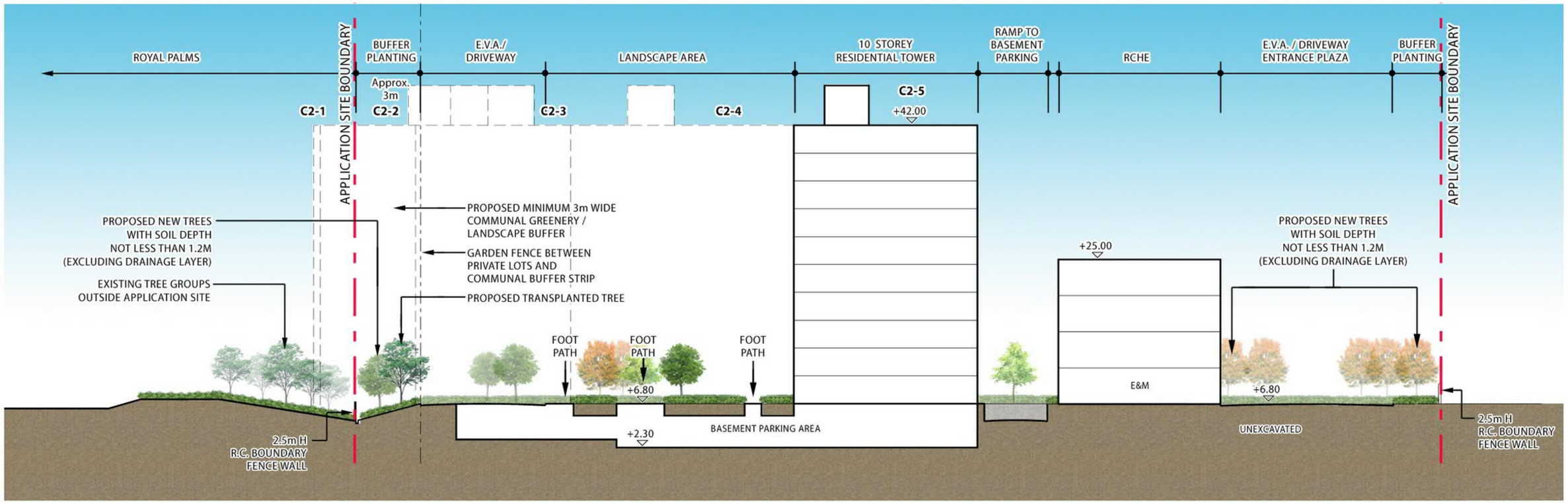

SECTION B - SECTION THROUGH PALM SPRINGS (WEST) / ROYAL PALMS / APPLICATION SITE

0m 2m 5m 10m 20m

SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section B

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Date : JUL 2025
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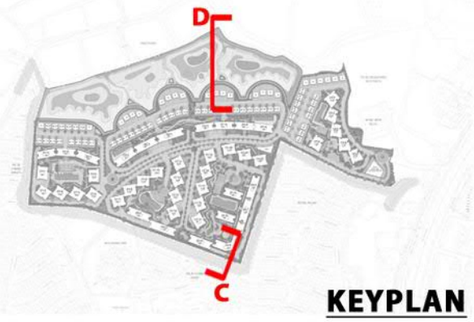
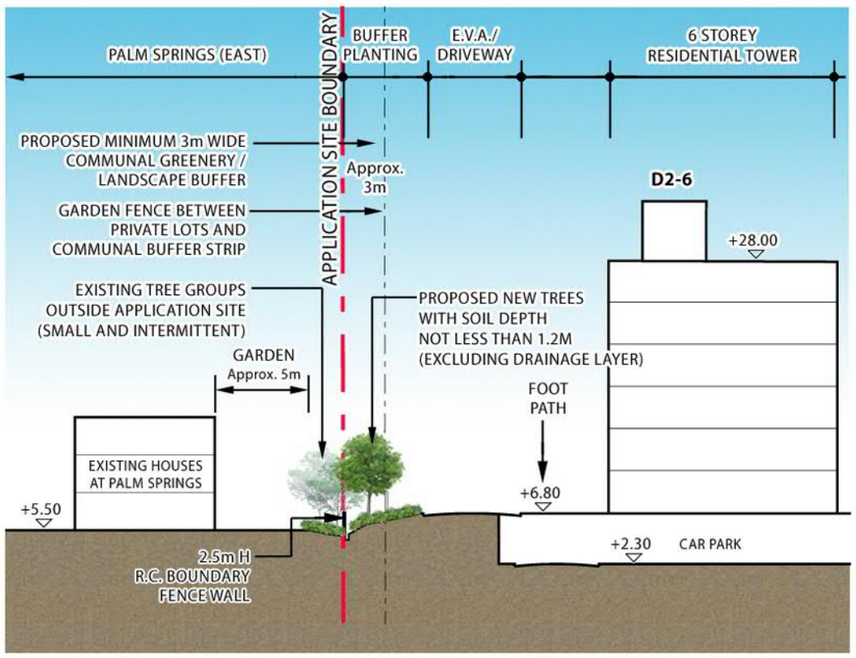
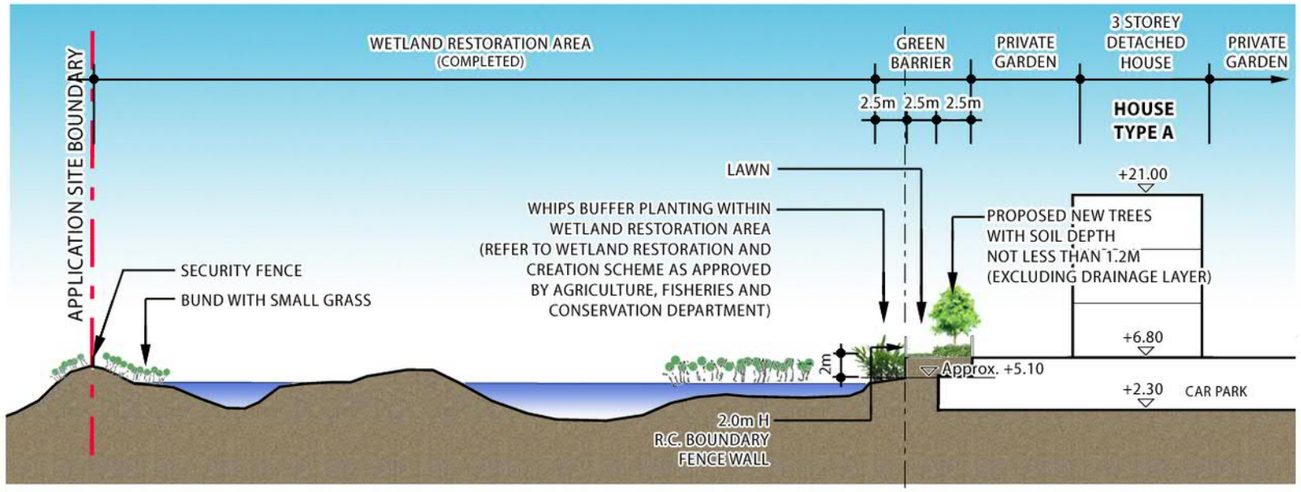




SECTION C - SECTION THROUGH PALM SPRINGS (EAST) / APPLICATION SITE



SECTION D - THROUGH INTERFACE OF WETLAND BUFFER AND RESIDENTIAL AREA (TYPICAL)

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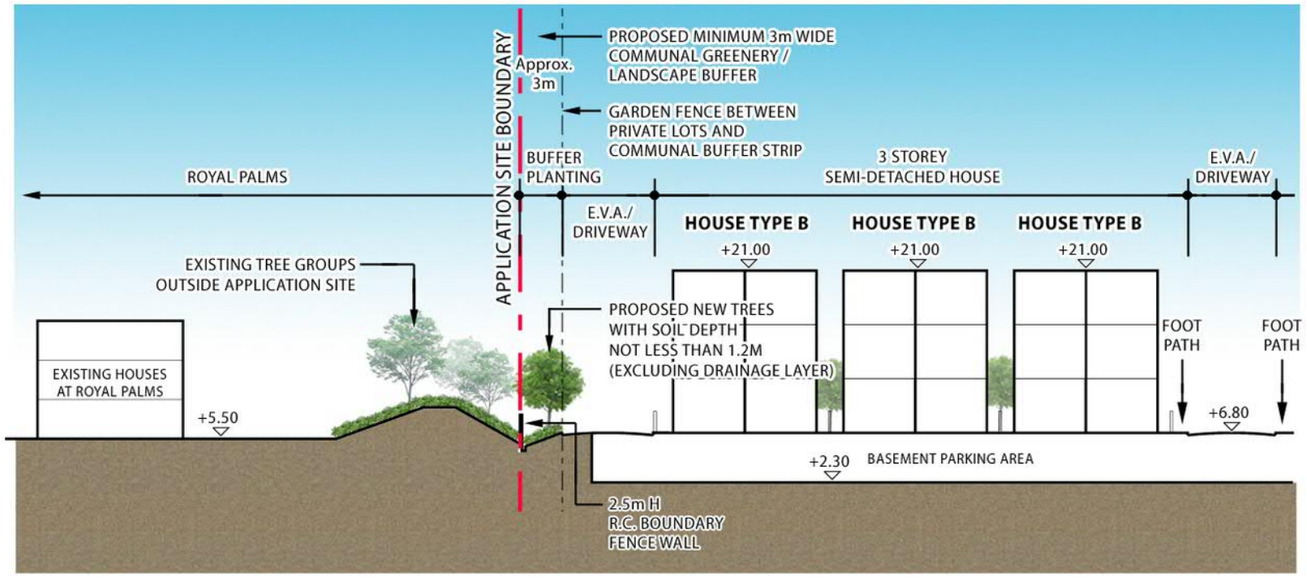
SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

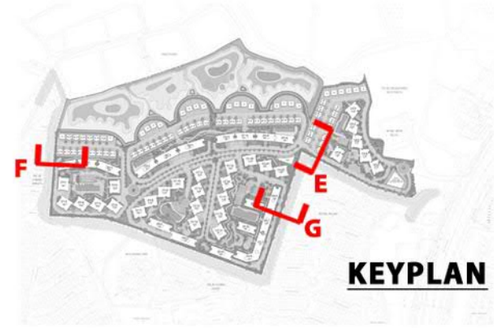
Landscape Section C & D

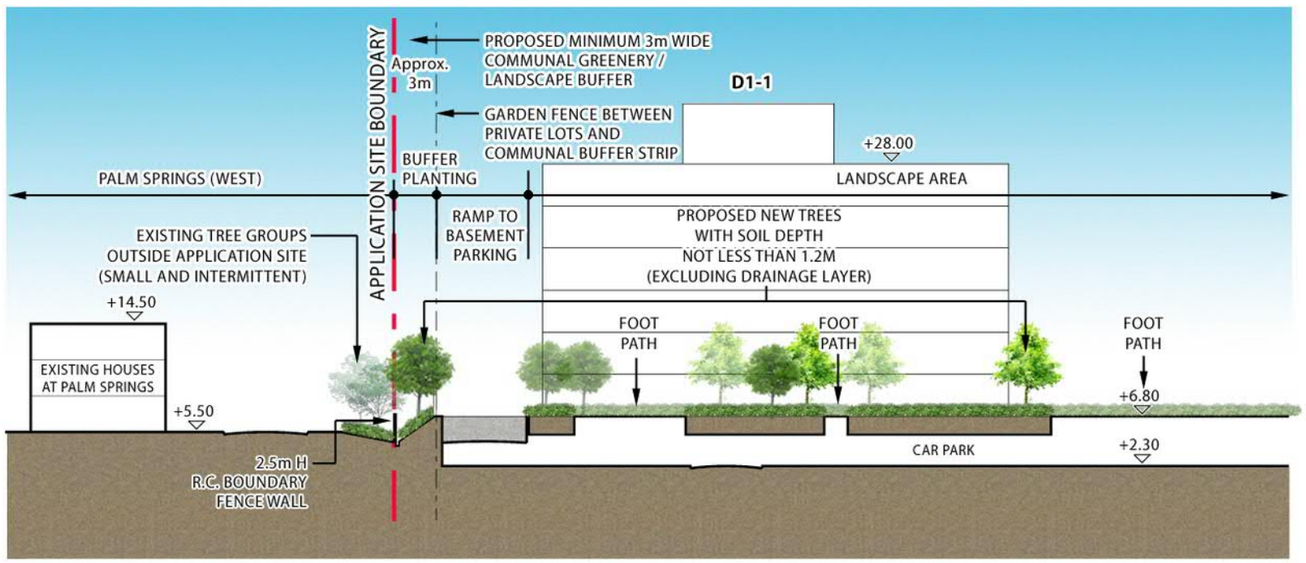
Dwg. No. : 2023202-SEC-03b

Date : JUL 2025
(A3-size)

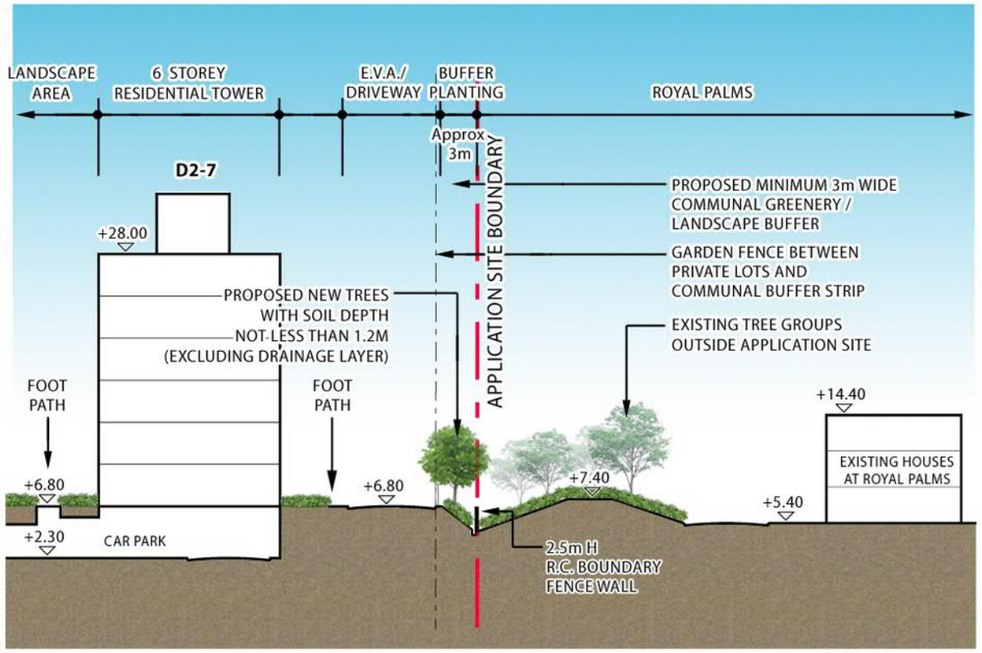


SECTION E - SECTION THROUGH ROYAL PALMS / APPLICATION SITE





SECTION F - SECTION THROUGH PALM SPRINGS (WEST) / APPLICATION SITE



SECTION G - SECTION THROUGH ROYAL PALMS / APPLICATION SITE

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SCALE . 1:500 (A3)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Landscape Section E, F & G

Dwg. No. : 2023202-SEC-04a

Date : APR 2025
(A3-size)

APPENDIX D

Fence Wall Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Fence Wall Demarcation Plan

Dwg. No. : 2023202-FWP-01a

Date : JUL 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-07-24 S12A Tower Scheme Rev\2023202-FWP-01a

APPENDIX E

Tree Planting Plan



LEGEND:

- LOT BOUNDARY
- TREES PROPOSED TO BE TRANSPLANTED (16nos.)
- PROPOSED NEW TREE (1200nos.)
- EXISTING TREE GROUP

no.	description	date
B	GENERAL REVISION	02/09/25
A	GENERAL REVISION	14/01/25

REVISION

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IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

axxa group limited
UNIT 301-02, 3/F PLAZA 228,
No. 228 WAN CHAI ROAD, HONG KONG.
香港 灣仔 灣仔道 228號,
PLAZA 228, 3樓 301-02室.
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E: ag@axxagroup.com.hk

PROJECT: To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE PLANTING PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202

Drawing No.: TPP-01 REV. B

CAD Ref.: 2023202-12A-TPP-01

A0 1189 x 841

ANNEX A

Greenery Demarcation Plan



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Greenery Demarcation Plan

Dwg. No. : 2023202-GDP-01a

Date : JUL 2025
(A3-size)

Y:\0-Axxagroup Project 2023\2023202_WSW_OAK\Graphic Storage\5. Submission Drawing\2025-07-24 S12A Tower Scheme Rev\2023202-GDP-01a

ANNEX B

Tree Preservation Proposal

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

ANNEX B

TREE PRESERVATION PROPOSAL

JULY 2025

Landscape Government
Submission Consultant Axxa Group Limited

axxa group

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2.0 Tree Treatment Proposal

3.0 Tree Planting Proposal

4.0 Summary of Tree Treatment and Planting Proposal

APPENDICES

Appendix A Tree Treatment Schedule

Appendix B Photographic Record of Existing Trees

Appendix C Tree Treatment Plan

Appendix D Tree Planting Plan

1.0 INTRODUCTION

1.1 This Tree Preservation Proposal is submitted to support Section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)"("OU(CDWRA)") zone.

1.2 The Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The Wetland Restoration Area (WRA) in the northern part of the Site was completed.

2.0 TREE TREATMENT PROPOSAL

2.1 Previous Approved Tree Preservation Proposal

Based on previous S16 Approved Tree Preservation Proposal (15 February 2024), a total of **203** nos. of trees located within Site were surveyed in 2023. Among them, 16 nos. of trees approved to be transplanted and 187 nos. of trees approved to be felled.

2.2 Current Tree Transplanting and Felling Proposal

There is **no change** to the tree treatment proposal comparing to the approved scheme. For detail, please refer to **Appendix A** for the Tree Treatment Schedule, **Appendix B** for the Photographic Record of Existing Trees and **Appendix C** for the Tree Treatment Plan.

3.0 TREE PLANTING PROPOSAL

1200 nos. of new trees as approved from previous planning applications are proposed to be planted. Among them, 851 nos. are proposed to be planted in residential portion, while 349 nos. along the perimeter have been planted through previous planning application approvals since 2008.

The following list indicates the proposed tree species along with suitable ornamental species to replenish the loss and to strengthen the greening / conservation. Species selected for planting are mostly larger woodland trees suitable for boundary buffer planting. Others chosen are native woodland species with dense foliage and to substitute felled tree species, recreating an environment similar to the original state of Site. The following list indicates the tree species to compensate for the loss and to strengthen the greening / conservation. Refer to **Table 1** and **Appendix D** - Tree Planting Plan**.**

Table 1: Plant Material Schedule

Proposed Species	Chinese Name	Quantity/ Size
Acacia auriculiformis	耳果相思	
Acacia mangium	大葉相思	
Araucaria heterophylla	異葉南洋杉	
*Bischofia javanica**	秋楓	
Casuarina equisetifolia	木麻黃	
Callistemon x hybridus 'Golden Ball'	黃金串錢柳	
Camellia japonica	山茶	
*Celtis sinensis**	朴樹	
Chorisia speciosa	絲木棉	
Chukrasia tabularis	麻楝	
*Cinnamomum burmannii**	陰香	851 nos.
*Cinnamomum camphora**	樟	
Delonix regia	鳳凰木	Size: Heavy Standard Size 4m High; 3-4m Spread; 4-5m Spacing; DBH 0.09m
Dracontomelon duperreanum	人面子	
*Elaeocarpus decipiens**	杜英	
Elaeocarpus hainanensis	水石榕	
Eucalyptus cumini	赤桉	349 nos.
Ficus benjamina	垂葉榕	
*Ficus microcarpa**	細葉榕	Size: Standard Size 2-2.5m High; 3m Spread; 3m Spacing; DBH 0.075m
*Hibiscus tiliaceus**	黃槿	
Lagerstroemia indica	紫薇	
*Liquidambar formosana**	楓香	
Mella azedarach	苦楝	
Melaleuca quinquenervia	白千層	
Michelia x alba	白蘭	
*Morella rubra**	楊梅	
Osmanthus fragrans	桂花	
*Podocarpus macrophyllus**	羅漢松	
Roystonea regia	王棕	
*Sapium sebiferum**	烏桕	
*Sterculia lanceolata**	假蘋婆	
Syzygium cumini	海南蒲桃	
Syzygium jambos	蒲桃	
Tabebuia impetiginosa	紫花風鈴木	
Terminalia mantaly	小葉欖仁	
Terminalia mantaly cv. 'Tricolor'	錦葉欖仁	
*Viburnum odoratissimum**	珊瑚樹	

Remarks: * Native Tree Species

Sufficient soil depth of not less than a minimum of 1200mm (excluding drainage layer) will be provided for each in-ground planting pit / bed / area to ensure future growth of transplanted and new trees. Water points will be installed based on the principle of not more than 40m c/c spacing.

4.0 SUMMARY OF TREE TREATMENT AND PLANTING PROPOSAL

A summary showing Tree Treatment and Planting Proposal is shown in **Table 2**:

Table 2: Tree Treatment and Planting Proposal Schedule

Description	**S16 Approved Scheme** (approved on 15 Feb 2024)	**Current Scheme**	**Difference**
Total Nos. of Trees Surveyed	203	203	0
Nos. of Trees Proposed to be Retained	0	0	0
Nos. of Trees Proposed to be Transplanted	16	16	0
Nos. of Trees Proposed to be Felled	187	187	0
Nos. of New Trees to be Planted	1200*	1200*	0

Remarks:

* 349 nos. of perimeter buffer trees have been planted through previous planning application approvals since 2008.

APPENDIX A

Tree Treatment Schedule

Tree Treatment Schedule

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T051	T051	*Ficus hispida*	對葉榕	7	130	3	F	F	
T052	T052	*Ficus hispida*	對葉榕	7	130	4	F	F	
T053	T053	*Ficus variegata*	青果榕	7	150	4	F	F	
T058	T058	*Ficus hispida*	對葉榕	7	140	3	F	F	
T063	T063	*Melaleuca cajuputi* subsp. *cumingiana*	白千層	7	100	2	F	F	Leaning
T070	T070	*Morus alba*	桑	6	140	4	F	F	
T072	T072	*Macaranga tanarius* var. *tomentosa*	血桐	8	100	4	F	F	
T554	T554	*Ficus microcarpa*	細葉榕	10	380	6	T	T	Broken branches/ exposed roots
T560	T560	*Ficus microcarpa*	細葉榕	11	280	6	T	T	Exposed roots
T567	T567	*Syzygium cumini*	海南蒲桃	11	280	6	T	T	
T569	T569	*Hibiscus tiliaceus*	黃槿	8	230	5	T	T	Broken branches / cross branches / epicormics
T571	T571	*Ficus microcarpa*	細葉榕	12	900	7	T	T	Broken branches
T580	T580	*Ficus microcarpa*	細葉榕	12	450	7	T	T	Broken branches / exposed roots
T584	T584	*Syzygium cumini*	海南蒲桃	11	190	5	T	T	
T588	T588	*Ficus microcarpa*	細葉榕	12	500	5	T	T	Bent trunk / broken branches/ exposed roots
T594	T594	*Ficus microcarpa*	細葉榕	12	520	8	T	T	Bent trunk/ broken branches/ exposed roots
T599	T599	*Syzygium cumini*	海南蒲桃	6	120	3	T	T	Decay at trunk base / leaning
T601	T601	*Ficus microcarpa*	細葉榕	12	260	8	T	T	Exposed root
T602	T602	*Syzygium cumini*	海南蒲桃	8	220	4	T	T	
T604	T604	*Ficus microcarpa*	細葉榕	12	300	9	T	T	
T605	T605	*Melaleuca cajuputi subsp. cumingiana*	白千層	12	200	5	T	T	multi-stems with included bark
T607	T607	*Ficus microcarpa*	細葉榕	12	250	6	T	T	Broken branches/ exposed roots/ bent trunk
T609	T609	*Syzygium cumini*	海南蒲桃	9	230	5	T	T	Broken branches/ codominant trunk
T636	T636	*Casuarina equisetifolia*	木麻黃	8	110	3	F	F	
T657	T657	*Casuarina equisetifolia*	木麻黃	7	130	3	F	F	
T669	T669	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	
T1450	T1450	*Casuarina equisetifolia*	木麻黃	6	100	2	F	F	
T1451	T1451	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1452	T1452	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1467	T1467	*Casuarina equisetifolia*	木麻黃	7	120	3	F	F	
T1468	T1468	*Casuarina equisetifolia*	木麻黃	7	130	3	F	F	
T1505	T1505	*Casuarina equisetifolia*	木麻黃	11	130	4	F	F	
T1520	T1520	*Casuarina equisetifolia*	木麻黃	6	140	5	F	F	
T1529	T1529	*Casuarina equisetifolia*	木麻黃	10	125	3	F	F	
T1599	T1599	*Leucaena leucocephala*	銀合歡	9	185	5	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1603	T1603	*Leucaena leucocephala*	銀合歡	8	235	3	F	F	Cross branches / multi-stems
T1605	T1605	*Leucaena leucocephala*	銀合歡	8	140	3	F	F	
T1607	T1607	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1609	T1609	*Casuarina equisetifolia*	木麻黃	4	140	2	F	F	Leaning
T1610	T1610	*Casuarina equisetifolia*	木麻黃	10	105	2	F	F	
T1611	T1611	*Casuarina equisetifolia*	木麻黃	10	100	2	F	F	
T1614	T1614	*Casuarina equisetifolia*	木麻黃	10	140	4	F	F	
T1616	T1616	*Casuarina equisetifolia*	木麻黃	10	130	2	F	F	
T1618	T1618	*Casuarina equisetifolia*	木麻黃	8	110	3	F	F	
T1619	T1619	*Casuarina equisetifolia*	木麻黃	10	95	2	F	F	Bark crack
T1621	T1621	*Leucaena leucocephala*	銀合歡	8	170	4	F	F	Codominant Stems
T1622	T1622	*Leucaena leucocephala*	銀合歡	7	110	2	F	F	
T1623	T1623	*Leucaena leucocephala*	銀合歡	8	233	5	F	F	Codominant Stems
T1624	T1624	*Leucaena leucocephala*	銀合歡	8	141	4	F	F	Multi-stems
T1626	T1626	*Leucaena leucocephala*	銀合歡	8	115	2	F	F	
T1627	T1627	*Leucaena leucocephala*	銀合歡	8	160	4	F	F	
T1629	T1629	*Leucaena leucocephala*	銀合歡	7	120	2	F	F	
T1630	T1630	*Leucaena leucocephala*	銀合歡	8	201	6	F	F	Multi-stems
T1631	T1631	*Leucaena leucocephala*	銀合歡	7	135	3	F	F	
T1732	T1732	*Casuarina equisetifolia*	木麻黃	7	105	2	F	F	
T1733	T1733	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1734	T1734	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1736	T1736	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1738	T1738	*Casuarina equisetifolia*	木麻黃	8	95	2	F	F	
T1739	T1739	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	Broken branches
T1740	T1740	*Casuarina equisetifolia*	木麻黃	8	130	3	F	F	
T1765	T1765	*Casuarina equisetifolia*	木麻黃	9	100	2	F	F	
T1781	T1781	*Casuarina equisetifolia*	木麻黃	10	115	2	F	F	
T1783	T1783	*Casuarina equisetifolia*	木麻黃	12	130	4	F	F	
T1784	T1784	*Casuarina equisetifolia*	木麻黃	11	115	5	F	F	
T1785	T1785	*Casuarina equisetifolia*	木麻黃	11	140	3	F	F	
T1786	T1786	*Casuarina equisetifolia*	木麻黃	8	142	4	F	F	Codominant Stems
T1797	T1797	*Casuarina equisetifolia*	木麻黃	9	95	2	F	F	
T1798	T1798	*Casuarina equisetifolia*	木麻黃	10	120	4	F	F	
T1800	T1800	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1802	T1802	*Casuarina equisetifolia*	木麻黃	9	105	3	F	F	Broken branches
T1804	T1804	*Casuarina equisetifolia*	木麻黃	12	105	3	F	F	
T1806	T1806	*Casuarina equisetifolia*	木麻黃	10	120	3	F	F	
T1814	T1814	*Casuarina equisetifolia*	木麻黃	9	115	4	F	F	
T1903	T1903	*Casuarina equisetifolia*	木麻黃	10	150	2	F	F	
T1904	T1904	*Casuarina equisetifolia*	木麻黃	9	130	2	F	F	
T1905	T1905	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1906	T1906	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1909	T1909	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	Broken branches
T1912	T1912	*Casuarina equisetifolia*	木麻黃	8	145	3	F	F	
T1913	T1913	*Casuarina equisetifolia*	木麻黃	9	170	5	F	F	
T1914	T1914	*Casuarina equisetifolia*	木麻黃	8	145	3	F	F	
T1916	T1916	*Casuarina equisetifolia*	木麻黃	8	160	4	F	F	
T1917	T1917	*Casuarina equisetifolia*	木麻黃	7	120	2	F	F	Codominant Stems / leaning
T1919	T1919	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1920	T1920	*Casuarina equisetifolia*	木麻黃	8	100	3	F	F	
T1921	T1921	*Casuarina equisetifolia*	木麻黃	8	95	2	F	F	
T1922	T1922	*Casuarina equisetifolia*	木麻黃	8	140	3	F	F	
T1923	T1923	*Casuarina equisetifolia*	木麻黃	8	145	2	F	F	
T1926	T1926	*Casuarina equisetifolia*	木麻黃	9	170	2	F	F	
T1927	T1927	*Casuarina equisetifolia*	木麻黃	8	150	2	F	F	
T1929	T1929	*Casuarina equisetifolia*	木麻黃	8	140	4	F	F	
T1930	T1930	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T1933	T1933	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1934	T1934	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T1935	T1935	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1936	T1936	*Casuarina equisetifolia*	木麻黃	7	100	2	F	F	
T1937	T1937	*Casuarina equisetifolia*	木麻黃	7	105	2	F	F	
T1938	T1938	*Casuarina equisetifolia*	木麻黃	8	100	4	F	F	
T1939	T1939	*Casuarina equisetifolia*	木麻黃	8	120	3	F	F	
T1940	T1940	*Casuarina equisetifolia*	木麻黃	8	125	2	F	F	
T1941	T1941	*Casuarina equisetifolia*	木麻黃	8	105	2	F	F	
T1942	T1942	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	Bark crack
T1943	T1943	*Casuarina equisetifolia*	木麻黃	8	115	3	F	F	
T1944	T1944	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T1946	T1946	*Casuarina equisetifolia*	木麻黃	9	110	2	F	F	
T1947	T1947	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	Broken branches / leaning
T1948	T1948	*Casuarina equisetifolia*	木麻黃	8	140	2	F	F	
T1949	T1949	*Casuarina equisetifolia*	木麻黃	10	100	3	F	F	
T1950	T1950	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T1951	T1951	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1952	T1952	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T1954	T1954	*Casuarina equisetifolia*	木麻黃	8	120	2	F	F	
T1955	T1955	*Casuarina equisetifolia*	木麻黃	9	135	2	F	F	Bark crack
T1956	T1956	*Casuarina equisetifolia*	木麻黃	9	170	3	F	F	
T1957	T1957	*Casuarina equisetifolia*	木麻黃	9	120	2	F	F	
T1958	T1958	*Casuarina equisetifolia*	木麻黃	8	95	3	F	F	
T1959	T1959	*Casuarina equisetifolia*	木麻黃	9	100	2	F	F	
T1960	T1960	*Casuarina equisetifolia*	木麻黃	8	100	2	F	F	
T1968	T1968	*Casuarina equisetifolia*	木麻黃	10	105	2	F	F	
T1970	T1970	*Casuarina equisetifolia*	木麻黃	10	130	2	F	F	
T1973	T1973	*Casuarina equisetifolia*	木麻黃	10	110	2	F	F	
T1982	T1982	*Casuarina equisetifolia*	木麻黃	10	200	4	F	F	Codominant Stems
T1999	T1999	*Casuarina equisetifolia*	木麻黃	7	100	2	F	F	
T2002	T2002	*Casuarina equisetifolia*	木麻黃	7	110	2	F	F	
T2008	T2008	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2009	T2009	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2010	T2010	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T2011	T2011	*Casuarina equisetifolia*	木麻黃	8	115	2	F	F	
T2012	T2012	*Casuarina equisetifolia*	木麻黃	9	110	3	F	F	
T2013	T2013	*Casuarina equisetifolia*	木麻黃	10	150	4	F	F	
T2017	T2017	*Casuarina equisetifolia*	木麻黃	11	150	2	F	F	
T2019	T2019	*Casuarina equisetifolia*	木麻黃	8	115	4	F	F	
T2020	T2020	*Casuarina equisetifolia*	木麻黃	8	125	2	F	F	
T2021	T2021	*Casuarina equisetifolia*	木麻黃	10	125	3	F	F	
T2022	T2022	*Casuarina equisetifolia*	木麻黃	10	115	2	F	F	
T2023	T2023	*Casuarina equisetifolia*	木麻黃	6	145	2	F	F	
T2025	T2025	*Casuarina equisetifolia*	木麻黃	9	135	3	F	F	Bark crack
T2027	T2027	*Casuarina equisetifolia*	木麻黃	11	115	2	F	F	
T2028	T2028	*Casuarina equisetifolia*	木麻黃	9	130	3	F	F	

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T2029	T2029	*Casuarina equisetifolia*	木麻黃	11	120	4	F	F	
T2030	T2030	*Casuarina equisetifolia*	木麻黃	15	145	4	F	F	
T2031	T2031	*Casuarina equisetifolia*	木麻黃	11	170	2	F	F	Multi-stems
T2032	T2032	*Casuarina equisetifolia*	木麻黃	12	150	4	F	F	
T2033	T2033	*Casuarina equisetifolia*	木麻黃	10	120	2	F	F	
T2034	T2034	*Casuarina equisetifolia*	木麻黃	15	160	6	F	F	Codominant Stems
T2034A	T2034A	*Casuarina equisetifolia*	木麻黃	10	110	3	F	F	
T2041	T2041	*Casuarina equisetifolia*	木麻黃	8	105	3	F	F	
T2042	T2042	*Casuarina equisetifolia*	木麻黃	5	115	3	F	F	
T2044	T2044	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2049	T2049	*Casuarina equisetifolia*	木麻黃	7	120	2	F	F	
T2052	T2052	*Casuarina equisetifolia*	木麻黃	9	120	2	F	F	
T2053	T2053	*Casuarina equisetifolia*	木麻黃	9	160	3	F	F	
T2054	T2054	*Casuarina equisetifolia*	木麻黃	12	140	4	F	F	Exposed roots
T2057	T2057	*Casuarina equisetifolia*	木麻黃	8	130	2	F	F	
T2070	T2070	*Casuarina equisetifolia*	木麻黃	8	150	2	F	F	
T2108	T2108	*Leucaena leucocephala*	銀合歡	11	105	3	F	F	
T2110	T2110	*Leucaena leucocephala*	銀合歡	10	205	6	F	F	Codominant Stems
T2111	T2111	*Casuarina equisetifolia*	木麻黃	7	110	2	F	F	
T2112	T2112	*Casuarina equisetifolia*	木麻黃	7	95	3	F	F	
T2115	T2115	*Leucaena leucocephala*	銀合歡	8	110	3	F	F	Leaning
T2116	T2116	*Leucaena leucocephala*	銀合歡	13	120	4	F	F	Leaning
T2117	T2117	*Leucaena leucocephala*	銀合歡	10	120	3	F	F	Bark crack / leaning
T2123	T2123	*Leucaena leucocephala*	銀合歡	12	220	4	F	F	Leaning
T2127	T2127	*Leucaena leucocephala*	銀合歡	8	125	2	F	F	Leaning
T2130	T2130	*Casuarina equisetifolia*	木麻黃	9	95	2	F	F	
T2153	T2153	*Leucaena leucocephala*	銀合歡	8	110	5	F	F	Leaning
T2154	T2154	*Leucaena leucocephala*	銀合歡	10	110	4	F	F	Leaning
T2155	T2155	*Leucaena leucocephala*	銀合歡	8	134	4	F	F	Codominant Stesm / leaning
T2156	T2156	*Leucaena leucocephala*	銀合歡	8	139	3	F	F	Multi-stems
T2157	T2157	*Leucaena leucocephala*	銀合歡	8	120	2	F	F	Cross branches / codominant stems
T2160	T2160	*Leucaena leucocephala*	銀合歡	7	201	2	F	F	Multi-stems
T2161	T2161	*Leucaena leucocephala*	銀合歡	7	128	4	F	F	
T2162	T2162	*Leucaena leucocephala*	銀合歡	8	141	4	F	F	Multi-stems
T2163	T2163	*Leucaena leucocephala*	銀合歡	11	141	3	F	F	Codominant Stesm

		Species		Tree Size			Approved Treatment (Retain/Transplant/Fell) S16 Approved by TPB on 15 Feb 2024	Proposed Treatment (Retain/Transplant/Fell)	Remarks[1] (Old and Valuable Tree (OVT), potentially registrable OVT, rare species, protected species, ecological and historical significance, etc.)
Tree No.	Photo No.	Scientific Name	Chinese Name	Height (m)	DBH[2] (mm)	Crown Spread (m)			
T2164	T2164	*Leucaena leucocephala*	銀合歡	11	117	3	F	F	Multi-stems
T2165	T2165	*Leucaena leucocephala*	銀合歡	10	158	4	F	F	Broken branches / leaning / multi-stems
T2166	T2166	*Leucaena leucocephala*	銀合歡	10	170	4	F	F	Cross branches / leaning
T2168	T2168	*Leucaena leucocephala*	銀合歡	11	120	3	F	F	
T2170	T2170	*Leucaena leucocephala*	銀合歡	8	175	5	F	F	Leaning / multi-stems
T2172	T2172	*Leucaena leucocephala*	銀合歡	10	140	5	F	F	Leaning
T2173	T2173	*Leucaena leucocephala*	銀合歡	10	180	5	F	F	Leaning
T2174	T2174	*Leucaena leucocephala*	銀合歡	10	115	3	F	F	Leaning
T2178	T2178	*Leucaena leucocephala*	銀合歡	10	200	4	F	F	
T2179	T2179	*Leucaena leucocephala*	銀合歡	10	120	4	F	F	
T2188	T2188	*Leucaena leucocephala*	銀合歡	8	155	4	F	F	
T2242	T2242	*Casuarina equisetifolia*	木麻黃	8	130	3	F	F	
T2245	T2245	*Casuarina equisetifolia*	木麻黃	7	95	2	F	F	
T2249	T2249	*Casuarina equisetifolia*	木麻黃	9	95	3	F	F	
T2249A	T2249A	*Casuarina equisetifolia*	木麻黃	9	150	4	F	F	Codominant Stesm / included bark
T2250	T2250	*Casuarina equisetifolia*	木麻黃	11	165	4	F	F	
T2251	T2251	*Casuarina equisetifolia*	木麻黃	7	95	2	F	F	
T2253	T2253	*Casuarina equisetifolia*	木麻黃	11	125	3	F	F	
T2253A	T2253A	*Casuarina equisetifolia*	木麻黃	10	115	3	F	F	Bark crack
T2254	T2254	*Casuarina equisetifolia*	木麻黃	10	95	2	F	F	
T2255	T2255	*Casuarina equisetifolia*	木麻黃	8	110	2	F	F	
T2266	T2266	*Casuarina equisetifolia*	木麻黃	10	115	3	F	F	Broken branches
T2275	T2275	*Casuarina equisetifolia*	木麻黃	13	120	3	F	F	Bark crack / codominant stems
T2278	T2278	*Casuarina equisetifolia*	木麻黃	14	200	5	F	F	
T2281	T2281	*Casuarina equisetifolia*	木麻黃	14	145	5	F	F	
T2283	T2283	*Casuarina equisetifolia*	木麻黃	12	180	6	F	F	Broken branches / Codominant Stems
T2284	T2284	*Casuarina equisetifolia*	木麻黃	12	200	6	F	F	
T2286	T2286	*Casuarina equisetifolia*	木麻黃	10	110	3	F	F	

Summary Table

	Number of Tree(s)
Tree to be Retained	0
Tree to be Transplanted	16
Trees to be Felled	187
Total Number of Existing Tree(s)	203

[1] Please state whether the OVT, potentially registrable OVT, trees of rare or protected species, trees with ecological and historical significance, etc. within and/or adjacent to the site is likely to be affected by the proposed development.

[2] DBH of a tree refers to its diameter at breast height (i.e. measured at 1.3m above ground level).

APPENDIX B

Photographic Record of Existing Trees



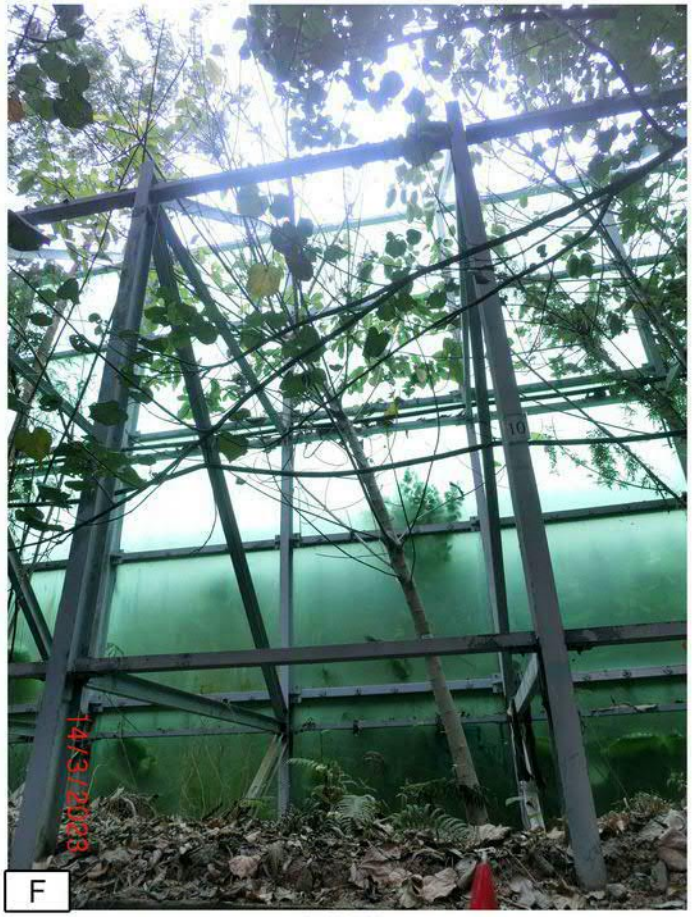
T051



T052



T053



T058

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T063



T070



T072

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T554



T560



T567



T569

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T571



T580



T584



T588

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



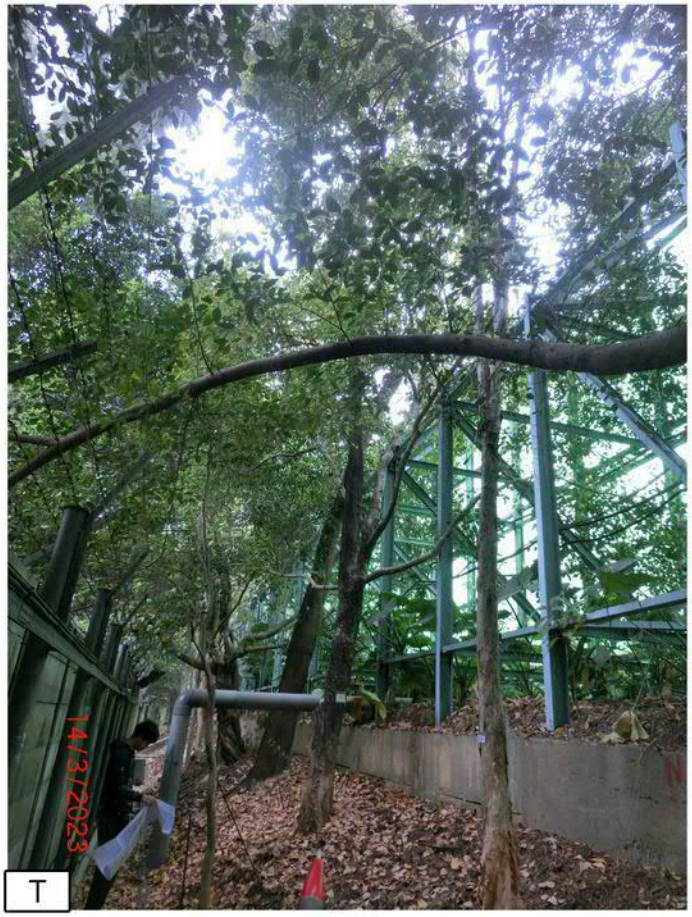
T594



T599



T601



T602

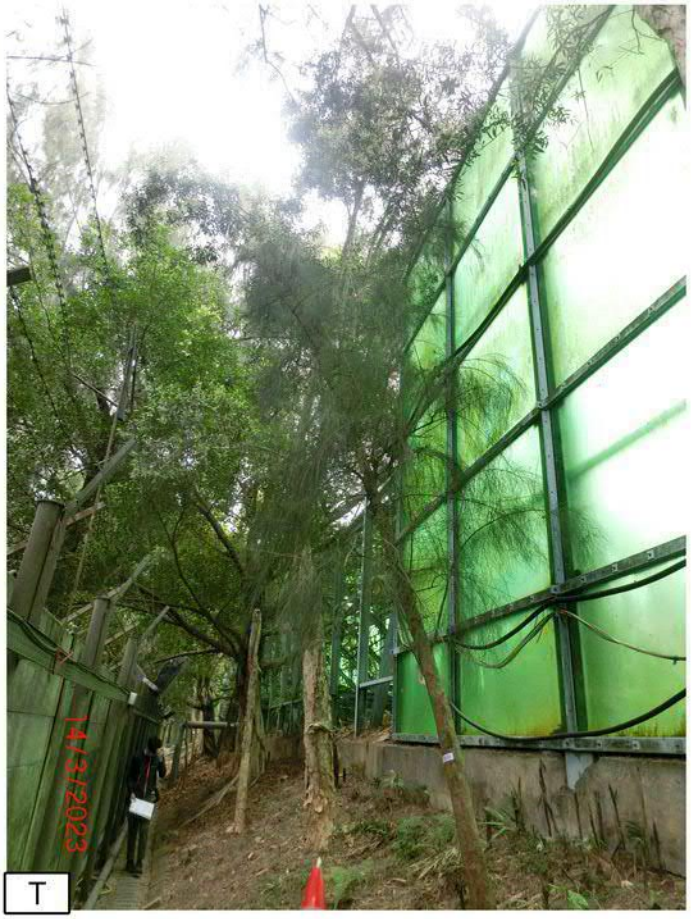
Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



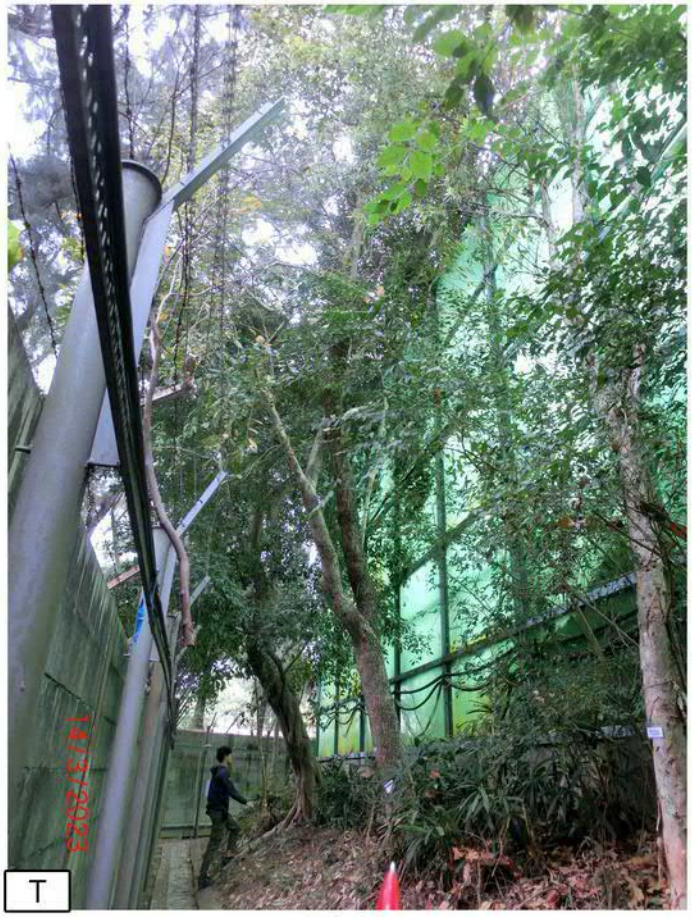
T604



T605



T607



T609

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T636



T657



T669



T1450

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1451



T1452



T1467



T1468

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1505



T1520



T1529



T1599

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1603



T1605



T1607



T1609

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1610



T1611



T1614



T1616

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1618



T1619



T1621



T1622

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1623



T1624



T1626



T1627

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1629



T1630



T1631



T1732

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1733



T1734



T1736



T1738

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1739



T1740



T1765



T1781

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1783



T1784



T1785



T1786

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1797



T1798



T1800



T1802

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1804



T1806



T1814



T1903

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1904



T1905



T1906



T1909

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1912



T1913



T1914



T1916

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1917



T1919



T1920



T1921

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1922



T1923



T1926



T1927

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1929



T1930



T1933



T1934

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1935



T1936



T1937



T1938

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1939



T1940



T1941



T1942

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1943



T1944



T1946



T1947

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1948



T1949



T1950



T1951

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1952



T1954



T1955



T1956

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1957



T1958



T1959



T1960

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1968



T1970



T1973



T1982

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T1999



T2002



T2008



T2009

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2010



T2011



T2012



T2013

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2017



T2019



T2020



T2021

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2022



T2023



T2025



T2027

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2028



T2029



T2030



T2031

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2032



T2033



T2034



T2034A

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2041



T2042



T2044



T2049

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2052



T2053



T2054



T2057

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2070



T2108



T2110



T2111

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2112



T2115



T2116



T2117

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2123



T2127



T2130



T2153

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2154



T2155



T2156



T2157

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2160



T2161



T2162



T2163

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2164



T2165



T2166



T2168

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2170



T2172



T2173



T2174

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2178



T2179



T2188



T2242

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2245



T2249



T2249A



T2250

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2251



T2253



T2253A



T2254

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2255



T2266



T2275



T2278

Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree



T2281



T2283



T2284



T2286

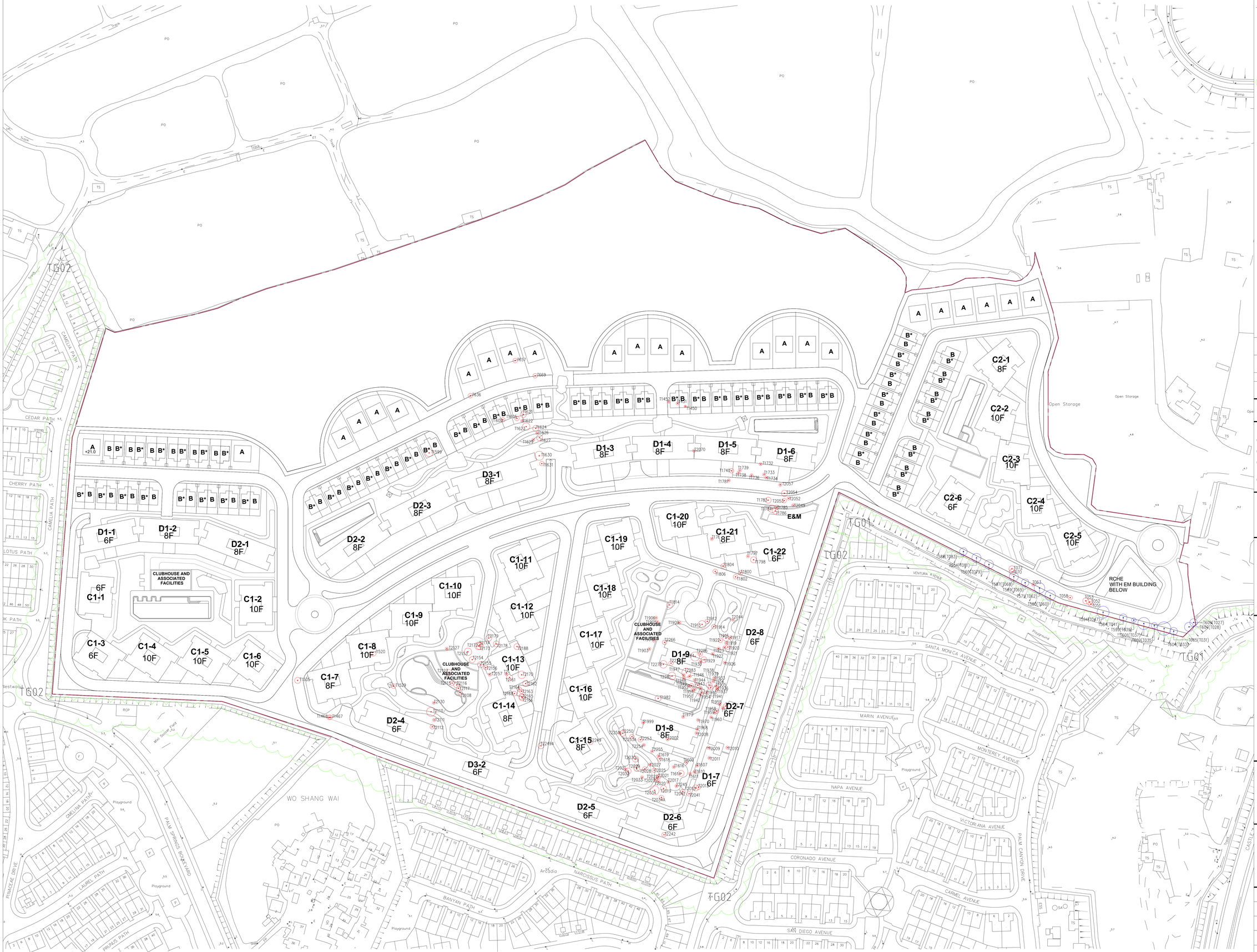
Wo Shang Wai, Yuen Long,
Lots 77 and 50 S.A in DD101

Tree Photographic Record

R-Retain T-Transplant F-Fell D-Dead Tree

APPENDIX C

Tree Treatment Plan



no.	description	date
B	GENERAL REVISION	02/09/25
A	GENERAL REVISION	14/01/25

REVISION

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IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

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PROJECT: To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE TREATMENT PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202
CAD Ref.:	2023202-12A-TTP-01

Drawing No.: TTP-01

REV. B

A0 1189 x 841

APPENDIX D

Tree Planting Plan



LEGEND:

- LOT BOUNDARY
- TREES PROPOSED TO BE TRANSPLANTED (16nos.)
- PROPOSED NEW TREE (1200nos.)
- EXISTING TREE GROUP

no.	description	date
B	GENERAL REVISION	02/09/25
A	GENERAL REVISION	14/01/25

REVISION

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IT IS THE CONTRACTOR'S RESPONSIBILITY TO

- use figured dimension in preference to scalling
- verify all dimensions at the site
- report all discrepancies to the landscape architect and agree before proceeding
- determine location of all existing services prior to excavation

This drawing shall not be used for construction purposes unless signed by Landscape Architect

Date:

Approval:

axxa group

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PROJECT: To Amend the Notes of the 'Comprehensive Development to include Wetland Restoration Area' Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

DRAWING TITLE:

TREE PLANTING PLAN

Scale:	1:800
Date:	JUL 2024
Design:	CL
Drawn:	LS
Checked:	CL
Project No:	2023202
CAD Ref.:	2023202-12A-TPP-01

Drawing No.: TPP-01

REV. B

A0 1189 x 841

ANNEX C

EPD's Approved Wetland Restoration and Creation Scheme

本署檔號 OUR REF: (8) in EP2/N6/P/105 Pt 4
來函檔號 YOUR REF:
電話 TEL. NO.: 2835 1843
圖文傳真 FAX NO.: 2591 0558
電子郵件 E-MAIL: tomtam@epd.gov.hk
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Environmental Protection Department
Branch Office
28th Floor, Southern Centre,
130 Hennessy Road,
Wan Chai, Hong Kong.

環境保護署分處
香港灣仔
軒尼詩道
一百三十號
修頓中心廿八樓

3 December 2010
(Fax No: 2908 8838)

Profit Point Enterprises Limited
71-76/F, Two International Finance Centre
8 Finance Street
Central, Hong Kong

Attn.: Mr David F. Dunigan

Dear Mr Dunigan,

Proposed Comprehensive Development at Wo Shang Wai, Mai Po, Yuen Long
Environmental Permit No. EP-311/2008/B
Condition 3.6 – Notification of Completion of Wetland Restoration Area Construction

I refer to your letter ref. HLD/HAPT/N083/1511/416 dated 15.11.2010 regarding the captioned.

We understand from you that the construction of the Wetland Restoration Area (WRA) has been completed in accordance with the requirements stated in condition 3.6 of the relevant Environmental Permit (No. EP-311/2008/B). We take this opportunity to remind you to ensure that all the habitat establishment, maintenance, management and monitoring works in the WRA as described in the Wetland Restoration Plan (WRP) as well as the ecological mitigation measures as proposed in the Ecological Impact Assessment report (3rd edition) dated November 2009 be properly followed and implemented, and submitted the necessary Environmental Monitoring & Audit reports according to the requirements set in the WRP and the relevant EP conditions in due course.

Should you have any query on the above, please feel free to contact the undersigned or my colleague Mr Kenny LEUNG on 2835 1038.

Yours faithfully,

(Tom T. H. TAM)
Senior Environmental Protection Officer
for Director of Environmental Protection

c.c. AFCD (Attn: Ms Eva YAU) Fax No: 2377 4427
Mott MacDonald Hong Kong Ltd. (Attn: Ms Florence YUEN) Fax No: 2827 1823

Internal
E(SA)33
(20101201.001)

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG: DETAILED DESIGN AND IMPLEMENTATION

WETLAND RESTORATION AND CREATION SCHEME SECOND SUBMISSION

November 2009

Prepared by: **Shirley Lam**

Verified by: Shirley Lam



Date: 01-11-2009

Validated by: **Paul Leader**



Date: 1 Nov 2009

Asia Ecological Consultants Ltd
127 Commercial Centre
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Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment

8th September 2025

Prepared By:

SCENIC Landscape Studio Limited

Project Title	Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101
Report Title	**Visual Impact Assessment**

Revision	Date	Complied by:	Checked by:	Approved by:	Description
-	20240725	Anessa Wu	Winza Choi	Chris Foot	Draft to Client
A	20240809	Anessa Wu	Winza Choi	Chris Foot	Draft to Client
B	20250116	Various	Winza Choi	Chris Foot	Draft to Client
C	20250417	Various	Winza Choi	Chris Foot	Draft to Client
D	20250428	Various	Winza Choi	Chris Foot	Final to Client
E	20250612	Various	Winza Choi	Chris Foot	Final to Client
F	20250627	Various	Winza Choi	Chris Foot	Final to Client
G	20250908	Various	Winza Choi	Chris Foot	Final to Client

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3.0 Description of the Proposed Scheme
4.0 Baseline Conditions
5.0 Visual Impact Assessment
6.0 Visual Mitigation Measures
7.0 Residual Impacts
8.0 Conclusion

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1.0 Introduction

1.1 SCENIC Landscape Studio Limited have been commissioned to undertake the Visual Impact Assessment (VIA) in support of a Section 12A application under the Town Planning Ordinance for a site located at Wo Shang Wai, Yuen Long. The application is submitted on behalf of the applicant, Profit Point Enterprises Limited who currently owns the site (hereafter referred to as "Application Site").

1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42.0 mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.3 The VIA has been prepared in accordance with Town Planning Board ("TPB") Guidelines No. 41 – Guidelines on Submission of Visual Impact Assessment for Planning Applications to the Town Planning Board ("TPB PG No. 41"). It assesses the source and magnitude of the proposed development on the existing visual character and amenity within the context of the site and its environs. The report concludes by making specific recommendations for alleviating any potential visual impact caused by the proposed development. The baseline for the assessment is the Approved Section 16 (OZP Compliant) Scheme (Planning Application No. A/YL-MP/344).

2.0 Existing Site Description

2.1 The Application Site including the Project Area and the proposed Wetland Restoration Area (WRA) is located on the southern fringe of the Deep Bay wetland, west of Mai Po San Tsuen and northwest of Castle Peak Road. Most of the Project Area is on land created from filling in the fishponds in the early 1990s, which has since undergone clearance as part of the development works in progress.

2.2 The site is roughly rectangular in shape on an east west axis and covers an area of approximately 207, 408 m^2 an has an existing elevation of around +4.8 to +4.9 mPD. It is bounded to the east, south and west by low-rise residential development at Royal Palms and Palm Springs. The northern boundary of the Project Area is contiguous with the boundary of the WCA, while the entire site lies within the WBA.

2.3 The future landscape and visual context is informed by the findings of Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Draft San Tin Technopole Outline Zoning Plan (S/STT/1) dated 8th March 2024. This includes the implementation of a number of Planned and Committed Developments including the proposed San Tin Technopole Development and Ngau Tam Mei New Development Area; and a number of other residential projects. These are described in greater detail in section 4.18 to 4.21 of this report.

2.4 The baseline for the assessment assumes the implementation of the Approved Section 16 (OZP Compliant) Scheme which comprises of the following:

(i) Low-rise residential development containing about 789 houses of 2 to 3-storey houses;
(ii) Wetland Restoration Area (WRA) of about 4.74 ha to the north of the Project area; and
(iii) Associated works such as roads and drains within the Project area.

3.0 Description of the Proposed Scheme

3.1 The Proposed Scheme comprises of low and medium-rise residential houses and blocks arranged on an east -west orientation. The proposed building heights (BH) include 3-storey semi-detached and detached houses with a BH of +21 mPD; and a series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00 mPD to +35.00 mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00 mPD. The Proposed Scheme will also include three 1-2 story clubhouses located throughout the Application Site. The buildings are arranged with the 3 storey houses within the northern portion of the Application Site adjacent to the proposed WRA. Moving south the medium-rise blocks adopt a stepped height profile with the taller blocks located within the southern portion of the Application Site. The design of the medium-rise blocks also adopts stepped building height profile on an east – west axis. The WRA is already completed with the objective of providing ecological mitigation and creating a buffer to the proposed Potential Area for Wetland and Fisheries Enhancement.

3.2 The proposed building disposition and orientation is designed to maximise the area of landscape for the enjoyment of the future residents while also providing a significant setback from the Application Site boundary to minimise the impacts on surrounding communities and their landscape setting; and preserving the ecological value of the area to the north of the Application Site.

4.0 Baseline Conditions

Visual Envelope

4.1 The extent of the Visual Envelope (VE), the zones of visual influence (ZVI) and the location of the Vantage Points (VPs) are presented as **Figures 4.5** to **4.6 – Visual Envelope and Visually Sensitive Receivers**. The VE, the area from which the proposed development will be seen, is shaped by a combination of the existing and proposed built development and the upland landform which serves to contain views to the south and east.

4.2 Although the Assessment Area for the VIA is normally delineated according to the TPB PG No. 41, as being around three times the overall BH of the Proposed Development Scheme it is instructive to map the actual VE and ZVI to get a more accurate picture of the locations which will have a view of the proposals and how much of the Proposed Scheme can be seen.

4.3 To the north the VE for the Proposed Scheme extends to the Shenzhen River and the urban landscape beyond. At lower elevations the VE extends to features such as the Lok Ma Chau MTR Station and the Mai Po Nature Reserve and wetlands / fishpond areas. To the north east with the implementation of the proposed San Tin Technopole Development (Technopole) the VE will be contained by the development associated with the proposed Innovation and Technology areas

4.4 Views to the east extend along the San Tin Highway corridor with its associated low-rise village areas including San Tin, Tsing Lung Tsuen and Wing Ping Tsuen. Low level views are also contained by green features such as the small, wooded knolls including Man Tin Cheung Park. To the south of the San Tin Highway the proposed San Tin Technopole Development include a number of low and medium-rise uses including G/IC and cultural and community uses. The proposed Ngau Tam Mei New Development Area will also shape the Visual Envelope to the south east of the Application Site containing low levels views from the valley floor. At more elevated levels the VE will be contained by the proposed high-rise residential development at the base on Ki Lun Shan (Hadden Hill) (+222 mPD) and the proposed innovation and technology developments in the area of Luk Mei Tsuen and Pang Loon Tei. There will be small area on the western side of the summit of Ki Lun Shan with views towards the Application Site. The VE will also extend to the ridgeline and secondary summits to the

north, east and south west of Kai Kung Leng (+572 mPD). The ridgeline is located within the Lam Tsuen Country Park.

4.5 Views from the south east will extend from the proposed high-residential development to the east of the San Tin Highway and the Maple Gardens development and to the south the spur emanating from the Ki Lun Shan ridgeline including a Trigonometrical Point (+337 mPD).

4.6 To the south the VE extends over the low flat expanse of the fishponds and low-rise residential and village landscapes to the west of the San Tin Highway to the San Tin River and the Nam Sang Wai area. There are a number of approved new developments in this area which will also serve to shape the VE. These include the proposed Sha Po North Public Housing (S/YL-KTN/9) with a BH of +182.8 mPD. The low-rise developments include Fairview Park; and Palm Springs, Royal Palms and Wo Shang Wai in addition to Chuk Yuen Tsuen; Pok Wai Village, Pok Wai and Tai Sang Wai. Longer distance views extend from the high-rise developments at the northern periphery of Yuen Long and east from the eastern periphery of Tin Shui Wai.

4.7 Views to the west extend from the low lying, flat wetland areas of the Mai Po area including the Mai Po Nature Reserve and fishponds to the east of the Shan Pui River.

4.8 The area from which any part of the proposed development would be visible may be relatively extensive to the south and west however, it should be noted that for the purposes of this assessment, a nominal approximate 6.5 km VE extends from the Application Site as it is considered that the visual impact generated by the proposed development would be insignificant beyond this distance.

4.9 Within the VE there are a number of Zones of Visual Influence (ZVIs) which represent areas from which there are different degrees of visibility of the proposals. These are as follows:

- **Primary Zone of Visual Influence** – Area from which the majority of the development can be seen is largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.

- **Secondary Zone of Visual Influence** – Area with more limited visibility of the Proposed Scheme due to intervening obstacles including a combination of existing infrastructure, built development and vegetation. As such the visible part of the Proposed Scheme is largely limited to the central and upper portions of the residential blocks.

- **Tertiary Zone of Visual Influence** – For the most part views of the Proposed Scheme are obscured or screened by intervening visual obstacles including the landform, mature tree growth and built development. Views limited to partial and glimpsed views of the upper portion of some of the proposed residential towers.

4.10 The importance of identifying the ZVIs is that this provides a clearer picture of the actual visibility of the Proposed Scheme and demonstrates that given the nature of the existing landscape there are few locations where the whole development would be visible and for the most part views are limited to the upper sections and roofs of the proposed buildings. The extent of the VE and the ZVIs are presented as **Figures 4.5** to **4.6 – Visual Envelope and Visually Sensitive Receivers**.

Visual Elements

4.11 **Figures 4.1 to 4.4** show the visual elements which shape the visual outlook and amenity of the area. These include attractors such as the upland setting of hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan and to the south and east the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay. The uplands form the backdrop to may of the views from the north, west and south of the Application Site while the wetlands and fishponds provide for open skies and longer distance views.

4.12 Visually detracting elements include the major infrastructural development such as the San Tin Highway and the associated engineering works including highways structures; and the piecemeal commercial and light industrial developments which line the highway corridor.

4.13 An important consideration in determining the potential visual impacts is the degree of visibility and has been described above this is largely determined by visual obstacles immediately adjacent to the Application Site boundary. For instance, low level views from many locations are obscured by a combination of the existing development, small knolls and mature tree growth which clothes the landscape.

4.14 Where there are views from the identified vantage points frequently these views are partial being obscured by intervening visual obstacles including existing and proposed development.

4.15 The photographs demonstrate that the landscape is both visually enclosed particularly at lower elevations within the wetland and fishpond areas to the south and west and the valley floors to the east.

4.16 The landscape will be characterised by a more urbanised developmental context with the implementation of the proposed San Tin Technopole Development, Ngau Tam Mei New Development Area; and the approved planning applications for the residential development to the south of the Application Site and it is considered that new developments of the scale of the Proposed Scheme can be accommodated within this landscape without causing significant additional visual impacts.

4.17 The ability of this new landscape to accommodate development and obscure views is an important consideration in assessing the potential impacts of the Proposed Scheme and its effect (if any) on the local landscape and visual context.

Other Planned and Committed Developments

San Tin Technopole Development

4.18 The planning of the San Tin Technopole Development will strike a balance between development and nature conservation. The development area comprises mainly the I&T Park and the San Tin Town Centre for providing diverse employment opportunities and various types of housing, as well as commercial uses, open space and community and infrastructural facilities. Major planning themes of the Technopole include:

- Developing a World Class I&T Hub - Together with the HSITP at the Lok Ma Chau Loop, the Technopole will supply about 300 ha of information and technology (I&T) uses;
- Ecological Conservation – The proposals include the establishment of the Sam Po Shue Wetland Conservation Park (SPS WCP). The park is located along the core section of the flight path for migratory birds, in close proximity to the Mai Po Nature Reserve and other wetlands and has large areas of productive fishponds. Within the proposed area, 328 ha will be used for the implementation of ecological and fisheries enhancement measures for the development at STLMC area of the Technopole, while the remaining 10 ha is tentatively reserved for eco-

education, eco-recreation and eco-tourism facilities. The proposals will enhance the ecological function and capacity of 288 ha of wetlands and fisheries resources of 40 ha of fishponds with active conservation management and modernised aquaculture to compensate for the loss of wetland habitats and fisheries resources arising from the development of the Technopole.

- Balanced, Vibrant and Liveable Community – The area will provide about 50,000 to 54,000 new flats of different housing to help address the housing shortage in the territory. The proposals also include provisions of land for government, institution and community (GIC) facilities and open space have adopted the ratio of 3.5m^2 per person.

4.19 The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Outline Zoning Plan (S/STT/1) dated 8th March 2024.

Ngau Tam Mei New Development Area

4.20 The development proposal for Ngau Tam Mei New Development Area (NTM) covering an area of approximately 127 ha includes about 46 ha of the land is proposed for developing the UniTown (including the land required by the third medical school). This area offers space for activities related to research and development (R&D) and includes the training of doctors. In addition, approximately 9-ha is provided for an integrated hospital. Apart from providing comprehensive healthcare services for the existing and new population in the Northern Metropolis the integrated hospital will be developed into a three-in-one teaching, training and research facility, providing training for medical and healthcare professionals, and conducting clinical trials and scientific research to facilitate the advancement of patient care. The layout of the proposed NTM development used in this assessment is based on the zoning indicated in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024.

Proposed Residential Developments

4.21 The future landscape and visual setting for the proposed Scheme will also include a number of planned and committed developments including the following;

- Yau Pok Road Light Public Housing (A/YL-MP/341) BH +10.65 mPD (3 storeys);
- Approved private housing development (Y/YL-NSW/7) BH +53.95 mPD (15 storeys);
- Sha Po North Public Housing (S/YL-KTN/9) BH +182.8 mPD;
- Approved private housing development (A/YL-KTN/663) BH +62.2 mPD (17 storeys);
- Approved private housing development (A/YL-KTN//604) BH +45.95 - 66.35 mPD (12-18 storeys including 1 basement);
- Approved Tung Shing Lei public and private housing development (LSPS/002) BH ~~(~~+99.9 mPD (24 storeys) and BH ~~(~~+99.3 mPD (26 storeys) respectively;
- Approved private housing development (A/YL-NSW/274) BH +75 mPD (8-21 storeys including 2 basements);
- Approved open storage (A/YL-NSW/276 ~~3~~) BH ~~(~~+46mPD (1-2 storeys);
- Approved private housing development (A/YL-NSW/242) BH +85.5mPD (4-26 storeys including 1-2 basements);
- Approved comprehensive development (A/YL-NSW/241) BH +23.5 mpD) (4 storey including 1 basement);
- Approved private housing development (A/YL-MP/287) BH +6.6 mpD (2 storeys);
- Approved private housing development (A/YL-MP/247) BH +15.35 mPD (3 storeys);
- Approved private housing development (A/YL-NTM/310) BH +15.7 mPD (3 storeys); and
- Approved private housing development (Y/YL-MP/10) +BH 59.85 mPD (14 -16 storeys).

Vantage Points

4.22 The Vantage Points (VPs) are identified as views from key strategic and popular local vantage points, as well as viewing locations from the village areas adjacent to the Application Site. For the purposes of this assessment and in accordance with current approaches the VPs are based on publicly accessible and popular locations. Priority is given during the selection to public viewpoints, open spaces and key pedestrian routes.

4.23 Based on the targeting of publicly accessible locations the representative VPs are listed below with a brief description of the existing view and their locations presented as **Figures 7.1** to **7.2** – Location of Photomontage Vantage Points.

- **Vantage Point 01**: View looking south west from Lok Ma Chau MTR Station (VP 01);
- **Vantage Point 02**: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02);
- **Vantage Point 03:** View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03);
- **Vantage Point 04:** View looking north west from Kai Kung Leng (VP 04);
- **Vantage Point 05**: View looking north from the spur of the Kai Kung Ridgeline (VP 05);
- **Vantage Point 06**: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06);
- **Vantage Point 07**: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07);
- **Vantage Point 08**: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08);
- **Vantage Point 09**: View looking south east from Tam Kon Chau Road (VP 09);
- **Vantage Point 10**: View looking south east from WWF Mai Po Nature Reserve Visitor Centre (VP 10);
- **Vantage Point 11**: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (VP 11);
- **Vantage Point 12**: View looking west from the Tsz Tong of Mai Po Tsuen (VP 12);
- **Vantage Point 13**: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP 13); and
- **Vantage Point 14**: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP 14).

4.24 Many of these locations are over a relatively short distance from the Application Site owing to the screening effect of the existing development, landform and mature vegetation.

5.0 Visual Impact Assessment

Sources of Visual Impact

5.1 The primary sources of visual impact will be due to the scale within essentially a flat low-lying landscape although the proposals will be seen in the context of the proposed San Tin Technopole Development; Ngau Tam Mei New Development Area and a number of other high and medium-rise residential developments planned for the area to the south of the Application Site.

5.2 The key issues to be addressed by the visual impact assessment will include:

- The potential impact of the Proposed Scheme on the visual amenity available to the immediately adjacent village and low-rise residential developments; low-lying fishpond and

wetland areas to the west and south of the Application Site and more elevated views from the upland areas to the north east and east.

- Development of an architectural design and the associated mitigation measures to minimise potential visual impacts as far as possible.
- Visual integration of the built form of the Proposed Scheme particularly in views from the west and south of the site although the proposals will be seen against a backdrop of existing hillsides.
- Development of a responsive architectural design and the associated mitigation measures to minimise potential visual impacts as far as possible which responds to both the existing context and the future planning context.

5.3 The predicted visual impact for each of the VPs is described in section 7.0 together with the proposed mitigation measures in accordance with PG-No. 41.

6.0 Visual Mitigation Measures

6.1 The proposed mitigation measures for the project are described below and shown on **Figure 3.1 to 3.4 – Proposed Scheme: Urban Design Considerations**.

6.2 The landscape and visual mitigation measures include two key levels of approach, the primary and secondary mitigation. The primary mitigation measures are based on the design, disposition, orientation and overall form of the Proposed Scheme whilst the secondary mitigation measures look to how the proposals can be treated to mitigate any potential impacts. It is the primary mitigation measures which shape the form of the architectural scheme and have the biggest effect on the mitigation of the potential visual impacts. The proposed mitigation measures include the following:

Primary Mitigation Measures

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise residential blocks stepping up on a north to south axis and from east to west. These medium rise blocks range in height from around +28.00 mPD to +42.00 mPD in the south east corner of the Application Site. The proposed building heights (BH) include 3-storey semi-detached and detached houses with a BH of +21.0 mPD; and series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00 mPD to +35.00 mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00 mPD).
- Disposition and orientation of the proposed blocks designed to minimise the potential impact on the visual amenity of the wetlands and fish pond areas to the north and west; and the existing residential developments surrounding the Application Site.
- The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break up the visual mass or bulk of the proposed development.
- Introduction of a visual corridor and two building separations on a north south axis and setbacks to the west and east which serve to break up the combined development frontage and avoid a potential wall effect. The gaps between buildings extend above the height of the low-rise houses at the northern edge of the Proposed Scheme, an area which is partially occupied by existing and proposed tree planting within the landscape buffer and fish pond bunds when viewed from the photomontage vantage points. These include:
  - Visual Corridor 1 (VC1) – approx. 16m in width;
  - Building Separation 1 (BS1) – approx. 12m in width;
  - Building Separation 2 (BS2) – approx. 11m in width;

- Building setback (west) – approx. 5 – 11m in width;
- Building setback (east) – approx. 14 – 33m in width;
- Gap in between buildings (Blocks D1-6 and C2-6) – approx. 78m in width (above an elevation of +21 mPD); and
- Gap in between buildings (Blocks C2-6 and C2-3) – approx. 14m in width (above an elevation of +21 mPD).

- Introduction of articulated building facades to further break-up the visual mass of the individual blocks through the manipulation of architectural form; and the creation of areas of light and shade.
- Location of car parking in the basement to maximise the area available for landscaping.

Secondary Mitigation Measures

- Other measures might include the use of colour and finishes for the architectural façade for the structures to minimise the prominence of the scheme. This includes the use of earth tones and colour blocking working with the massing and articulation of the structures.
- Landscaping including the introduction of new tree planting within the Application Site to break up the horizontal visual emphasis of the Proposed Scheme in low level views.
- Incorporation of a landscape buffer where space allows along the periphery of the Application Site to integrate or ground the development within the existing green areas which surround it and establish a human scale for the key landscape spaces at the G/F.
- Utilisation of a combination of heavy standard trees creating a more mature landscape with an immediate effect.
- Introduction of comprehensive urban design parameters as part of the detailed design stage of the project to establish the future character of the development from an architectural and landscape perspective. This includes the use of high quality hard and soft landscape measures including water features, sculpture, site furniture, lighting and seating.

6.3 It should be noted that the final architectural design and the appearance of the buildings will be refined during the detailed design stage of the project.

7.0 Residual Impacts

7.1 The residual visual impact is defined as the impact remaining after all practical methods of mitigation have been implemented. A series of computer-generated images or photomontages from the vantage points indicated on **Figures 7.1** to **7.2** are presented as **Figures 7.3** to **7.16**. The locations have been selected to demonstrate the range of viewing angles and viewing distances in relation to identified VPs, demonstrate the schemes 'fit' into the existing and future sub-urban context; and also demonstrate the degree of visibility from surrounding locations.

7.2 The photomontages show the existing situation with the implementation of the Planned and Committed Developments including the proposed San Tin Technopole Development and Ngau Tam Mei New Development Area; and a number of other residential projects together with the Approved Section 16 (OZP Compliant) Scheme; and the Proposed Scheme following the implementation of the proposed mitigation measures. Where the proposals are not visible, or views partially obscured a red dashed line is used to indicate their approximate location.

7.3 The text below provides a brief description of each of the views selected for the photomontages and provides an appraisal of visual changes (visual composition, visual obstruction, the effect on public viewers and the effect on visual resources) in accordance with TPB PG-No. 41.

7.4 **Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (VP 01)** (**Figures 7.3 and 7.4** refer). This vantage point, represents the view available vehicle travellers, at an elevation of +10 mPD and located at a distance of approximately 2765 m. This location offers panoramic views over the existing fishponds to the south and east of the station and the Lok Ma Chau Wetland compensation area and extends towards the low-rise village, light industrial, open storage and commercial development and low wooded knolls of the San Tin area. This eventually gives way to the uplands Ki Lun Shan and Kai Kung Leng which form the green backdrop to views. Views of the Application Site are largely obscured at a low level by a combination of the existing landform and mature tree growth on the fish pond bunds and the areas to the east. There are also distant views of the high-rise development on the eastern periphery of Yuen Long. The proposed Ngau Tam Mei New Development Area, San Tin Technopole Development and the new Residential development will form the middle ground of future views.

7.5 *Sensitivity of Public Viewers:* Low
The view from this vantage point, available to transient vehicle travellers on the MTR, is characterised by a combination of the manmade landscapes of fishponds and wetlands in the foreground, low-rise village areas and woodland / belts of trees in the middle ground; and the naturalistic mountain landscape as the backdrop. The view will undergo a change in character with the development of the San Tin Technopole Development with the introduction of high and medium-residential and I&T developments in the middle ground. The Technopole demonstrates that that owing to a combination of the viewing distance and the open ness of the views relatively major developments can be accommodated without a significant degradation in its inherent character and quality of the landscape and visual amenity. Despite the nature of the existing view the transient nature of the visually sensitive receivers results in allow sensitivity of public viewers. The degree of visibility towards the Application Site is partial and there are alternative views to the north, east and south.

7.6 *Visual Composition*: Compatible
The Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme would form a relatively small components in this view owing to a combination of its scale relative to the adjacent Technopole, the screening effect of intervening vegetation at low-levels and the scale of the landscape which surrounds the Application Site. The photomontages show the measures incorporated into the architectural design for the proposed to minimize its visual mass and avoid any wall effects in terms of the combined development frontage. These include the separation of the medium-rise components with the creation of a visual corridor and the stepped height of the blocks both in terms of the proposed building heights (BH) and the effect of perspective owing to the building disposition. The use of low-rise buildings along the northern periphery of the proposed scheme also serves to break up the visual mass of the development introducing a more faceted appearance and creating a more subtle transition with the surrounding landscape.

7.7 *Visual Obstruction*: Small
The degree of visual obstruction arising from the implementation of the Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme is considered to be small owing to a combination of the viewing distance and the relative scale of the proposals. In addition, the Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme will be viewed against a backdrop of committed developments such as the approved scheme for the Sha Po North Public Housing (S/YL-KTN/9) with a BH of +182.8 mPD, the high and medium-rise development of Yuen Long and the uplands of the Tai Lam Country Park.

7.8 *Effect on Public Viewers*: Slight
This view of the Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme is available to vehicle travellers at the MTR Lok Ma Chau Station with the potential VSRs confined to the MTR station, cross border facilities, semi-open-air platform and views from the windows of the MTR carriages travelling at a relatively high speed. As such the effect on public viewers from this

vantage point would also be slight.

7.9 *Effect on Visual Resources*: Small
The quality of the existing visual resources apparent in this view is considered to be high owing to the fishpond and wetland context with low-rise village type development within a framework of woodland and the mountain backdrop. However, given the viewing distance and the relative scale of the Proposed Scheme relative to the adjacent Technopole proposals, existing and committed developments which will form part of the lower elevation backdrop to the view the effect on visual resources due to both schemes would also be small. As is apparent in the photomontage the ridgeline formed by the uplands of the Tai Lam Country Park would also be maintained.

7.10 *Overall visual Impact*: Slightly adverse
Given the viewing distance and the relatively small scale of the proposals relative to the that of the adjacent Technopole proposals and the nature of the view available to VSRs the overall visual impact is considered to be slightly adverse to negligible for the Approved Section 16 (OZP Compliant) Scheme and to be slightly adverse for the Proposed Scheme. Based on the view available from this vantage point despite the maximum proposed BH of +76.1 mPD for the Proposed Scheme would not lead to a significant visual impact.

7.11 **Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP02)** (**Figures 7.5** and **7.6** refer**)**. This vantage point, at an elevation of +10 mPD and located at a distance of approximately 1680 m to the north east of the Application Site, is available to pedestrians and vehicle travellers on the west bound carriageway. Views from this location looking south west extend along the San Tin Highway corridor bounded to the north and south by mature tree growth which will be replaced by the proposed San Tin Technopole Proposed Ngau Tam Mei New Development Area and new Residential developments; serving to obscure views beyond. Views of the Application Site will be largely obscured by the proposed development in this area.

7.12 *Sensitivity of Public Viewers: Low*
This vantage point is available to transitory vehicle travellers and pedestrians crossing the footbridge to the north east of the Application Site. Views are largely enclosed by a combination of the existing landform and mature tree growth. Given a combination of the developed nature of the existing view with the large infrastructure associated with the highway and the transitory nature of views the sensitivity is likely to be low. The degree of visibility towards the Application Site is glimpsed / partial of the eastern edge of the site and there are alternative views to the north east from the foot bridge.

7.13 *Visual Composition*: Not readily apparent and compatible
The visual composition of the Approved Section 16 (OZP Compliant) Scheme will not be apparent and the Proposed Scheme is not readily apparent and compatible in views from this location owing to a combination of the viewing distance, its scale relative to the adjacent Technopole and the screening effect of the proposed roadside development. Views of the proposals would be limited to partial and glimpsed views of blocks C2.1 to C2.5 and some of the low-rise developments to the north of the Application Site. The visible portions of the Proposed Scheme are not sufficient to provide an indication of the overall visual composition although its scale and the disposition of the blocks are compatible with the Technopole proposals.

7.14 *Visual Obstruction*: Small blockage but not significant
The Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme would result in a relatively small additional blockage of the existing view of the wooded verge of the San Tin Highway at distance of some 1680m with views of the proposals being partially obscured by the

Technopole proposals and the proposals will not obscure views of any landscape features beyond the Application Site only the sky view above the development.

7.15 *Effect on Public Viewers*: Slight to negligible
The existing view will be largely contained within the San Tin Highway corridor by the Proposed San Tin Technopole Development on either side of the highway and given the viewing distance a small part of the Approved Section 16 (OZP Compliant) Scheme and Proposed Scheme would be visible. The implementation of the Technopole proposals would lead to a change in the existing view to a more urbanised character and the proposed would serve to partially obscure views of the Application Site. As such views of Proposed Scheme compared with the Approved Section 16 (OZP Compliant) scheme would be limited to the upper portions of the residential blocks the eastern periphery of the Application Site and the effect on transitory public viewers would be slight to negligible.

7.16 *Effect on Visual Resources*: Small
The road corridor will be visually enclosed Proposed San Tin Technopole Development and beyond the Ngau Tam Mei New Development Area and the new Residential development; and so, the quality of the existing visual resources apparent in this view are considered to be fair owing to the likely landscaping of the developments which frame the view. The visible section of the Proposed Scheme will lead to a small loss of the vegetation to the east of the Application Site and the sky view above it. The most significant impact upon this view will be the implementation of the Technopole proposals. Despite the lower BH the effect of the Approved S.12a (OZP Compliant) Scheme would also be small. As such the impact on visual resources arising from the Proposed Scheme is not considered to be significant.

7.17 *Overall visual Impact*: Slightly adverse
The existing landscape; characterised by a combination of highway infrastructures and the mature roadside tree planting will be replaced by the new development associated with the Proposed San Tin Technopole Development and beyond the Ngau Tam Mei New Development Area and the new Residential development and this will result in a more urbanised character. Views of the Proposed Scheme would be limited to some of the medium-rise blocks and low-rise houses (similar to the Approved Section 16 (OZP Compliant) Scheme) in the eastern portion of the Application Site. Given the viewing distance, the scale of the visible part of the Proposed Scheme and the screening effect of the intervening Technopole proposals the overall visual impact arising from the implementation of the Proposed Scheme compared with the Approved Section 16 (OZP Compliant) Scheme) would slightly adverse.

7.18 **Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)** (**Figure 7.7** and **7.8** refer). This vantage point, represent the views recreational users of the existing trial ascending from Ki Lung Shan Au towards the summit from the northern side of Kai Kung Leng at an elevation of +200 mPD and located at a distance of approximately 3555 m form the Application Site. The existing view extends along the Ngau Tam Mei valley towards the San Tin Highway and the low-rise residential developments of Fairview Park, Palm Springs and Royal Palms towards the fishpond and wetland areas of Mai Po and the Deep Bay Shenzhen River estuary with the skyline of Shenzhen forming the backdrop. Prior to the implementation of the Technopole proposals there will be relatively open oblique aerial views of the Application Site. Following implementation of the Proposed San Tin Technopole Development and beyond the Ngau Tam Mei New Development Area and the new Residential development views towards the application site will be obscured by the intervening development.

7.19 *Sensitivity of Public Viewers:* Low
This vantage point is available to recreational users of the trail leading to the summit of Kai Kung Leng and offers a relatively panoramic open views of the landscape to the north west framed to the north and south by the upland landform. With the implementation of the Technopole proposals the

landscape will be transformed to a more urban character and the visibility toward the Application Site will be obscured by proposed high-rise residential development at the south eastern periphery of the Technopole proposals. Alternative views extend towards the east.

7.20 *Visual Composition*: Not apparent
Views of the Application Site will be obscured by the intervening high-rise development of the Technopole proposals and so the visual composition of the Proposed Scheme (as with the Approved Section 16 (OZP Compliant) Scheme) will not be apparent.

7.21 *Visual Obstruction*: No Blockage
Given the screening effect of the intervening Technopole proposals the Proposed Scheme would not cause any visual obstruction.

7.22 *Effect on Public Viewers*: Negligible
As the Proposed Scheme will not be visible to trail walkers at this vantage point there will be a negligible effect on public viewers.

7.23 *Effect on Visual Resources*: Negligible
The Proposed Scheme similar to the Approved Section 16 (OZP Compliant) Scheme will have no effect on the visual resources apparent in this view owing the scale of the proposed intervening development.

7.24 *Overall Visual Impact*: Negligible
Given the scale and screening effect of the intervening Technopole proposals the Proposed Scheme as with the Approved Section 16 (OZP Compliant) Scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.25 **Vantage Point 04: View looking north west from Kai Kung Leng (VP 04)** (**Figures 7.9** and **7.10** refer). This vantage point is located at the summit of Kai Kung Leng at an elevation of +585 mPD and approximately 3935 m from the Application Site. The view from this location extends to the north, south and west extending from Kwu Tong to Lok Ma Cha, San Tin, Fairview Park, Palm Springs and Royal Palm to Yuen Long and Tin Shui Wai to Lau Fau Shan and Tsim Bei Tsui. The vista extends over the Mai Po wetlands to the Deep Bay with the skyline of Shenzhen forming the backdrop. The area of the fore and middle grounds of the view will be transformed with the implementation of the Proposed San Tin Technopole Development, Ngau Tam Mei New Development Area and the new Residential development.

7.26 *Sensitivity of Public Viewers:* Medium
The view for transient trail walkers is characterised by the open expanse of the low-lying village and agricultural landscape punctuated by islands of low-rise residential developments and traversed by infrastructure such as the San Tin Highway. With the implementation of the Technopole proposals and committed developments such as the approved schemes for planning applications A/YL-MP/287, A/YL-MP/341, A/YL-MP/247, A/YL-NTM/432 (with a BH not exceeding 21 mPD); the approved scheme for Y/YL-MP/10 (with a BH +59.85 mPD) and the approved scheme for planning application S/YL-KTN/9 (BH not exceeding +185 mPD); and the approved scheme for planning application A/YL-NSW/242 with a BH not exceeding +85.5mPD). As such the landscape and visual amenity of the area will be transformed to a more urban character particularly in the middle ground. Despite the developed nature of the landscape public viewers in this location are considered to have medium level of sensitivity. The degree of visibility towards the Application Site is open and there are alternative views to the north and south west.

7.27 *Visual Composition*: Compatible
The visual composition of the Proposed Scheme would be partially apparent from this location

particularly in terms of the scale, disposition and orientation of the proposed medium-rise residential blocks, the adoption of a stepped building height profile and the creation of visual corridor using the location of the low-rise houses. The visual composition of the Proposed Scheme similar to the Approved Section 16 (OZP Compliant) Scheme will be apparent and compatible. In terms of the schemes fit within the wider landscape the proposals form an extension of the Technopole high-rise built form creating an intermediate visual medium-rise structure between the proposed high-rise and the low-lying nature of the surrounding existing more rural landscape of fishponds and wetland areas. As such the visual composition is apparent and compatible with the future developmental context.

7.28 *Visual Obstruction*: Small
Owing to the viewing distance, the relative scale of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme and the elevated viewing position the proposal would be seen against the northern and western parts of the Application Site and the immediately adjacent fish ponds. Given these factors the proposals would lead to a small area of blockage of views. This would not be significantly different to the visual obstruction caused by the Approved Section 16 (OZP Compliant) Scheme.

7.29 *Effect on Public Viewers*: Slight
Given the scale of the proposals relative to their landscape setting, the extent of the existing residential development in the immediate area, the scale of the Technopole proposals and the distribution of committed developments to the south of the Application Site the appearance of the Proposed Scheme will be in tune with its future context and so the effect on public viewers will be slight, not significantly different to the Approved Section 16 (OZP Compliant) Scheme.

7.30 *Effect on Visual Resources*: Small
There will be a small additional impact on the visual resources visible from this location with the Proposed Scheme compared with the Approved Section 16 (OZP Compliant) Scheme replacing the views of the belt of woodland along the northern periphery of the Application Site and part of the fishponds contiguous with the site boundary.

7.31 *Overall Visual Impact*: Slightly adverse
Given the elevation of this vantage point, the viewing distance and the relative scale of the Proposed Scheme; and the proximity to existing and future developments the appearance of the Proposed Scheme will be in tune with the future developed character of the area. The proposals will form a small component of the overall view available from this location and so the overall visual impact will be slightly adverse. The overall visual impact arising from the Proposed Scheme will be slightly adverse compared with the Approved Section 16 (OZP Compliant) Scheme. It may be argued that both schemes form an extension of the Technopole proposals, and the Proposed Scheme provides a more subtle medium-rise transition between the proposed high-rise development and the surround low-lying landscape.

7.32 **Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 04)** (**Figures 7.11 and 7.12** refer). This vantage point is located on the trail following the ridgeline on the spur to the west of Kai Kung Leng at an elevation of around +375 mPD and a distance of approximately 2830 m. The view from this location extends to the north over the Ngau Tam Mei valley to secondary ridgeline to the San Tin - Lok Ma Chau development cluster and to the north west the extensive low- rise developments of Fairview Park, Palm Springs, Royal Palms and the Vineyard; and village developments such as Yau Mei San Tsuen and the San Tin Highway corridor. Beyond this the view extends to the fish pond and wetland areas of Mai Po to the Shenzhen River, Deep Bay and the skyline of Shenzhen. The fore and middle grounds of the view will be transformed with the implementation of the Proposed San Tin Technopole Development, Ngau Tam Mei New Development Area and the new Residential development.

7.33 *Sensitivity of Public Viewers:* Medium
The existing view for trail walkers at this location is characterised by the combination of low-rise residential, light industrial and commercial development set within a semi-rural landscape enclosed and bounded by upland areas and small wooded knolls. The landscape is well wooded, and this vegetation serves to integrate the existing development into the landscape context. Views extend to the fishpond areas and wetlands of Mai Po, to Shenzhen and the Deep Bay area. The future landscape context will be more developed in nature with the Technopole proposals and a number of committed residential developments to the south of the Application Site. Despite this transition to a more urbanised character the public viewers in this location are considered to have medium level of sensitivity. The degree of visibility towards the Application Site is largely obscured and there are alternative views to the north and west.

7.34 *Visual Composition*: Compatible
The visual composition of the Proposed Scheme would be apparent from this location particularly in terms of the scale, disposition and orientation of the proposed medium-rise residential blocks, the adoption of a stepped building height profile and the creation of visual corridor using the location of the low-rise houses. When viewed from this location the Proposed Scheme would form an extension of the Technopole high-rise built form creating an intermediate visual medium-rise structure between the proposed high-rise and the low-lying nature of the surrounding existing more rural landscape of fishponds and wetland areas. The view from this location also includes committed developments such as the approved schemes for planning applications A/YL-MP/287, A/YL-MP/341, A/YL-MP/247, and the approved scheme for Y/YL-MP/10 (with a BH +59.85 mPD). The visual composition of the Approved Section 16 (OZP Compliant) Scheme although obscured to greater degree by intervening development is also apparent and with the future developmental context.

7.35 *Visual Obstruction*: Small
The level of visual obstruction is likely to be small owing to a combination of the viewing distance, the scale of the Proposed Scheme relative to the adjacent Proposed Ngau Tam Mei New Development Area, San Tin Technopole Development and the new Residential development; and the elevated viewing position. The proposals would be seen against the northern and western parts of the Application Site and the immediately adjacent fish ponds. Given these factors the proposals would lead to a small area of blockage of views compared with the Approved Section 16 (OZP Compliant) Scheme.

7.36 *Effect on Public Viewers*: Slight
Based on the scale of the proposals relative to their future landscape setting, the extent of the existing residential development in the immediate area including the Technopole proposals and the distribution of committed developments to the south of the Application Site the appearance of the Proposed Scheme will be in tune with their context and so the effect on public viewers will be slight compared with the Approved Section 16 (OZP Compliant) Scheme.

7.37 *Effect on Visual Resources*: Small
There will be a small impact on the visual resources visible from this location with the Proposed Scheme replacing the views of the belt of woodland along the northern periphery of the Application Site and first row of fishponds to the north. This would not be significantly different than the Approved Section 16 (OZP Compliant) Scheme.

7.38 *Overall Visual Impact*: Slightly adverse
Given a combination of the elevation of this vantage point, the viewing distance and the scale of the Proposed Scheme relative to the adjacent existing and future developments its appearance will be in tune with the future developed character of the area. The proposals will form a small component of the overall view and so the overall visual impact will be slightly adverse. The Proposed Scheme appears to form an extension of the Technopole proposals and provides a

transition between the proposed high-rise development and the surround low-lying landscape. Similarly, the Approved Section 16 (OZP Compliant) Scheme will form a small component in the future views.

7.39 **Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)** (**Figures 7.13** and **7.14** refer). This vantage point, at an elevation of +10 mPD and an approximate distance of 2595m, represents the view available to pedestrians crossing the footbridge and vehicle travellers on the north bound carriageway for the San Tin Highway. The view extends north east along the corridor formed by the San Tin Highway bounded by mature tree growth with occasional glimpsed views of the landscape beyond. There will be glimpsed views of the Technopole proposals to the north east of the foot bridge filtered by the existing trees.

7.40 Sensitivity of Public Viewers: Low
This vantage point is available to transitory vehicle travellers and pedestrians crossing the footbridge to the south of the Application Site. Views are largely enclosed by mature tree growth. Given a combination of the developed nature of the existing view with the large infrastructure associated with the highway and the transitory nature of views the sensitivity is likely to be low. The existing roadside trees obscure views of the Application Site. Alternative views extend towards the south.

7.41 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening mature tree growth and so the visual composition of the Approved Section 16 (OZP Compliant) Scheme and Proposed Scheme will not be apparent.

7.42 Visual Obstruction: No Blockage
Given the screening effect of the intervening mature trees the Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme would not cause any visual obstruction.

7.43 Effect on Public Viewers: Negligible
As the Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme will not be visible to pedestrians or vehicle travellers at this vantage point there will be a negligible effect on public viewers.

7.44 Effect on Visual Resources: Negligible
The Approved Section 16 (OZP Compliant) Scheme and the Proposed Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.45 Overall Visual Impact: Negligible
Given the scale and screening effect of the intervening roadside trees the Proposed Scheme similar to the Approved Section 16 (OZP Compliant) Scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.46 **Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)** (**Figures 7.15** and **7.16** refer). This vantage point at an elevation of +3.2 mPD and some 2450 m from the Application Site is located to the north of Yau Pok Road. The existing view looking north east extends across two fish ponds in the foreground to the mature tree growth on the pond bund in the middle ground. Beyond this there are glimpsed views on the landscape beyond including the proposed San Tin Technopole Development and Ngau Tam Mei New Development Area, and the summit of Ki Lun Shan and the ridgeline of Kai Kung Shan.

7.47 *Sensitivity of Public Viewers:* Medium
The view for transient walkers is characterised by the enclosed nature of the fish pond landscape at lower elevations owing to the mature tree growth of the pond bunds. With the implementation of the Technopole proposals there will be glimpsed views of the central and upper floors of the high-rise residential developments and the I&T developments at the periphery. Despite the introduction of development into this landscape it is considered that public viewers in this location will have a medium level of sensitivity. The degree of visibility towards the Application Site is glimpsed and there are alternative views to the west although these too are enclosed by vegetation on the pond bunds.

7.48 *Visual Composition*: Not apparent
Views of the Proposed Scheme will be limited to the upper floors of a small number of the medium-rise residential blocks on the southern corner of the Application Site. There will also be some glimpsed views of the residential blocks to the south west of the Application Site through the canopies of the existing trees. Given this limited visibility of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme and their visual composition will not be apparent although the visible portions of the proposals will be compatible with the taller visible sections of the Technopole proposals.

7.49 *Visual Obstruction*: Small
Owing to the restricted visibility of the Proposed Scheme similar to the Approved Section 16 (OZP Compliant) Scheme the degree of visual obstruction will be limited to an area of clearing in the trees and some glimpsed views through the tree canopies and so the level of visual obstruction will be small.

7.50 *Effect on Public Viewers*: Slight
Given the nature of the existing view and the limited visibility of the Proposed Scheme; and the transient nature of the VSRs the effect on public viewers will be slight. This is similar to the Approved Section 16 (OZP Compliant) Scheme.

7.51 *Effect on Visual Resources*: Small
The loss of visual resources will be small owing to the limited visibility of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme and will be restricted to a small area of the sky view and glimpsed views of the upper floors of a small number of high-rise developments in Shenzhen.

7.52 *Overall Visual Impact*: Slightly adverse
The overall visual impact will be slightly adverse owing to the limited visibility towards the Proposed Scheme, with views being limited to the upper floors of a small number of the medium-rise residential blocks on the southern corner of the Application Site and glimpsed views of the residential blocks to the south west of the Application Site through the canopies of the existing trees. For the most part these limited views of the proposals will be available to a relatively few pedestrians. Similarly views Approved Section 16 (OZP Compliant) Scheme will be limited to the upper floors.

7.53 **Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)** (**Figures 7.17** and **7.18** refer). This vantage point at an elevation of +3.9 mPD and some 756 m to the west of the Application Site is located on a small access road on the bund between fishponds to the south of the Mai Po Nature Reserve. The existing view is characterised by a fish pond bounded by mature tree growth with glimpsed views of the small, wooded knoll adjacent to the San Tin Highway and more distant views of the uplands of the Tai Lam Country Park and the ridgeline of Kai Kung Leng (+585 mPD) and Kai Kung Leng (+375 mPD); and beyond this to the south east the summit of Lin Fa Shan (+550 mPD). These uplands form the backdrop to views of the

low-lying landscape of the San Tin and Mai Po areas. The landscape is punctuated by the buildings of small holdings associated with the fish ponds. The future visual context will contain the high-rise buildings of the proposed Ngau Tam Mei New Development Area, San Tin Technopole Development and the new Residential development appearing in the middle ground of the view from this location.

7.54 *Sensitivity of Public Viewers:* Medium
This landscape is used by a combination of the agricultural people, visitors and staff at the Mi Po Nature Reserve and hikers. Although relatively few in number these transient VSRs are able to enjoy a unique landscape and so the sensitivity of public viewers is considered to be medium. The degree of visibility towards the Application Site views is partial being obscured in some locations by the mature tree growth on the intervening pond bunds. There are alternative views to the south.

7.55 *Visual Composition*: Compatible
Views of the Proposed Scheme will be limited to the central and upper floors of the medium-rise residential blocks and glimpsed views of the low-rise houses at the north western edge of the Application Site. Low-level views of the proposed scheme are obscured by mature tree growth on the intervening bound bunds. The visible portion of the Proposed Scheme shows the terraced effect from north to south with the lower buildings being adjacent to the wetland compensation area. It also shows the stepped height profile utilised for the residential blocks on an east – west axis. The orientation and disposition of the blocks also creates an articulated development form with areas of light and shade serving to break up the visual mass of the Proposed Scheme. With the exception of block C1-4 the BH for the Proposed Scheme will also allow the preservation of the ridgeline in views from this location

The Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will be seen in the context of the taller buildings of the Technopole proposals and these establish a precedent for taller buildings in the landscape. The residential blocks of the Proposed Scheme ranging from +28.00 to +42.00 mPD form an intermediate step in between the high-rise development (+200 mPD) of the Technopole area to the lying landscape to the south and west. The eastern cluster of residential blocks of the Proposed Scheme will also be viewed against a backdrop of the high-rise development to the east. The composition of the Proposed Scheme will be apparent and compatible with its future landscape setting.

7.56 *Visual Obstruction*: Small
As the views of the Proposed Scheme will be limited to upper floors of the low-rise and medium-rise residential blocks respectively and given that the eastern potion will be seen against the high-rise development of the Technopole proposals the extent of visual obstruction is considered to be small and not significantly different to the Approved Section 16 (OZP Compliant) Scheme.

7.57 *Effect on Public Viewers*: Slight
For the relatively few transient VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole the effect on public viewers will be slight for the Proposed Scheme and Approved Section 16 (OZP Compliant) Scheme.

7.58 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the loss of part of the view of the mountain backdrop although it should be noted that part of this backdrop will be lost owing to the Technopole proposals, the proposed Ngau Tau Mei New Development Area and another section due to the committed residential development at the approved planning application LSPS/002, A/YL-NSW/274 with a BH not exceeding +99.9 mPD located to the south of the Application Site. Where the Proposed Scheme and Approved Section 16 (OZP Compliant) Scheme will be located in front of other committed high and medium-rise developments this represents a foreshortening of an already compromised view and so is not considered to be a loss of visual

resources. The BH of the slight for the Proposed Scheme and Approved Section 16 (OZP Compliant) Scheme would allow views ridgeline of the upland backdrop to be kept largely intact. As such it is considered that the effect on visual resources compared with the Approved Section 16 (OZP Compliant) Scheme will be small.

7.59 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few transient VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole and presence of other committed developments the overall visual impact of the Proposed Scheme compared with the Approved Section 16 (OZP Compliant) Scheme is considered to be slightly adverse. However, the impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole and Ngau Tau Mei New Development Area proposals.

7.60 **Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)** (**Figures 7.19** and **7.20** refer). This vantage point at an elevation of +3.2 mPD and some 550 m to the north of the Application Site is located on Tam Kon Chau Road. The existing view is characterised by a fish pond bounded by mature tree growth with glimpsed views of the small, wooded knoll adjacent to the San Tin Highway and more distant views of the uplands of the Lam Tsuen Country Park including Kai Kung Leng (+585 mPD) Kai Kung Leng (+375 mPD); and more distant views of Lin Fa Shan (+550 mPD). These uplands form the backdrop to views of the low-lying landscape of the San Tin and Mai Po areas. The landscape is punctuated by the buildings of small holdings associated with the fish ponds. With the implementation of the proposed San Tin Technopole Development and the new Residential development and the proposed Ngau Tam Mei New Development Area the visual context will be transformed to a more urbanised landscape with framed views of the mountain backdrop.

7.61 *Sensitivity of Public Viewers:* Medium
This landscape is used by a combination of the agricultural people and pedestrians and vehicle travellers on Tam Kon Chau Road. Given the character of the future view with the rural landscape and the intervention of the proposed San Tin Technopole Development, the new Residential development and the proposed Ngau Tam Mei New Development Area the sensitivity of public views is considered to be medium. The degree of visibility towards the Application Site views is open being partially obscured at low levels by the intervening mature tree growth on the intervening pond bunds. There are alternative views to the north.

7.62 *Visual Composition*: Compatible
Views of the Proposed Scheme will be relatively open with some lower-level views being obscured by the mature tree growth on the pond bounds to the north of the Application Site. In these locations visual access is limited to the central and upper floors of the medium-rise residential blocks and glimpsed views of the low-rise houses at the north western edge of the Application Site. The visible portion of the Proposed Scheme shows the terraced or stepped height effect from north to south with the lower buildings being adjacent to the wetland compensation area. It also shows the stepped height profile utilised for the residential blocks on an east – west axis with the large visual corridor (approximately 102m wide) at the eastern end the Application Site being apparent. In this view the Proposed Scheme forms an intermediate medium-rise step between the Technopole proposals and the lowing lying flat landscape to the south west. This view also demonstrates the architectural design which has sought to break-up the visual mass of the combined development frontage and adopts a developmental texture which is in tune with the scale of the existing landscape and visual context. The visual composition of the Approved Section 16 (OZP Compliant) Scheme although less visible owing to the reduced BH will also be apparent and compatible. Both schemes will be seen in the context of the taller buildings of the Technopole and the Ngau Tau Mei New Development Area proposals and these establish a precedent for taller buildings in the landscape. The composition of both the Approved Section 16 (OZP Compliant)

Scheme and the Proposed Scheme will be apparent and compatible with its future landscape setting.

7.63 *Visual Obstruction*: Medium
As the views of the Proposed Scheme will be largely limited to the central and upper floors of the medium-rise residential blocks and whilst the Proposed Scheme represents an intervention into a low-lying landscape it will be seen in the context of the high-rise Technopole and the Ngau Tau Mei New Development Area proposals. Given a combination of the viewing distance and the relative scale of the Proposed Scheme the extent of visual obstruction is considered to be medium compared with the Approved Section 16 (OZP Compliant) Scheme owing to its slightly increased scale.

7.64 *Effect on Public Viewers*: Moderate
Despite the relatively few transient VSRs, the viewing distance and the partial screening provided by mature vegetation the scale of the proposals will result in moderate effect on public viewers compared with the Approved Section 16 (OZP Compliant) Scheme however it should be noted that the character of the local area will be transformed from a semi-rural landscape to one which is more urbanised. Viewed in this context the proposals are not incompatible with their future landscape and visual context.

7.65 *Effect on Visual Resources*: Medium
Although the architectural design for the Proposed Scheme has sought to maintain views of the backdrop formed by the uplands to the east and south east through the location of significant visual corridor / gaps between the buildings and the orientation and disposition of the proposed medium-rise blocks there would be loss of sky view above the Application Site and this will result in a medium level of effect on the available visual resources compared with the Approved Section 16 (OZP Compliant) Scheme.

7.66 *Overall Visual Impact*: Moderately adverse
With consideration of the relatively few transient VSRs, the viewing distance, the screening provided by mature vegetation and mitigation measures including the disposition of the medium-rise blocks to avoid the upland backdrop and the measures to avoid a potential wall effect the overall visual impact will be moderately adverse compared with the Approved Section 16 (OZP Compliant) Scheme. The impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole and the Ngau Tau Mei New Development Area proposals.

7.67 **Vantage Point 10: View looking south east from WWF Mai Po Nature Reserve Visitor Centre (VP 10)** (**Figures 7.21** and **7.22** refer). This vantage point at an elevation of +5.82 mPD and some 720 m to the north west of the Application Site represents the view available from the landscape at the rear of the Visitor Centre. The existing view is characterised by a combination of the new landscaping at the edge of the Visitor Centre site in the foreground, glimpsed views of the fishponds beyond and backdrop of the upland landscape of Kai Kung Leng (+585 and +375 mPD). The future visual context will include glimpsed views of individual high-rise buildings of the proposed Ngau Tam Mei New Development Area and the San Tin Technopole Development in the middle ground of the view from this location.

7.68 *Sensitivity of Public Viewers:* Medium
This view is available to visitors and staff in the landscape at the rear of the Visitor Centre. Although relatively few in number these VSRs have view of the amenity planting surrounding the facility and framed partial and glimpsed views of the landscape to the south east. The view is partially interrupted by a solid metal at the edge of the adjacent fish pond. The degree of visibility towards the Application Site is glimpsed with only the eastern portion being visible. Views of the remainder

of the Application Site are obscured by the intervening vegetation. There are alternative views to the north east.

7.69 *Visual Composition*: Not apparent
Views of the Proposed Scheme will be limited to the eastern portion with four to five residential blocks and the roofs of the adjacent low-rise houses being visible. Views of the Approved Section 16 (OZP Compliant) Scheme will be similarly restricted with only the low-rise houses in the eastern portion of the site being visible. Given this limited visibility for both the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme their visual composition will not be apparent although the visible portions of the proposals will be compatible with the taller visible sections of the Technopole proposals and the approved developments to the south east of the Application Site.

7.70 *Visual Obstruction*: Small
Owing to the restricted visibility of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme the degree of visual obstruction will be limited to an area of clearing in the trees lining the intervening fishpond bunds and so the level of visual obstruction will be small.

7.71 *Effect on Public Viewers*: Slight
For the relatively few VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole the effect on public viewers arsing form the Proposed Scheme will be slight compared with the Approved Section 16 (OZP Compliant) Scheme.

7.72 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the loss of part of the view of the mountain backdrop famed either side by mature tree growth although it should be noted that part of this backdrop will be lost owing to the Technopole proposals Where the Proposed Scheme and to a lesser extent the Approved Section 16 (OZP Compliant) Scheme will be located in front of other committed high and medium-rise developments this represents a foreshortening of an already compromised view and so is not considered to be also of visual resources. The BH of both schemes would allow views ridgeline of the upland backdrop to be kept largely intact. As such it is considered that the effect on visual resources will be small.

7.73 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few VSRs, the viewing distance, screening provided by mature vegetation and the relative scale of the Technopole and presence of other committed developments the overall visual impact of the Proposed Scheme compared with the Approved Section 16 (OZP Compliant) Scheme is considered to be slightly adverse. However, the impact of the proposals should be viewed in light of the changes to the overall landscape and visual amenity of the area with the implementation of the Technopole proposals.

7.74 **Vantage Point 11**: **View looking south west from the proposed Sam Po Shue Wetland Conservation Park (VP 11)** (**Figures 7.23** and **7.24** refer). This vantage point, at an elevation of +4.0 mPD and an approximate distance of 650 m, represents the view that will be available to the visitors to the future Sam Po Shue Wetland Conservation Park. The view and visual access to the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will also be subject to the proposed landscape treatment of the intervening park area. Based on the existing situation including the mature tree growth along the periphery of the village in the foreground it is unlikely that the proposals will be visible from this location. The view extends south west and will include glimpsed views of the landscape beyond including the Technopole and NTM proposals.

7.75 Sensitivity of Public Viewers: Medium
This vantage point will be available to visitors to the future Sam Po Shue Wetland Conservation Park although views of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme are

likely to be obscured by mature tree growth at the edge of the village in the middle ground. Given a combination of the developed nature of the future view and the transitory nature of viewers the sensitivity is likely to be medium.

7.76 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening mature tree growth and so the visual composition of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will not be apparent.

7.77 Visual Obstruction: No Blockage
Given the screening effect of the intervening mature trees the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme would not cause any visual obstruction.

7.78 Effect on Public Viewers: Negligible
As the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will not be visible to visitors to the future Sam Po Shue Wetland Conservation Park there will be a negligible effect on public viewers.

7.79 Effect on Visual Resources: Negligible
The Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.80 Overall Visual Impact: Negligible
Given the scale and screening effect of the intervening mature trees the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme would not give rise to visual impacts in views from this location and so the overall visual impact is negligible.

7.81 **Vantage Point 12**: **View looking west from the Tsz Tong of Mai Po Tsuen (VP 12)** (**Figures 7.25 and 7.26** refers). This vantage point, at an elevation of +3.5 mPD and an approximate distance of 398 m, represents the view that will be available to the village residents in the courtyard outside the Tsz Tong in the centre of Mai Po Tsuen. As demonstrated by the photograph of the existing situation the existing village houses at the edge of the courtyard obscure views to the south west and their roofs form the visual horizon.

7.82 Sensitivity of Public Viewers: Medium
This vantage point will be available to village residents in the courtyard outside the Tsz Tong in the centre of the village. The view is characterised by the existing village houses which obscure views of the landscape beyond. Given the nature of the existing view the sensitivity of viewers is likely to be medium.

7.83 Visual Composition: Not apparent
Views of the Application Site will be obscured by the intervening village development and so the visual composition of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will not be apparent.

7.84 Visual Obstruction: No Blockage
Given the screening effect of the intervening village houses the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme would not cause any visual obstruction.

7.85 Effect on Public Viewers: Negligible
As the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will not be visible to village residents in the courtyard outside the Tsz Tong there will be a negligible effect on public viewers.

7.86 Effect on Visual Resources: Negligible
The Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme will have no effect on the visual resources apparent in this view owing the scale of the intervening mature tree growth.

7.87 Overall Visual Impact: Negligible
Given the scale and screening effect of the intervening village houses the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme would not result in visual impacts in views from this location.

7.88 **Vantage Point 13**: **View looking north west from cycle track along the eastern boundary of "Open Space" zone** (**VP 13**) (**Figures 7.27** and **7.28** refer). This vantage point at an elevation of +6.7 mPD and some 330 m to the south east of the Application Site represents the view available for cyclists and pedestrians on the cycle track along the eastern boundary of the future Open Space. The existing view is characterised by a combination of an open storage area and vehicular parking in the foreground with glimpses of the existing low-rise houses (Royal Palm) largely obscured by mature tree growth in the middle ground. Beyond this there are views of some of the taller office towers in Shenzhen including the Shenzhen International Chamber of Commerce and the Ping'an International Financial Center.

7.89 *Sensitivity of Public Viewers:* Medium
This view is available to cyclists and pedestrians in a more elevated position than the future Open Space and will be characterized by the landscape of the open space including it is assumed additional amenity tree and shrub planting. This combined with the mature tree growth at the edge of the Royal Palm development will form a vegetated fore and middle ground. The degree of visibility towards the Application Site views will be partial with views limited to the upper portion of the visible residential blocks for both the Proposed and to lesser extent the Approved Section 16 (OZP Compliant) Scheme. Views of the remainder of the Application Site are obscured by the intervening vegetation. There are alternative views to the south west east.

7.90 *Visual Composition*: Compatible
Views of the Proposed Scheme will be limited to the upper floors of the 6-8 and 6-10 storey medium-rise residential blocks at the eastern end of the Application Site. Low-level views of the proposed scheme are obscured by mature tree growth at the edge of the Royal Palm development and potentially any tree planting within the future Open Space. The visible portion of the Proposed Scheme appears to be stepped owing to the orientation and disposition of the proposed residential blocks. The visible section to the south west appears to be an extension of the visible part of the Royal Palm development whilst the four blocks to the north east appear to step down from east to west. These two clusters of visible development are separated by an apparent visual corridor created with views of the lower profile developments in between being obscured by intervening vegetation. The orientation and disposition of the blocks also creates an articulated development form with areas of light and shade serving to break up the visual mass of the Proposed Scheme. The composition of the Proposed Scheme will be apparent and compatible with its future landscape setting. Views of the Approved Section 16 (OZP Compliant) Scheme would also be limited to the upper floors of the low-rise houses at the eastern portion of the Application Site.

7.91 *Visual Obstruction*: Small
As the views of the Proposed Scheme will be limited to upper floors of the two small sections of the medium-rise residential blocks the extent of visual obstruction is considered to be small. Given the reduced visibility of the Approved Section 16 (OZP Compliant) Scheme visual obstruction would also be small.

7.92 *Effect on Public Viewers*: Slight
For the relatively few transient VSRs, the screening provided by mature vegetation at the edge of the Royal Palm development and the relatively small scale of the visible part of the Proposed

Scheme compared with the Approved Section 16 (OZP Compliant) Scheme the effect on transient public viewers will be slight.

7.93 *Effect on Visual Resources*: Small
The effect on the visual resources is considered to be small owing to the limited visibility of the Proposed and the Approved Section 16 (OZP Compliant) Schemes and the loss of a small part of the sky view above the eastern end of the Application Site. There would be no impact on any other visual resources apparent in the view from this location.

7.94 *Overall Visual Impact*: Slightly adverse
Given a combination of the relatively few transient VSRs, the screening provided by mature vegetation at the edge of the Royal Palm development and potentially within the future Open Space and the relatively small scale of the visible part of the Proposed Scheme the overall visual impact is considered to be slightly adverse compared with the Approved Section 16 (OZP Compliant) Scheme.

7.95 **Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen** (**VP 14**) (**Figures 7.29** and **7.30** refer). This vantage point, at an elevation of +5.0 mPD and an approximate distance of 750 m, represents the view that will be available to the visitors looking north into the future Sam Po Shue Wetland Conservation Park. It is assumed that the design for the proposed park will seek to preserve existing trees particularly at the interface with existing village development, and so the view will remain largely unchanged. Based on the existing situation including the mature tree growth in the foreground it is likely that there will be a very limited glimpsed view of the Application Site from this location. The view extends north and will include glimpsed views of the Technopole proposals.

7.96 Sensitivity of Public Viewers: Medium
This vantage point will be available to visitors to the future Sam Po Shue Wetland Conservation Park although views of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme are likely to be largely obscured by the mature tree growth in the foreground. Given the nature of the future view and the transitory nature of viewers the sensitivity is likely to be medium.

7.97 Visual Composition: Not apparent
Views of the will be largely obscured by the intervening mature tree growth with just the upper portion of two to three blocks of the Proposed Scheme at the eastern end of the Application Site being visible through the gap in the trees. As such although there will appear to be some stepping of the building height owing to the orientation and disposition of the blocks the visual composition will not be readily apparent.

7.98 Visual Obstruction: Small
Given the screening of large part of the Proposed Scheme and the Approved Section 16 (OZP Compliant) Scheme by the existing mature growth the degree of visual obstruction will be small.

7.99 Effect on Public Viewers: Slight
Views of the Proposed Scheme will be limited to the upper portions of two to three blocks at the eastern end of the Application Site and so the effect on public views will be slight. Similarly views of the Approved Section 16 (OZP Compliant) Scheme will be limited to the upper floors of small number of houses at the eastern end of the Application Site.

7.100 Effect on Visual Resources: Small
The Proposed Scheme and to a reduced extent the Approved Section 16 (OZP Compliant) Scheme will obscure views over small area of the sky view above the eastern end of the Application Site however this forma small component of the overall view the effect on visual resources will be small.

7.101 Overall Visual Impact: Slightly adverse
As the visible portion of the Proposed Scheme and Approved Section 16 (OZP Compliant) Scheme from a small component of the overall view from this location and the likely preservation of the existing intervening trees at the interface with the surrounding villages the change in the overall visual impact is considered to be slightly adverse.

8.0 Conclusion

8.1 In general, the existing landscape and visual amenity is characterised by a combination of the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay and the backdrop of the hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan. There are also some relatively large-scale existing developments within the area including low-rise developments such as Fairview Park; and Palm Springs, Royal Palms and Wo Shang Wai in addition to Chuk Yuen Tsuen; Pok Wai Village, Pok Wai and Tai Sang Wai. Longer distance views extend from the high-rise developments at the northern periphery of Yuen Long and east from the eastern periphery of Tin Shui Wai. The area is also traversed by the significant infrastructure of the San Tin Highway and the piecemeal commercial and light industrial developments which line the highway corridor. The skyline of Shenzhen to the north and west also forms a significant feature in the landscape and the backdrop to views from the south and east. It should also be noted that this is a landscape which will be subject to significant change in the future moving from a semi-rural character to one which is more urbanised with developments such as the San Tin Technopole Development, Ngau Tam Mei New Development Area and a number of approved residential developments to the south of the Application Site. These developments serve to shape the future visual context of the local area.

8.2 A detailed review of the Application Site and its immediate context has revealed that the visual envelope and the primary zone of visual influence from where the whole development is visible is largely contained in close proximity to the Application Site within the area of fishponds and their belts of trees immediately to the north of the Application Site. The second and tertiary zones of visual influence are largely located on areas of low-lying fishponds and wetlands to the north west, west and south west of the Application Site and the upland areas of the Lam Tsuen Country Park to the east and south east. Views range from more open views of the Application Site from the upland areas to the east to views which are largely partial and glimpsed from the low-lying areas to the west.

8.3 The Proposed Scheme together with the other approved developments within the local area including the Technopole and Ngau Tam Mei New Development Area proposals fit relatively comfortably within its future context. The predicted visual impacts for the vantage points mainly range from slightly adverse to moderately adverse. The latter are located immediately adjacent to the Application Site and enjoy more open views of the Proposed Scheme. For the most part views are partially obscured resulting is limited visibility of the Proposed Scheme. **Figures 7.3** to **7.30** attached to this annex show a comparison of the Proposed and Approved S16 (OZP compliant) Schemes and **Table 8.1** a comparison of the predicted visual impacts.

8.4 The Approved S16 (OZP compliant) Scheme has maximum building height of around +21.3 mPD with the predicted visual impacts ranging from Slightly Adverse to Negligible. For the most part the impacts arising from both the Approved (OZP compliant) Scheme and the Proposed Scheme are not significantly different owing to a combination of the viewing distances, the panoramic nature of the available view and the scale of the adjacent committed and planned developments.

8.5 The Proposed Scheme for the Application Site adopts a proposed relaxation in the BH with the maximum height of the medium rise blocks of +42.00 mPD. The proposed building heights (BH)

include 3-storey semi-detached and detached houses with a BH of +21.0 mPD; and series of medium-rise residential blocks. These include 6 to 8-storey blocks (+28.00 mPD to +35.00 mPD); and 6 to 10-storey blocks (+28.00 mPD to +42.00 mPD). The proposals adopt a stepped building height profile from north to south and along the east – west axis. The disposition and orientation of the proposed blocks is designed to minimise the potential impact on the visual amenity of the Wetland Restoration Area, the future SPS Wetland Conservation Park; and the fish pond areas to the north and west. The overall development form also includes Introduction of a visual corridor (approximately 16m wide) on a north-south axis through the development; two building separations (approximately 12m and 11m wide) and gaps between buildings (approximately 78 and 14m wide) which tother serve to break up the combined development frontage and avoid a potential wall effect. There are also building setbacks at the eastern and western edges of the Application Site. This articulation and layering of the development, the scale of the individual blocks and stepped building height serve to reduce its apparent scale and reduce its overall visual mass.

8.6 The selection of vantage points has been comprehensive covering all the potential viewing angles from publicly accessible locations. As is clearly demonstrated by the photomontages there are few locations from where the Proposed Scheme can be seen in its entirety. In many of the locations views of the proposals are obscured to some degree by a combination of the intervening landform, mature vegetation and built structures; and in some locations by the Technopole and Ngau Tam Mei New Development Area proposals. In the few locations where there will be views of the proposals these are largely partial with the central and upper portions of the Proposed Scheme being visible above the intervening mature vegetation of the pond bunds to the north, west and south west of the Application Site.

8.7 When viewed from the selected vantage points the Proposed Scheme and Approved (OZP Compliant) Scheme together with the other approved developments within the local area including the Technopole and Ngau Tam Mei New Development Area proposals fit relatively comfortably within its future context. The Technopole proposals adjacent to the Application Site with a maximum BH of around +76.1 mPD include residential buildings with a BH of up to +200 mPD. Whereas the Ngau Tam Mei New Development Area will potentially have buildings ranging from +90 mPD to +170 mPD. This 'comfortable fit' is in part due to the scale of the proposals and the architectural enhancement measures designed into the Proposed Scheme. It would be unrealistic to think that there would be no adverse impacts however this must also be considered in terms of the nature and extent of existing and future views. The predicted visual impacts for the vantage points mainly range from slightly adverse to moderately adverse. The latter are located immediately adjacent to the Application Site and enjoy more open views of the Proposed and Approved (OZP Compliant) Schemes. For the most part views are partially obscured resulting is limited visibility of the Proposed Scheme.

8.8 For vantage point 01 the viewing distance is some 2765 m and vantage point 04 3935m and at this distance the Proposed and Approved S16 (OZP compliant) Schemes do not appear significantly different owing to the relative scale of the proposals against the adjacent approved and committed developments including the proposed San Tin Technopole Development and the Proposed Ngau Tau Mei New Development Area (+90 mPD to +170 mPD); and the intervening mature tree growth on the pond bunds.

8.9 In views from vantage points 03, 06, 11 and 12 views of both schemes are obscured by intervening mature vegetation and existing village development and or approved and committed developments.

8.10 In vantage points 02, 04, 05, 07, 08, 10, and 14 the future views of both the Proposed and Approved S16 (OZP compliant) Schemes will be largely obscured by the intervening development such as the proposed San Tin Technopole Development and the Proposed Ngau Tau Mei New Development Area (+90 mPD to +170 mPD); and mature tree growth in the fore and middle grounds of the views.

8.11 Vantage point 09 at some 550 m provide partial views of the upper portion of both the Proposed and Approved S16 (OZP compliant) schemes with the Proposed Scheme being more visible owing to its larger maximum height. The predicted impacts are Moderately Adverse and Slightly Adverse respectively. However, the overall visual impact for the two schemes is not considered to be significantly different particularly given the proximity and scale of the approved and planned developments such the Proposed Ngau Tam Mei New Development Area and the San Tin Technopole Developments which will significantly change if the landscape and visual amenity of the area which forms the development context.

8.12 Similarly, vantage point 13, at 330 m from the Application Site, will be characterized by views of the upper potions of some of the residential blocks and low-rise houses visible above the existing skyline formed by mature trees and existing village houses. The Proposed Scheme will be more prominent than the Approved S16 (OZP compliant) Scheme however given the nature of the existing view the predicted impact will be Slightly Adverse.

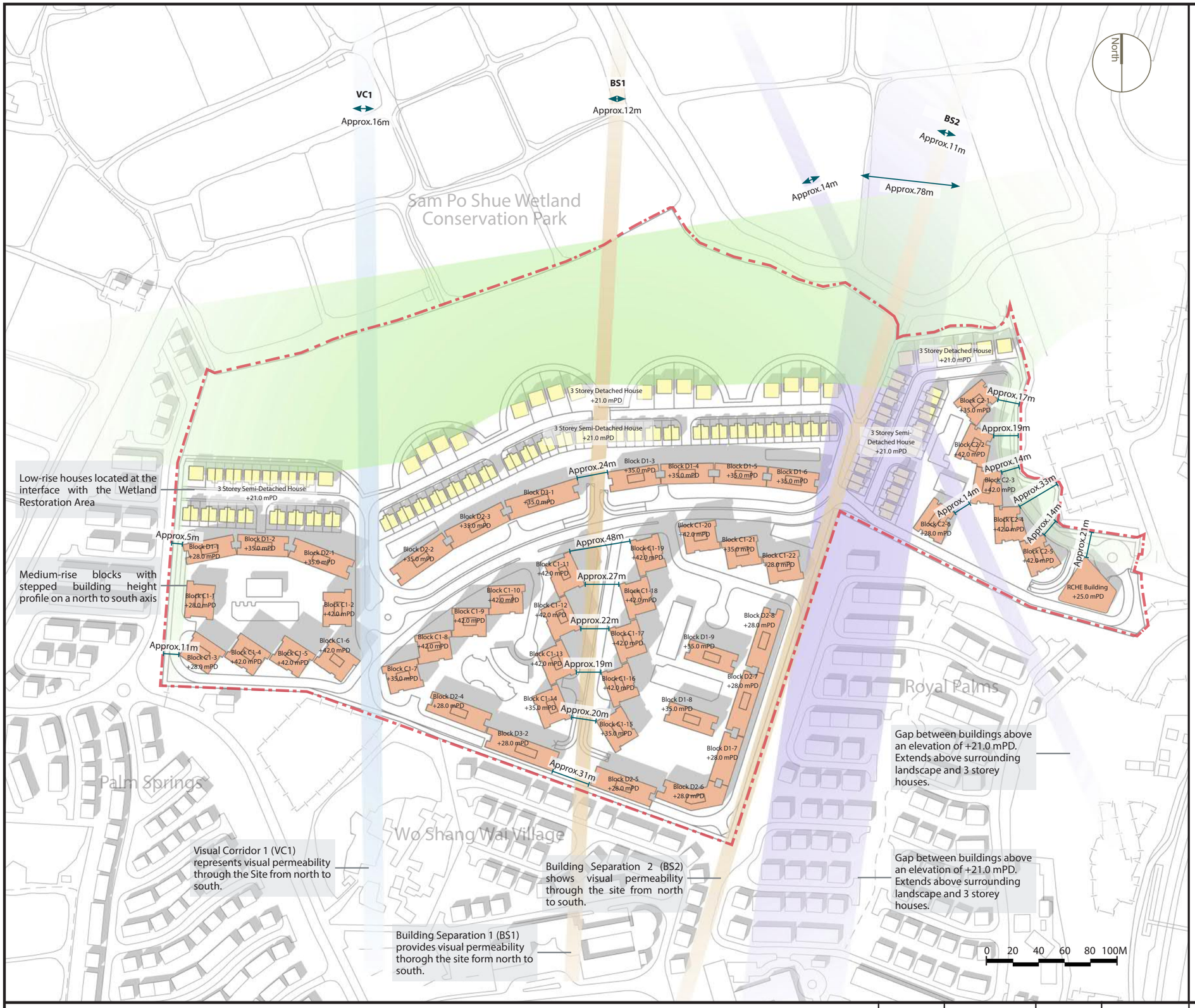
Table 8.1 Summary of Visual Impact Assessment Ratings

Vantage Point (VP)	Sensitivity of Public Viewers	Visual Composition	Visual Obstruction	Effect on Public Viewers	Effect on Visual Resources	Overall Visual Impact
VP 01: View looking south west from Lok Ma Chau MTR Station	Low	Compatible	Small	Slight	Small	Slightly Adverse
VP 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen)	Low	Not readily apparent and compatible	Small blockage but not significant	Slight to negligible	Small	Slightly Adverse
VP 03: View looking north west from the hiking trail to the summit of Kai Kung Leng	Low	Not apparent	No Blockage	Negligible	No Effect	Negligible
VP 04: View looking north west from Kai Kung Leng	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 05: View looking north from the spur of the Kai Kung Ridgeline	Medium	Compatible	Small	Slight	Small	Slightly adverse
VP 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village)	Low	Not apparent	No Blockage	Negligible	Negligible	Negligible
VP 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai	Medium	Not apparent	Small	Slight	Small	Slightly Adverse
VP 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 09: View looking south east from Tam Kon Chau Road	Medium	Compatible	Medium	Moderate	Medium	Moderately Adverse

Vantage Point (VP)	Sensitivity of Public Viewers	Visual Composition	Visual Obstruction	Effect on Public Viewers	Effect on Visual Resources	Overall Visual Impact
VP 10: View looking south east from WWF Mai Po Nature Reserve Visitor Centre	Medium	Not apparent	Small	Slight	Small	Slightly Adverse
VP 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park	Medium	Not apparent	No Blockage	Negligible	Negligible	Negligible
VP 12: View looking west from the Tsz Tong of Mai Po Tsuen	Medium	Not apparent	No Blockage	Negligible	Negligible	Negligible
VP 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone	Medium	Compatible	Small	Slight	Small	Slightly Adverse
VP 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen	Medium	Not apparent	Small	Slight	Small	Slightly Adverse

8.13 Despite the relative scale of the Proposed Scheme the factors described above together with the adoption of a responsive architectural design the implementation of the proposals would not significantly detract from the existing landscape and visual amenity of the local area. Although the Proposed Scheme will be part of a dramatic change in the existing sub-urban character of the existing landscape the future visual context is represented by a much more developed character The proposals are considered to be visually compatible with this future context. Based on this assessment the Proposed Scheme would not have a significant additional impact compared with the Approved (OZP) Compliant Scheme.

Visual Impact Assessment Figures



LEGEND

- Application Site Boundary
- Proposed Blocks/ Houses
- Proposed Low-Rise Houses (detached and semi-detached)
- Proposed Medium-Rise Blocks
- Proposed Building Setbacks
- Proposed Visual Corridors (Between Proposed Blocks)
- Building Seperation (Between Proposed Blocks)
- Gap between buildings above an elevation of +21.0 mPD.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO. Figure 3.1 REV B

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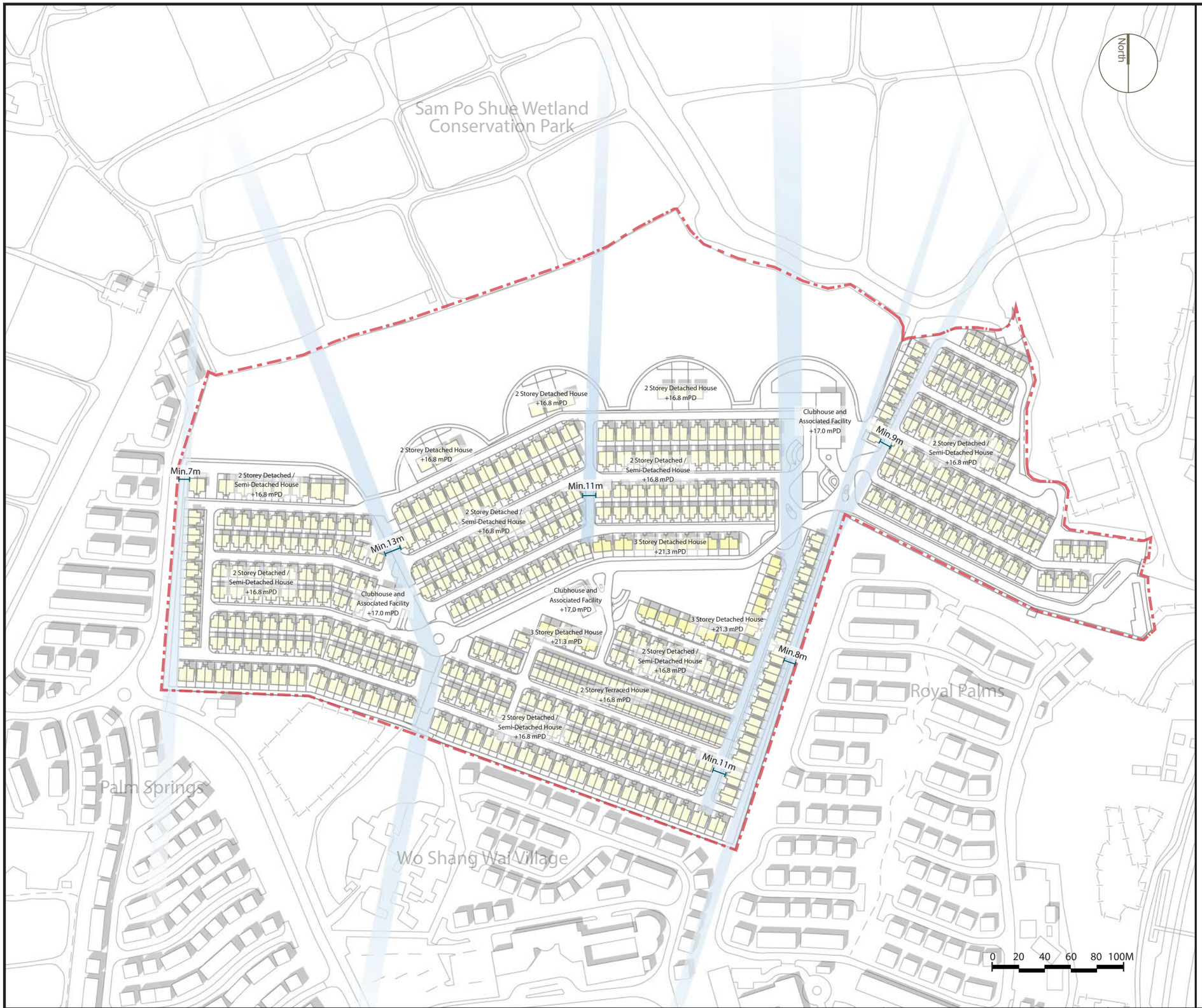

LEGEND

- Application Site Boundary
- Proposed 2 Storey Detached House
- Proposed 3 Storey Detached House
- Proposed 2 Storey Detached / Semi-Detached House
- Proposed 2 Storey Terraced House
- Proposed Visual Corridors (Between Proposed Blocks)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Approved OZP Compliant Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 3.1A	REV	-

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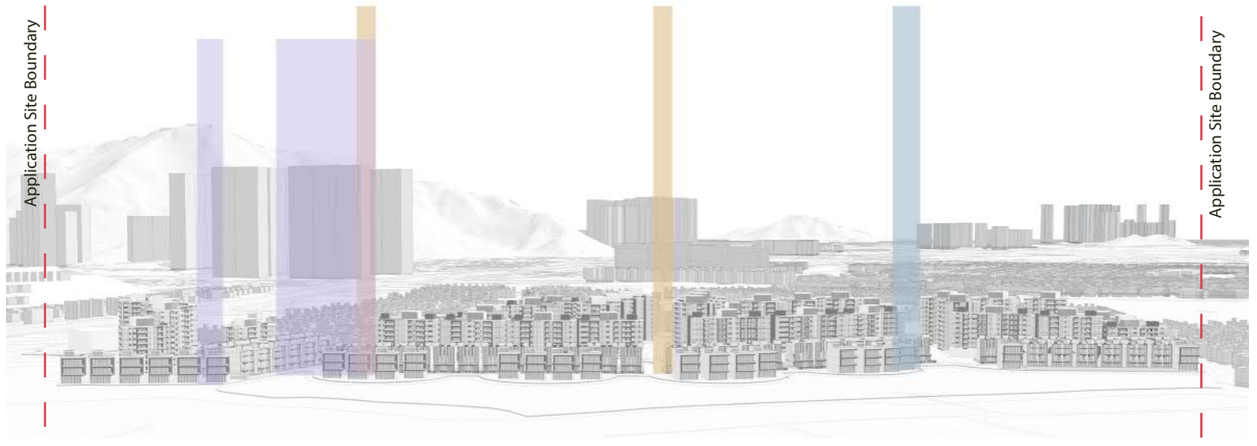
View from the Wetland Conservation Park of the Proposed Scheme

Visual Permeability

The design for the Proposed Scheme has enhanced visual permeability when viewed from the north and south through the incorporation of three visual corridors.

This is achieved through disposition of the proposed medium-rise residential blocks and the location of the low-rise houses to create a significant north –south visual corridors through the Application Site with a minimum widths of approximately of 68.6m, 18.9 and 18.3m. The Proposed Scheme also adopts a significant setback of the medium-rise blocks from the northern Application Site boundary.



View from the Wetland Conservation Park of the Proposed Scheme

- Building Seperation (bewteen Proposed blocks)
- Permeability within Application Site
- Gap between buildings above an elevation of +21.0 mPD.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Urban Design Considerations: Visual Permeability

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FIGURE NO.	Figure 3.2	REV	B

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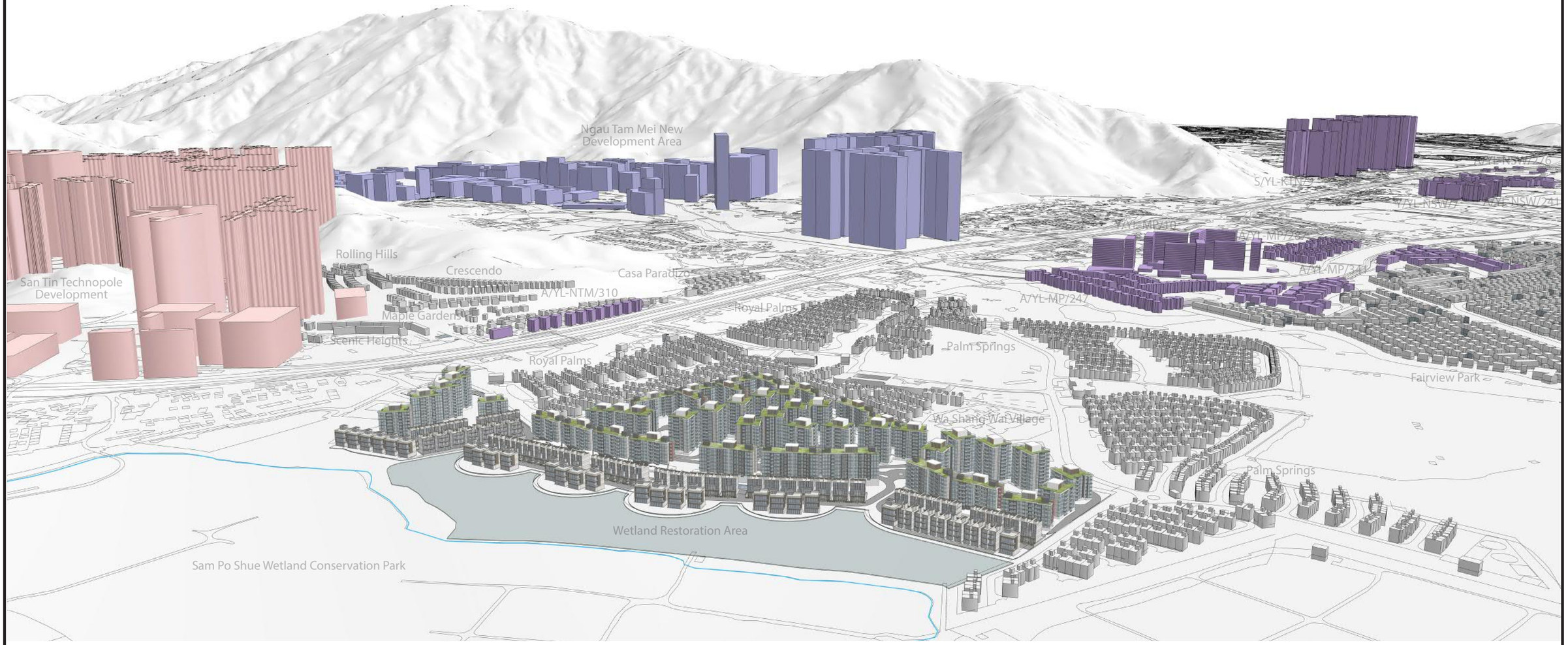

Existing Developments

Ngau Tam Mei New Development Area

San Tin Technopole Development

Approved Development

SPS Wetland Conservation Park

Urban design considerations

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise residential blocks stepping up on a north to south axis and from east to west and vice versa. These medium rise blocks range in height form around +28.00 mPD to +42.00 mPD in the south east corner of the Application Site. Disposition and orientation of the proposed blocks designed to minimise the potential impact on the visual amenity of the wetlands and fishpond areas to the north and west.
- The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.
- Introduction of three visual corridors on a north south axis through the development which serves to break up the combined development frontage and avoid a potential wall effect.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 3.3	REV	A

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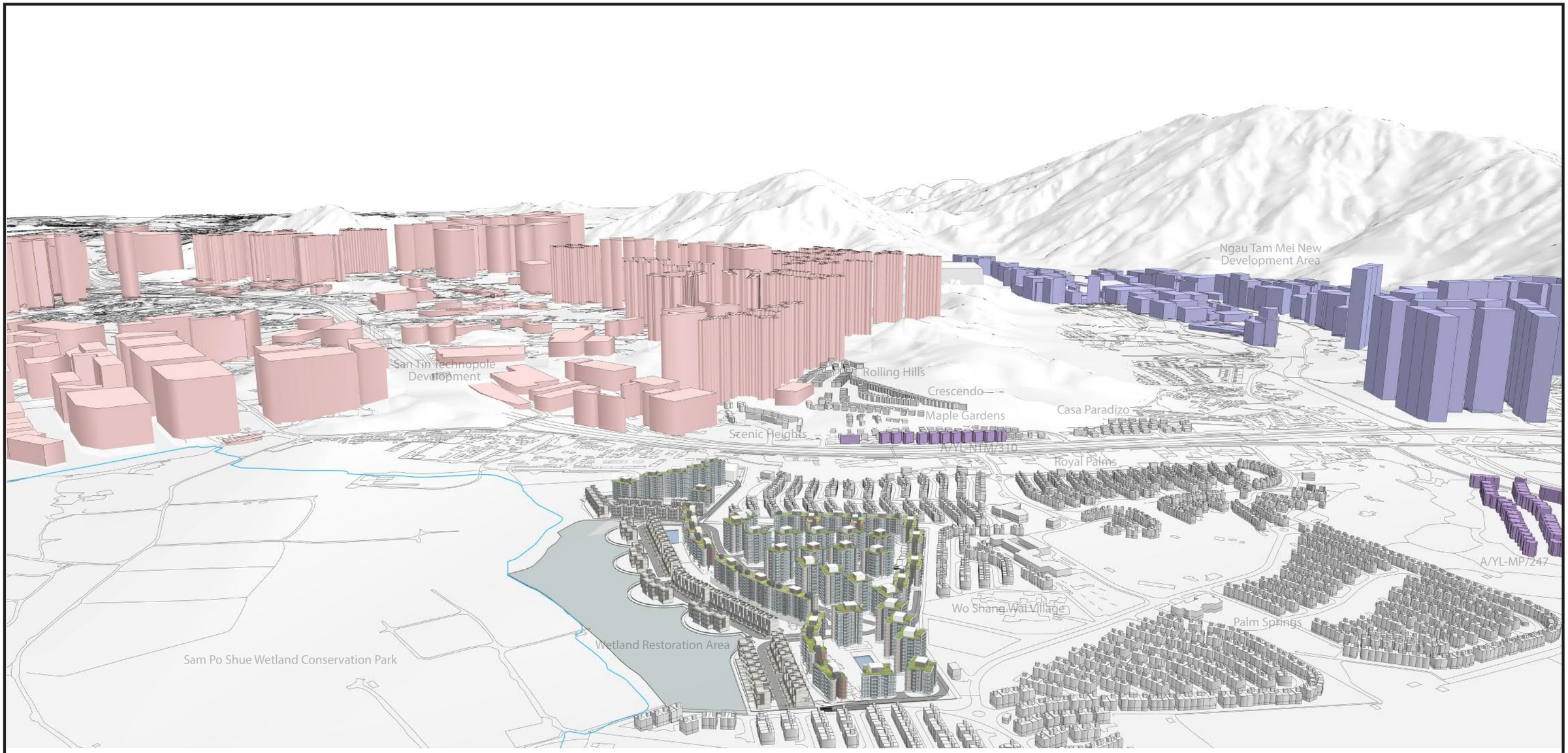

Existing Developments

Ngau Tam Mei New Development Area

San Tin Technopole Development

Approved Development

SPS Wetland Conservation Park

Urban design considerations

- Introduction of responsive building heights ranging from 3 storey houses at the northern periphery of the Application Site adjacent to the proposed Wetland Restoration Area to a series of medium-rise Introduction of responsive building heights ranging The image shows the stepped height profile incorporated into the Proposed Scheme and the disposition and orientation of the proposed medium-rise residential blocks which with the visual corridors view also shows the scale of the Proposed Scheme relative to the scale of the technopole proposals.

- The building height profile is arranged to have 6-storey blocks at the southern boundary edges, facing surrounding private residential houses. This proposed intensity of 6-storeys is considered compatible in scale with the surrounding private residential developments, aligns with the existing OU(CDWRA) zoning height, and has insignificant visual impact at the pedestrian public vantages in the surrounding neighborhood. The highest building heights of maximum 10-storey blocks are concentrated at the central area of the Site, where it would have the least ecological impact to the wetlands in the north, and the least visual impact to the southern neighborhood, while optimizing the development potential of the site.

- The lowest building heights are the 3-storey houses at the northern portion of the site, facing the existing wetlands (including the Wetland Restoration Area and the Wetland Conservation Park). The 3-storey heights are considered compatible and with the least impact to the ecology of the wetlands.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Proposed Scheme: Urban Design Considerations

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 3.4	REV	A

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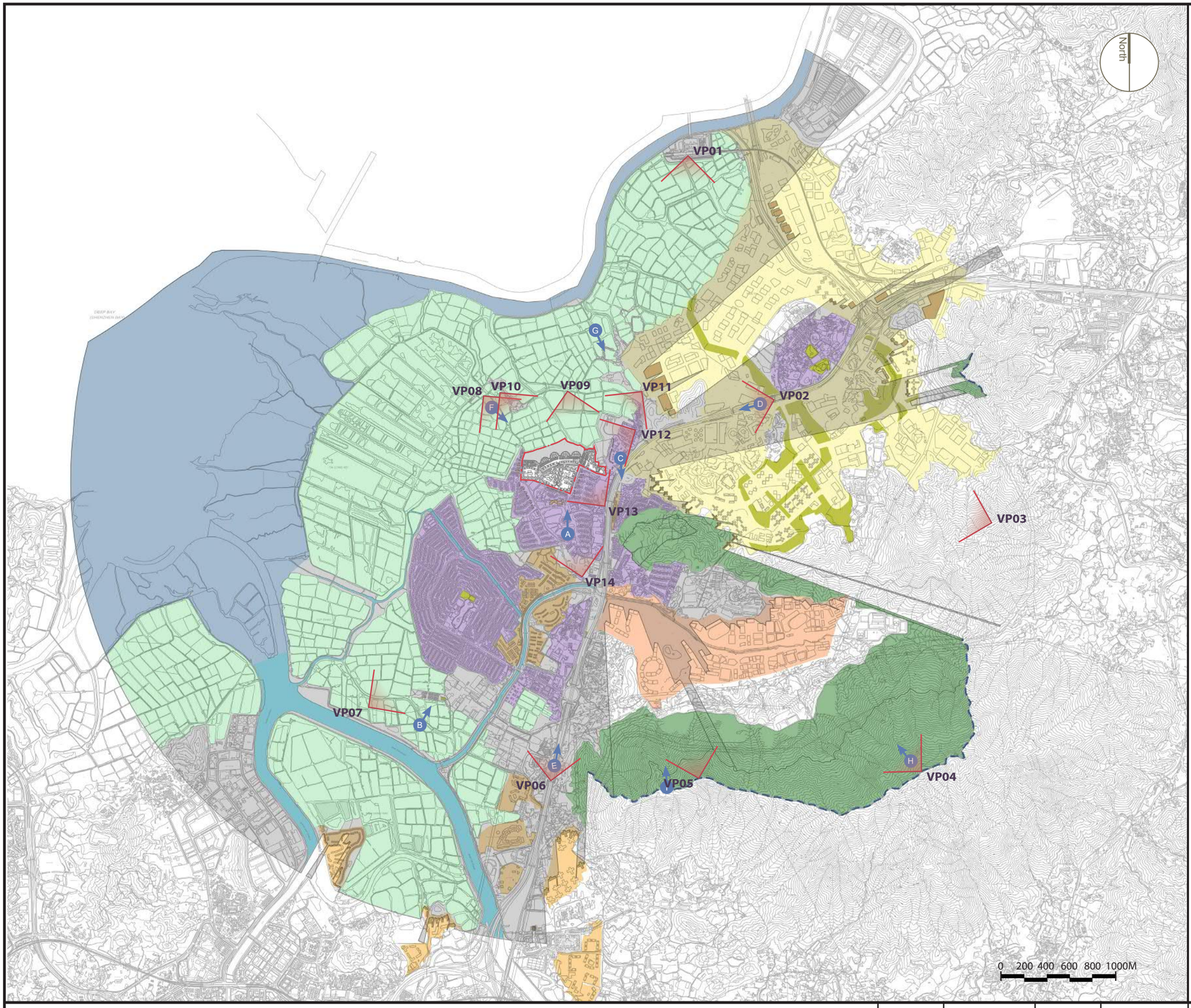

LEGEND

- Approximate location of Rezoning Site
- Proposed Scheme (Max building height +76.1 mPD)
- Boundary of Application Site
- Fields of View towards the Proposed Development
- VP — Key Public Vantage Points
- A — Location of photographs of Visual Elements
- +9.3mPD — Height in mPD
- Visual Envelope
- Mountain Backdrop and Small Knolls
- Ridgeline
- Wetland and Fishpond Landscape
- Estuary and Bay Landscape
- River Courses
- Proposed San Tin Technopole Development
- Proposed Ngau Tam Mei New Development Area
- Approved Developments
- Existing Low-rise Village Type Development
- Publicly Accessible Open Space / Amenity Areas
- Key Buildings (Shaping Visual Envelope)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.1	REV	-

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A View looking north towards the Application Site showing the juxtaposition of the existing extensive residential development with the low lying, flat landscape of the fishponds, river courses and wetlands leading to Deep Bay; and the visual prominence of the Shenzhen Skyline of high and medium-rise development



B View looking north towards the Application Site showing the visual backdrop formed by the upland setting of hills to the east of the Application Site such as Kai Kung Leng part of the Lam Tsuen Country Park and other hills such Ki Lun Shan

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.2	REV	-

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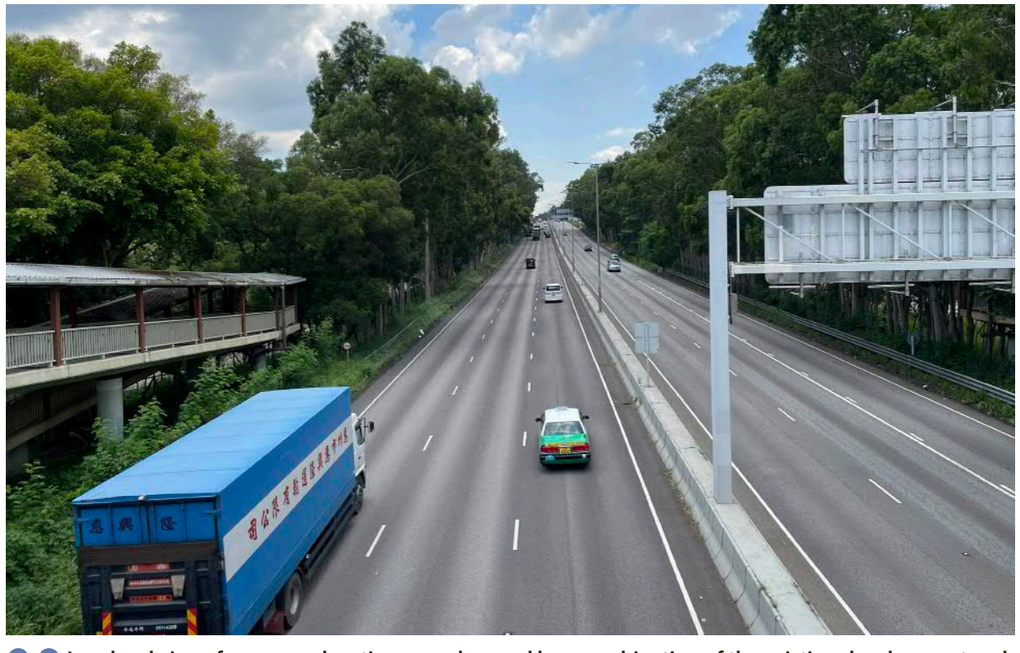
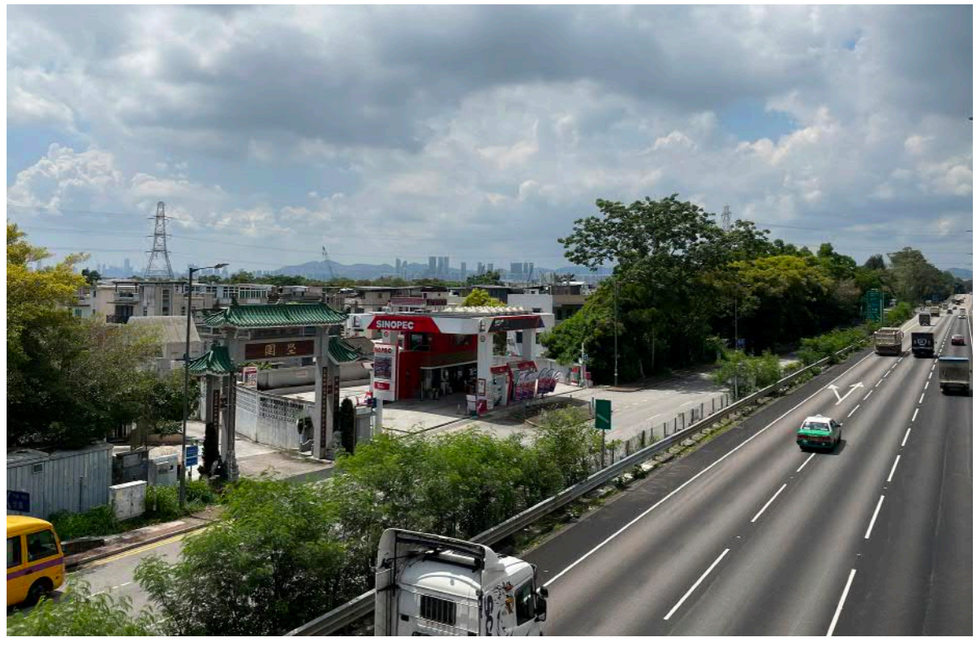
C Visually detracting elements include the major infrastructural development such as the San Tin Highway and the associated engineering works including highways structures; and the piecemeal commercial and light industrial developments which line the highway corridor





D E Low level views from many locations are obscured by a combination of the existing development and mature tree growth

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.3	REV	-

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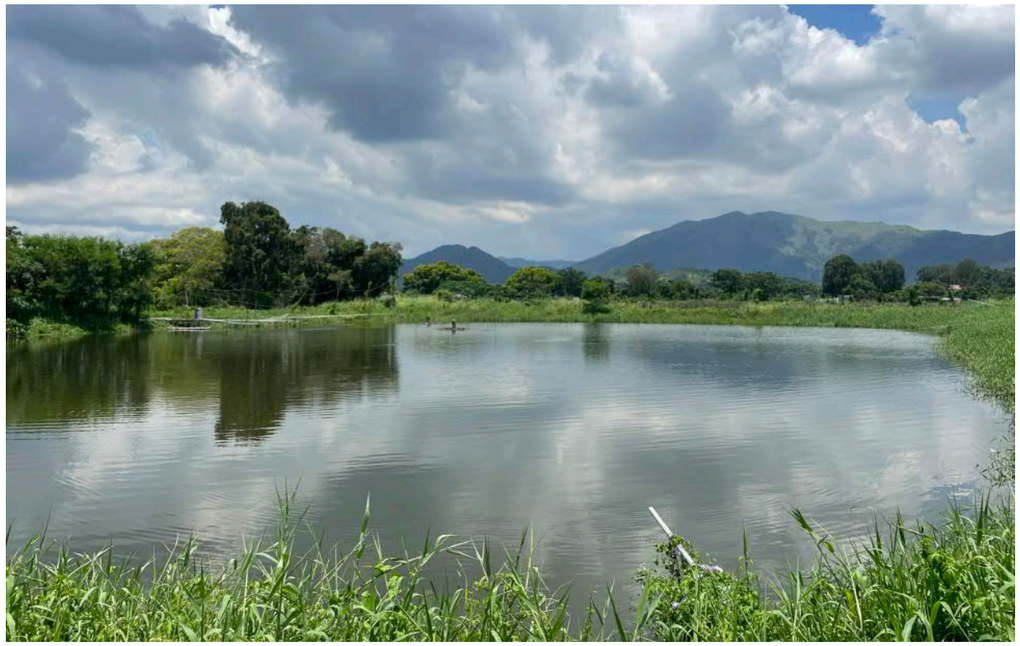
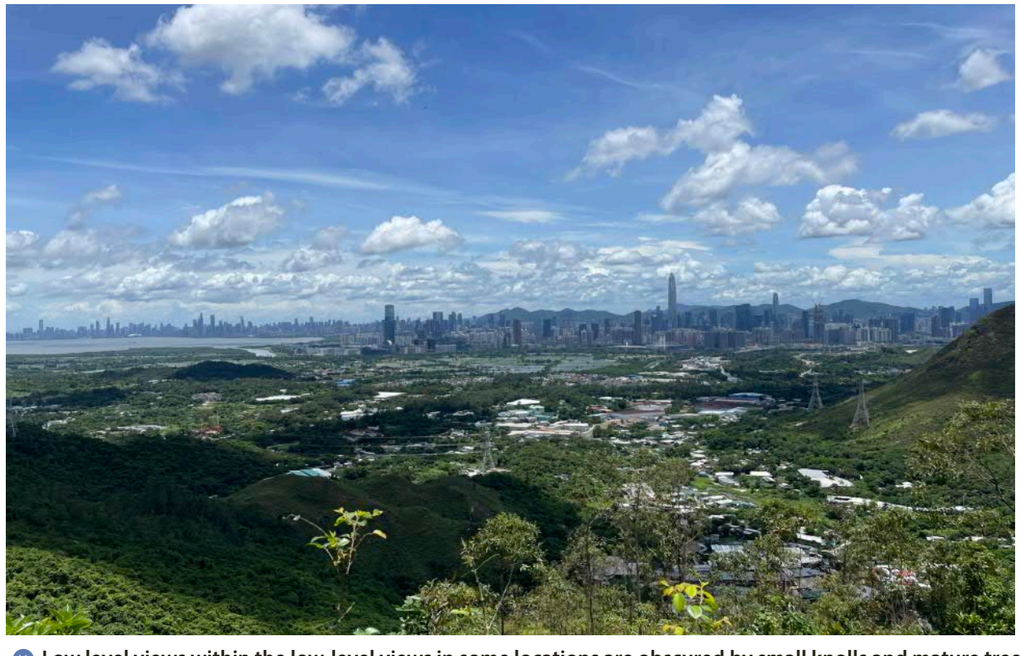
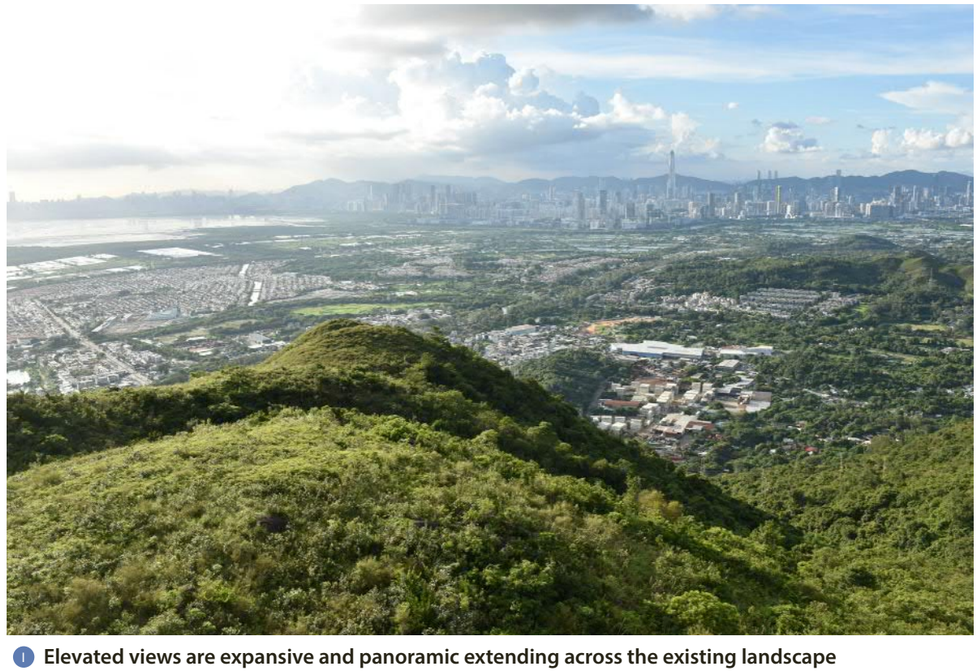


F G Low level views within the fishpond areas also obscured by mature tree growth on pond bunds





H Low level views within the low-level views in some locations are obscured by small knolls and mature tree growth which clothes the landscape



I Elevated views are expansive and panoramic extending across the existing landscape

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Elements

SCALE	N.T.S.	DATE	Jan 2025
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FIGURE NO.	Figure 4.4	REV	-

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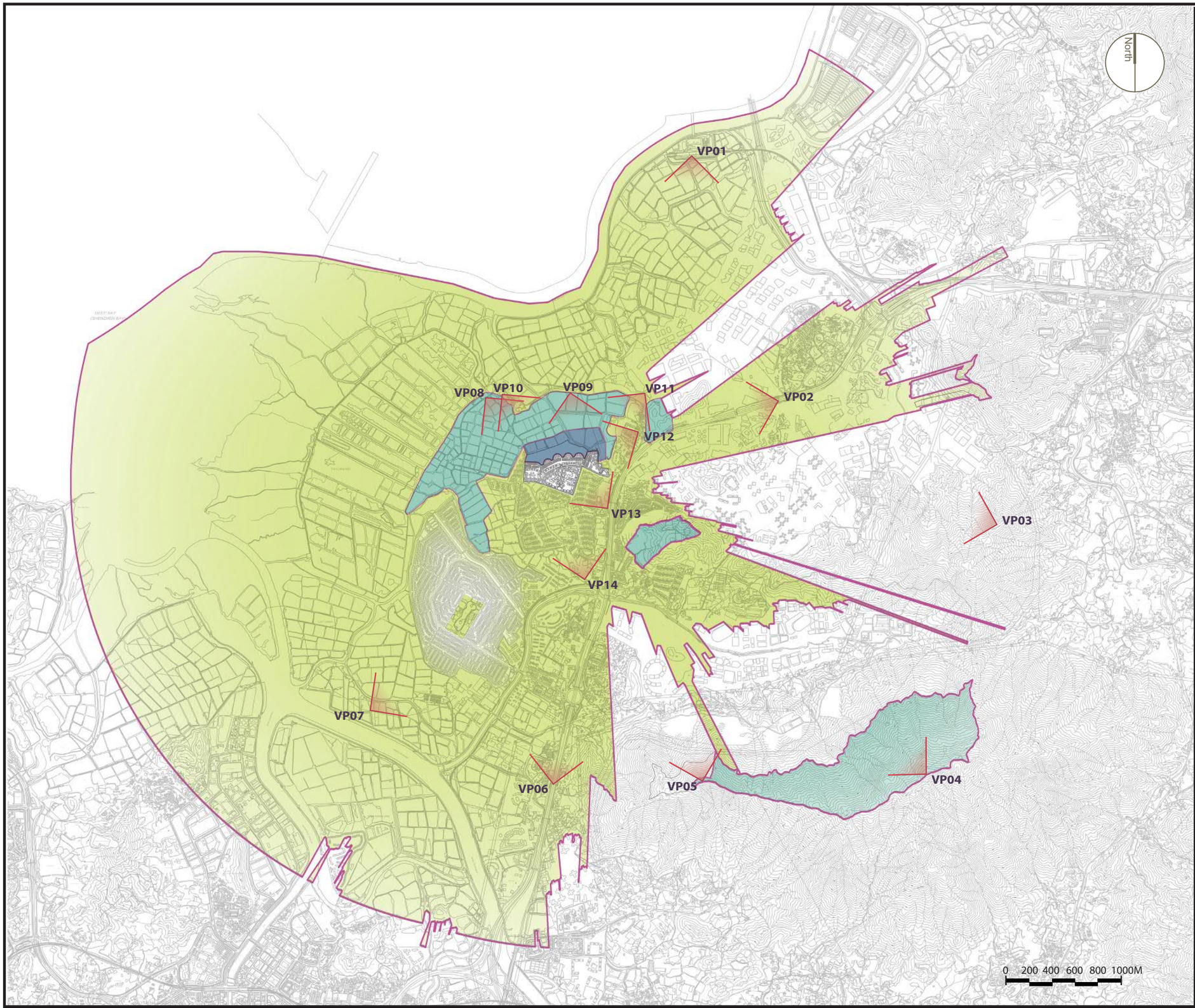

LEGEND

- Application Site Boundary
- Zone of Visual Influence
- VP — Representative vantage points (VPs) and angle of main view
- Primary ZVI – Area from which the majority of the development can be seen. Largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.
- Secondary ZVI – Area with more limited visibility of the Indicative Scheme due to intervening obstacles including buildings, mature vegetation and landform. Visible part of the proposal largely limited to the upper portions of the residential blocks.
- Tertiary ZVI – For the most part views of the Indicative Scheme are obscured or screened by intervening visual obstacles including the landform andand built development. The locations are distanced and therefore limited to glimpsed views of the upper portion of the some of the proposed residential blocks.

Local Vantage Points

Vantage Point 01: Vie w looking south west from Lok Ma Chau MTR Station (VP 01)

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)

Vantage Point 04: View looking north west from Kai Kung Leng(VP 04)

Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 05)

Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)

Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Envelope and Visually Sensitive Receivers

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FIGURE NO.	Figure 4.5	REV	-

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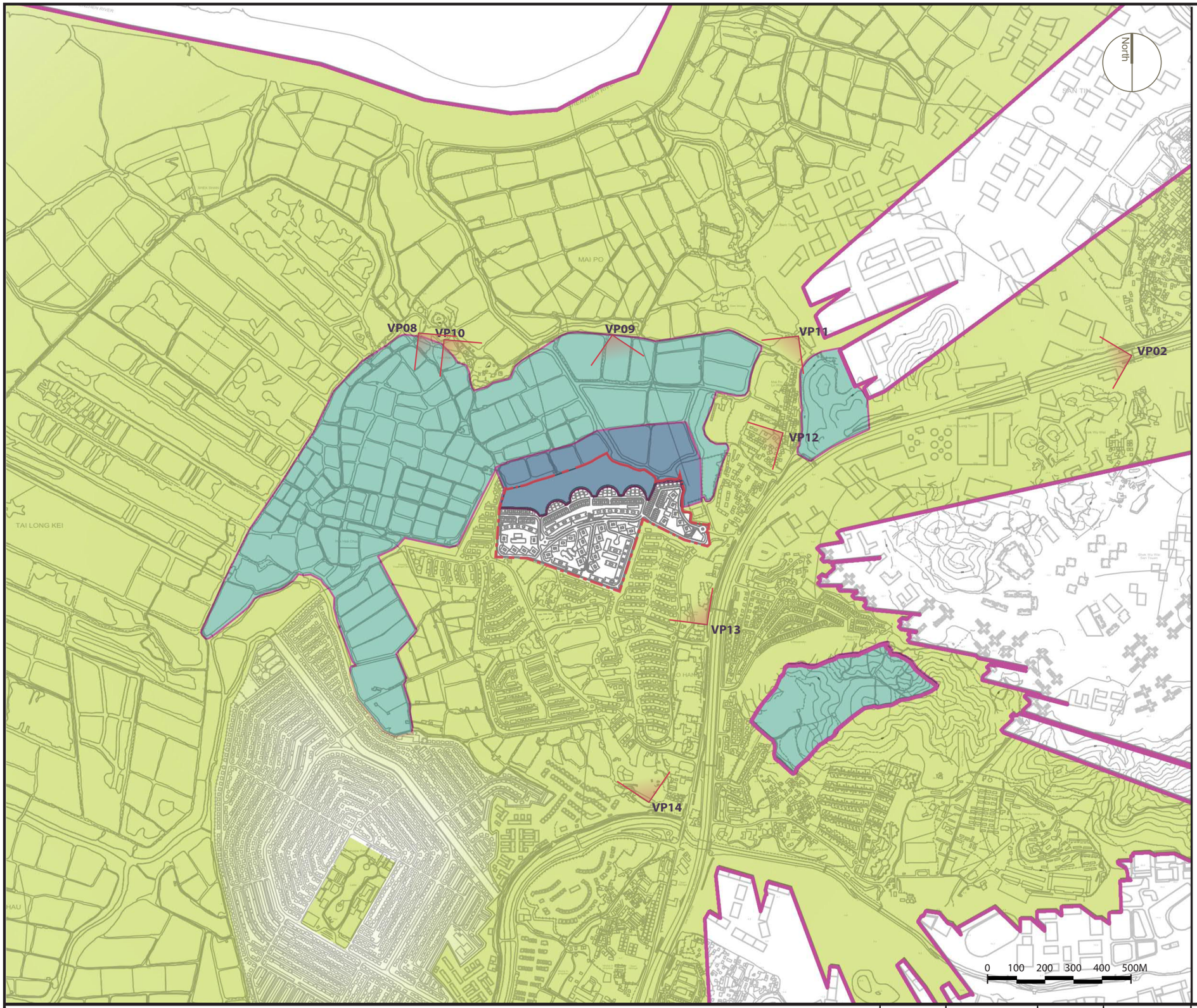

LEGEND

- Application Site Boundary
- Zone of Visual Influence
- VP — Representative vantage points (VPs) and angle of main view
- Primary ZVI – Area from which the majority of the development can be seen. Largely contained within the Application Site boundary owing to the proximity and scale of the existing landform, mature tree growth and elements of built development.
- Secondary ZVI – Area with more limited visibility of the Indicative Scheme due to intervening obstacles including buildings, mature vegetation and landform. Visible part of the proposal largely limited to the upper portions of the residential blocks.
- Tertiary ZVI – For the most part views of the Indicative Scheme are obscured or screened by intervening visual obstacles including the landform andand built development. The locations are distanced and therefore limited to glimpsed views of the upper portion of the some of the proposed residential blocks.

Local Vantage Points

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Envelope and Visually Sensitive Receivers (Blow-up)

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 4.6	REV	-

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LEGEND

Application Site Boundary

VP — Representative vantage points (VPs) and angle of main view

Proposed Scheme

Local Vantage Points

Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (VP 01)

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (VP 03)

Vantage Point 04: View looking north west from Kai Kung Leng(VP 04)

Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (VP 05)

Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (VP 06)

Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (VP 07)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Location of Photomontage Vantage Points

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.1	REV	-

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LEGEND

- Application Site Boundary
- VP — Representative vantage points (VPs) and angle of main view
- Proposed Scheme

Local Vantage Points

Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (VP 02)

Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (VP 08)

Vantage Point 09: View looking south east from Tam Kon Chau Road (VP 09)

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (VP10)

Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme) (VP11)

Vantage Point 12: View looking west from the Tsz Tong of Mai Po Tsuen (VP12)

Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" zone (VP13)

Vantage Point 14: View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (VP14)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Location of Photomontage Vantage Points

SCALE	N.T.S.	DATE	Jan 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.2	REV	-

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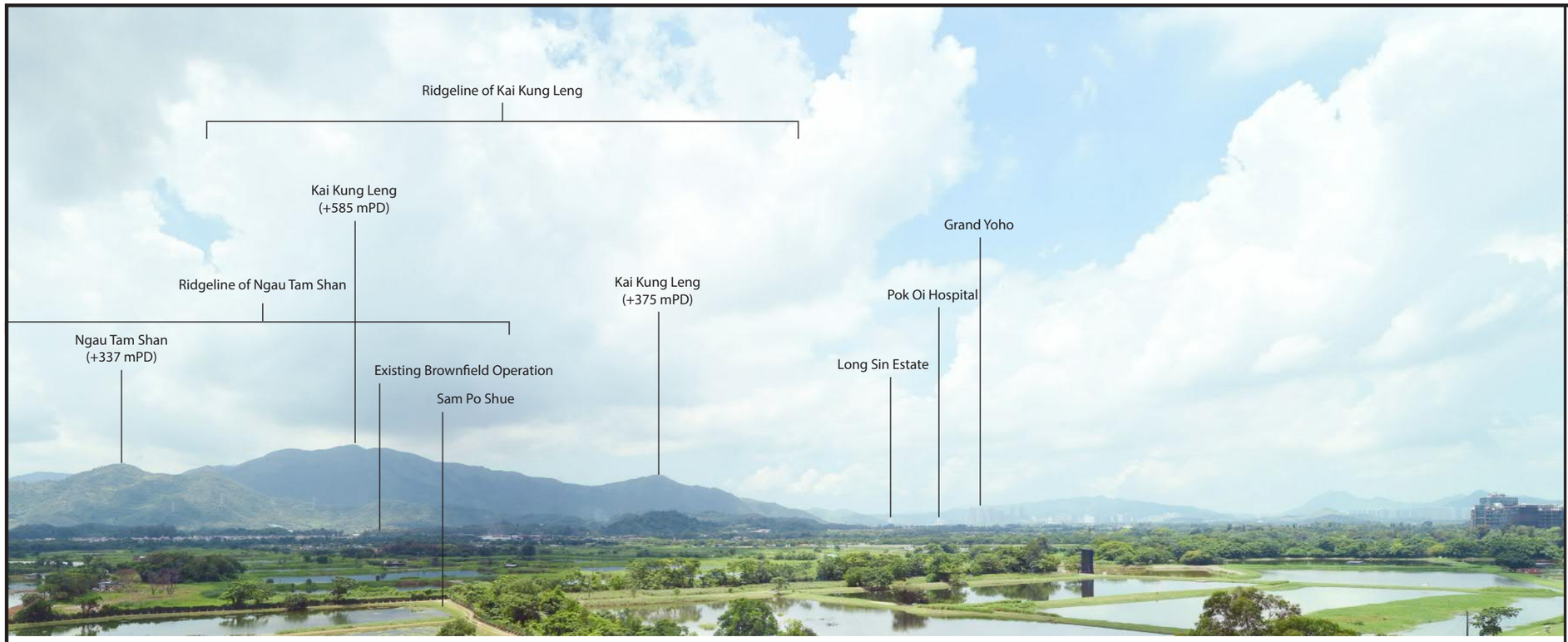
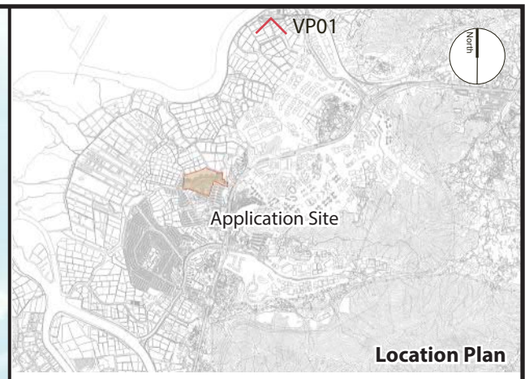


Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (Existing Situation)



Vantage Point 01 (VP01)

Vantage point elevation: +10 mPD
Viewing distance: 2765m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
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FIGURE NO.	Figure 7.3	REV	A

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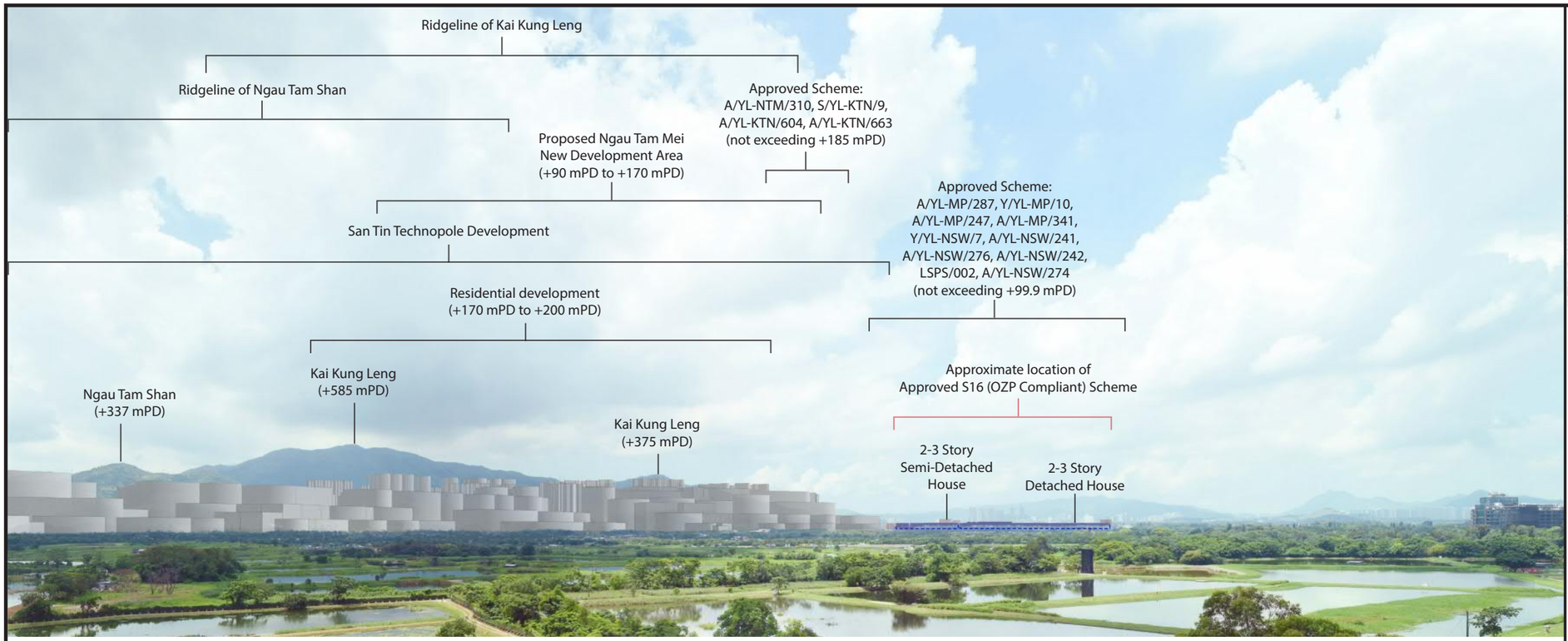
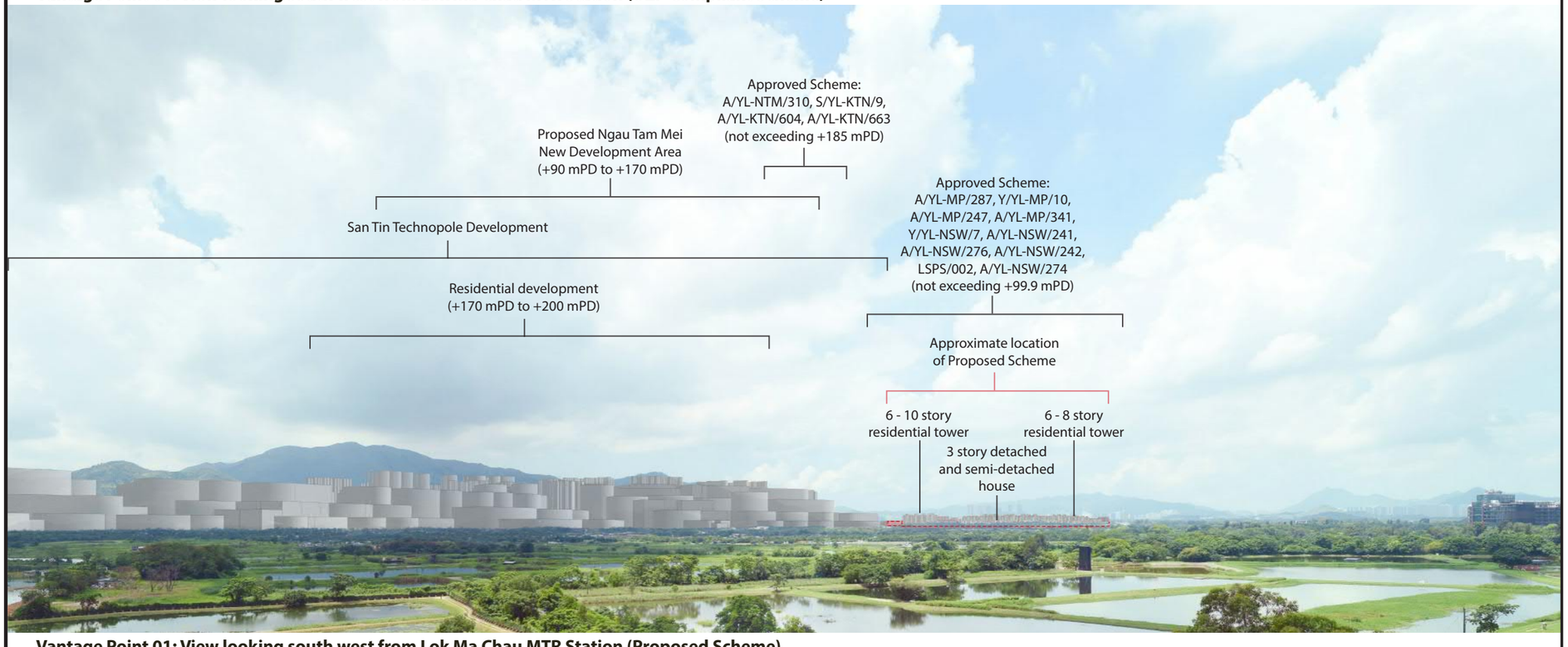
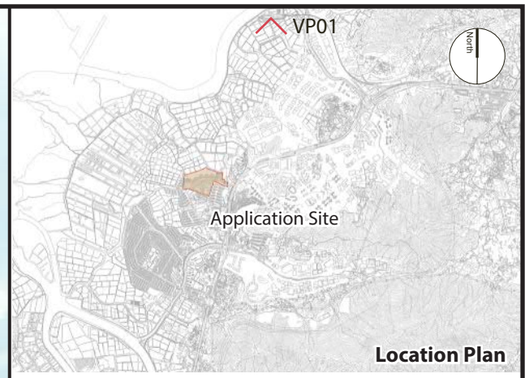


Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (OZP Compliant Scheme)



Vantage Point 01: View looking south west from Lok Ma Chau MTR Station (Proposed Scheme)



Vantage Point 01 (VP01)

Vantage point elevation: +10 mPD
Viewing distance: 2765m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.4	REV	B

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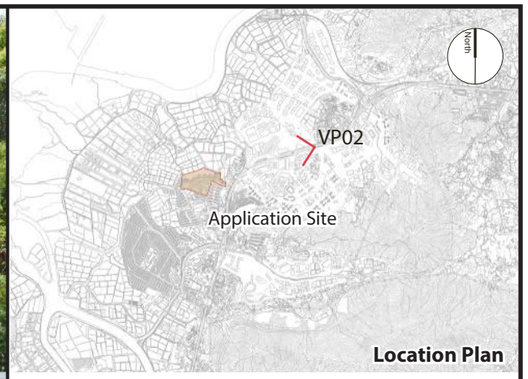
Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (Existing Situation)



Vantage Point 02 (VP02)

Vantage point elevation: +10 mPD
Viewing distance: 1680 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
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FIGURE NO.	Figure 7.5	REV	A

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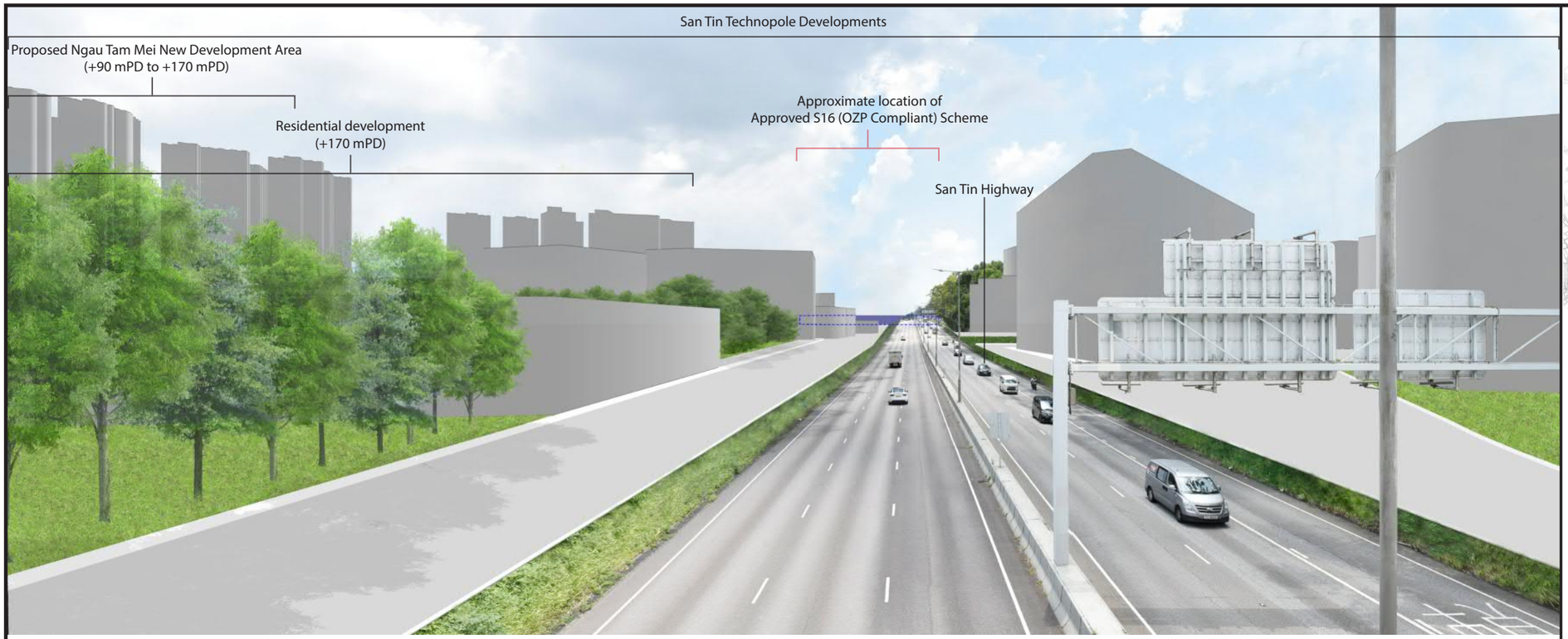
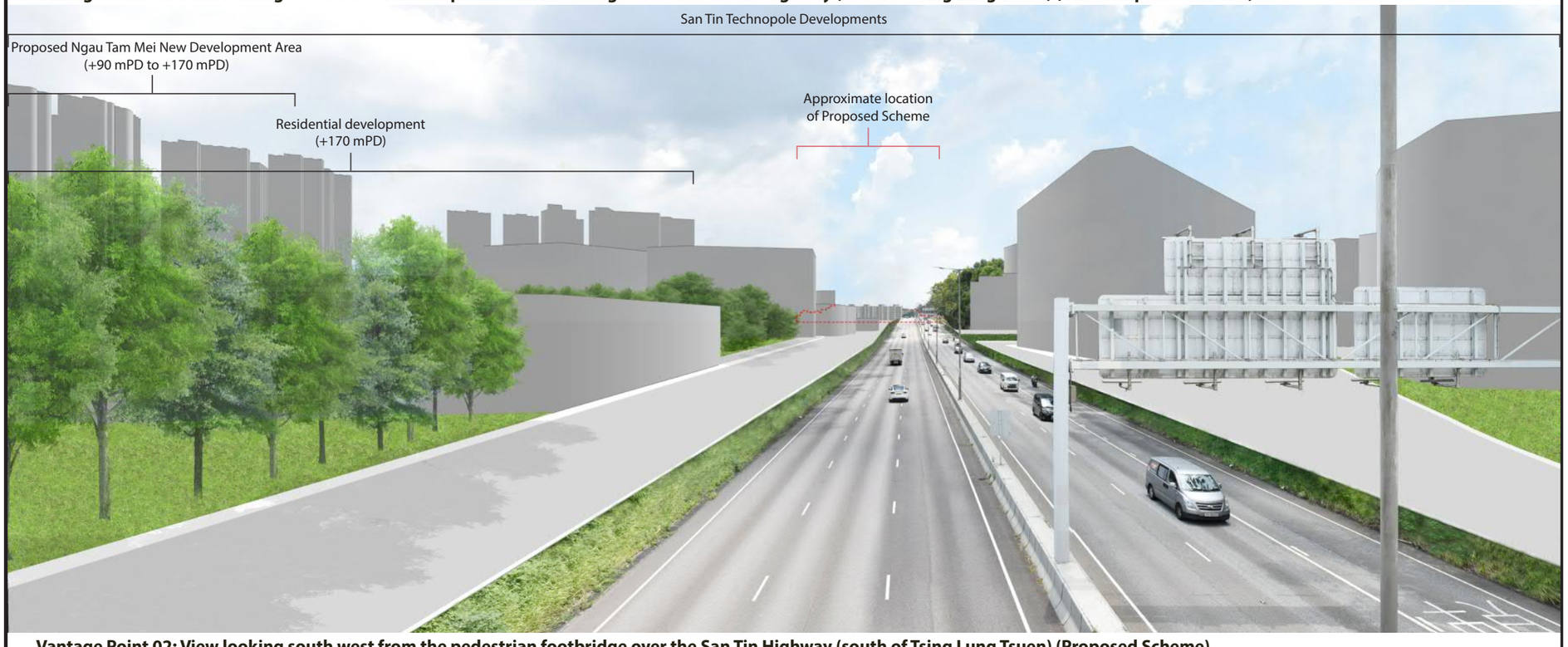
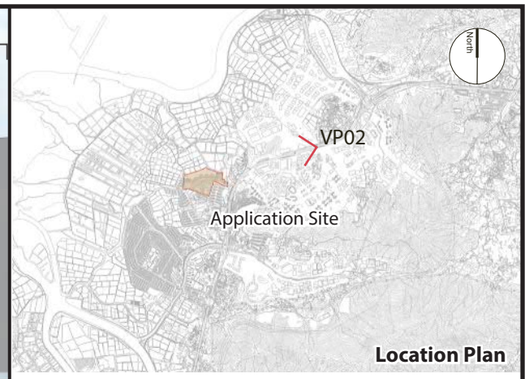


Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (OZP Compliant Scheme)



Vantage Point 02: View looking south west from the pedestrian footbridge over the San Tin Highway (south of Tsing Lung Tsuen) (Proposed Scheme)



Vantage Point 02 (VP02)

Vantage point elevation: +10 mPD
Viewing distance: 1680 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.6	REV	A

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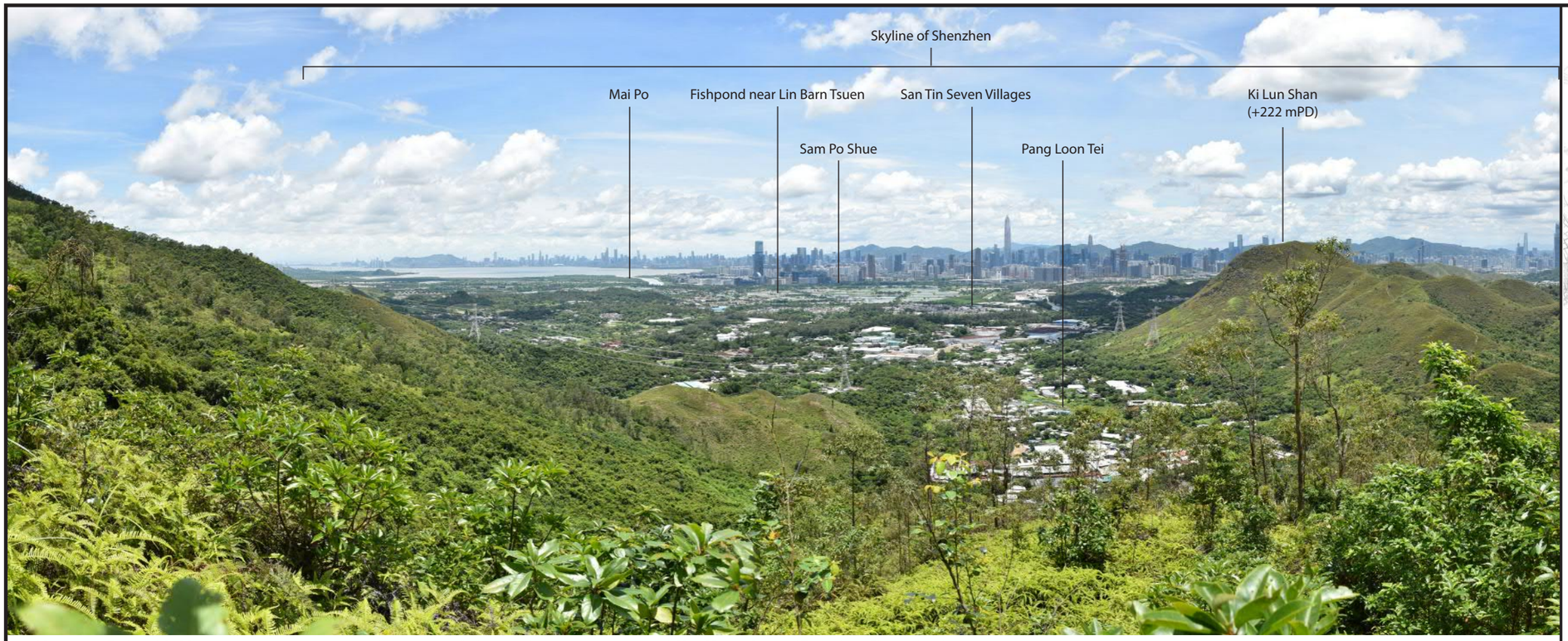
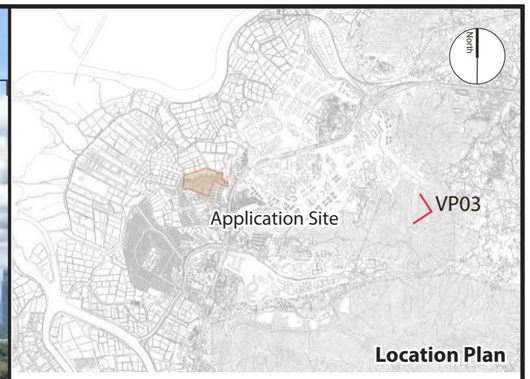


Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (Existing Situation)



Vantage Point 03 (VP03)

Vantage point elevation: +200 mPD
Viewing distance: 3555 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.7	REV	A

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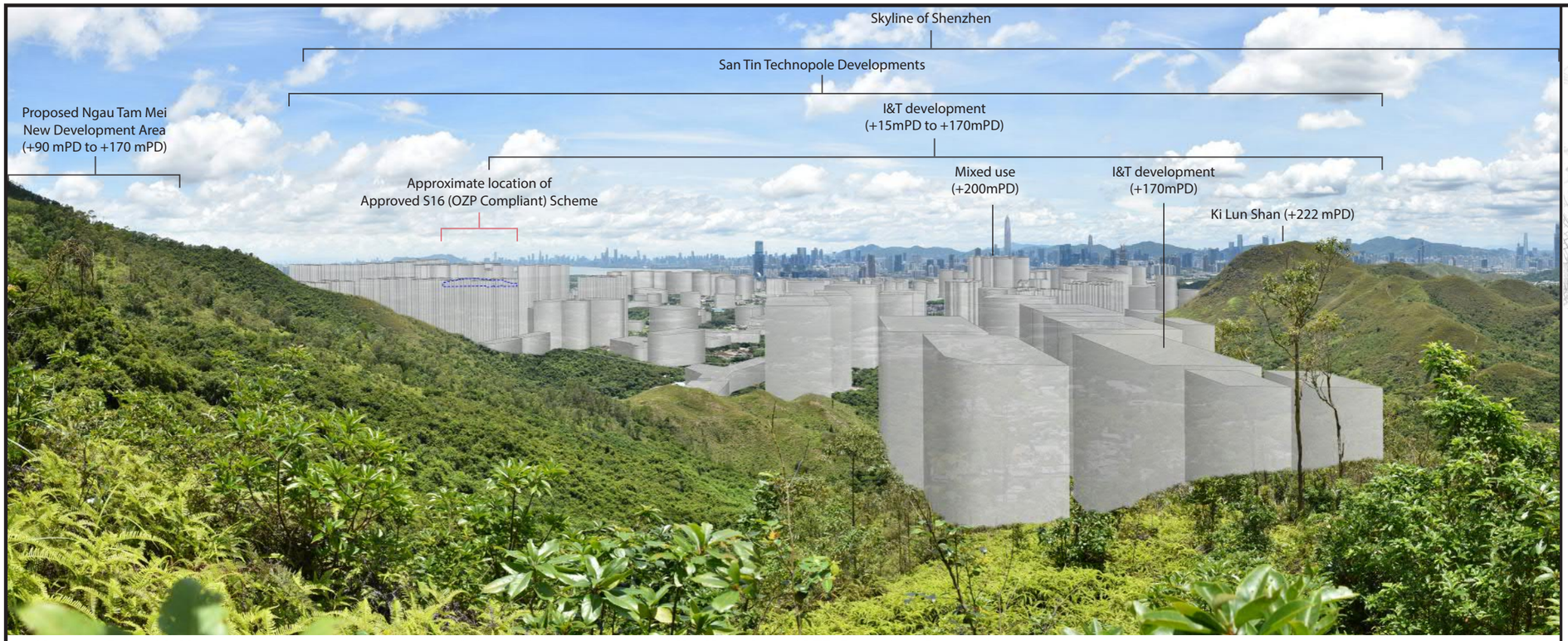
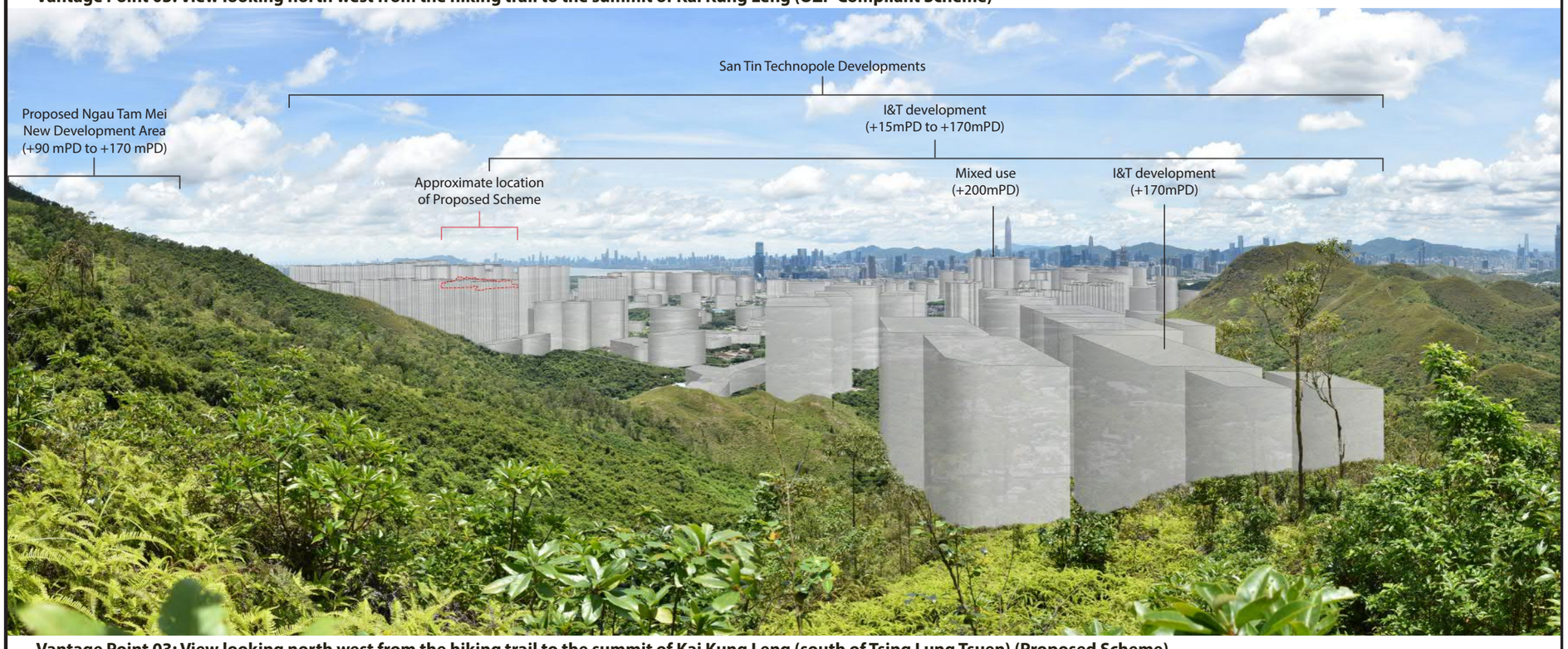
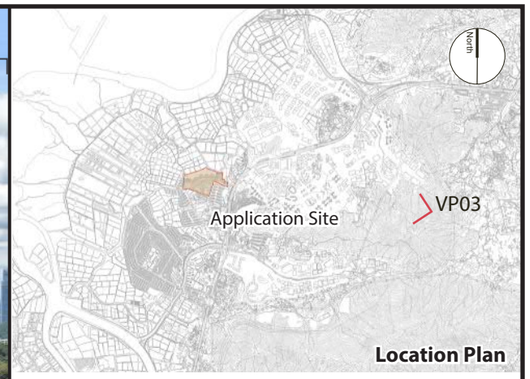


Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (OZP Compliant Scheme)



Vantage Point 03: View looking north west from the hiking trail to the summit of Kai Kung Leng (south of Tsing Lung Tsuen) (Proposed Scheme)



Vantage Point 03 (VP03)

Vantage point elevation: +200 mPD
Viewing distance: 3555 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.8	REV	A

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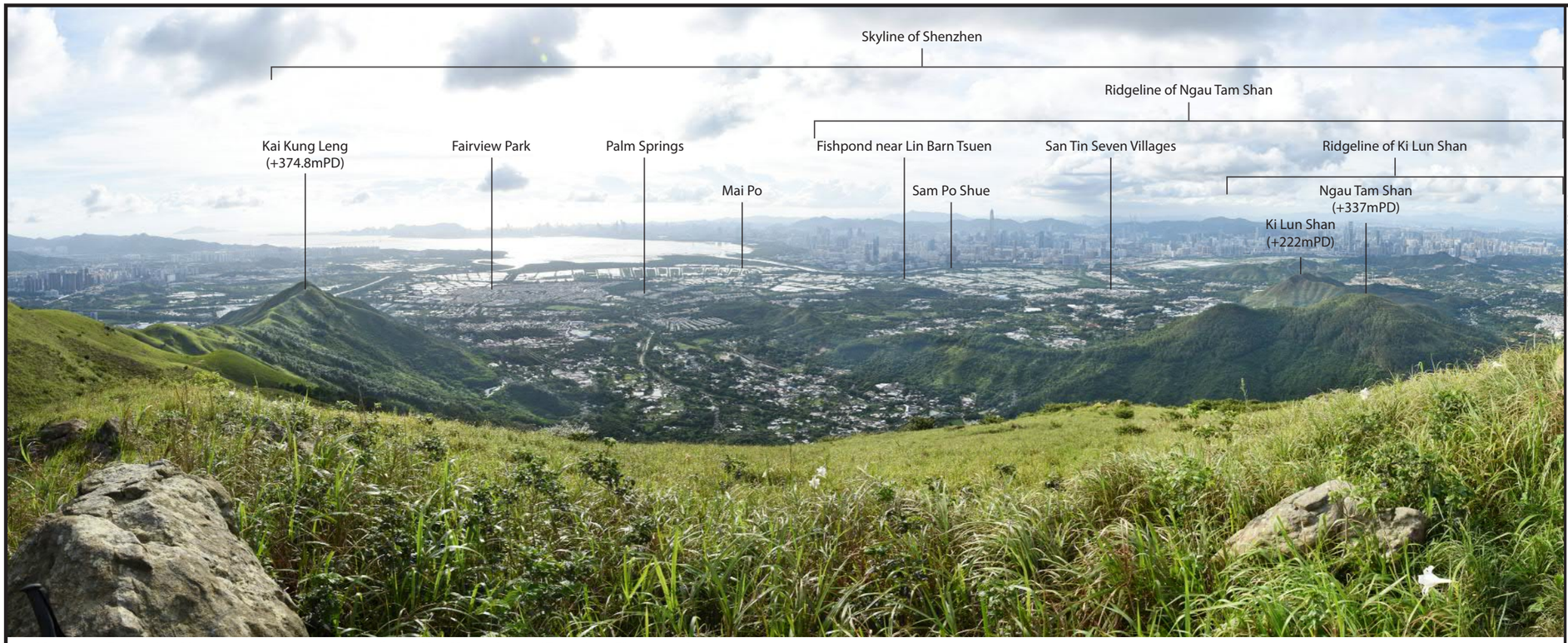

Vantage Point 04: View looking north west from Kai Kung Leng (Existing Situation)



Vantage Point 04 (VP04)

Vantage point elevation: +585mPD
Viewing distance: 3935m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.9	REV	A

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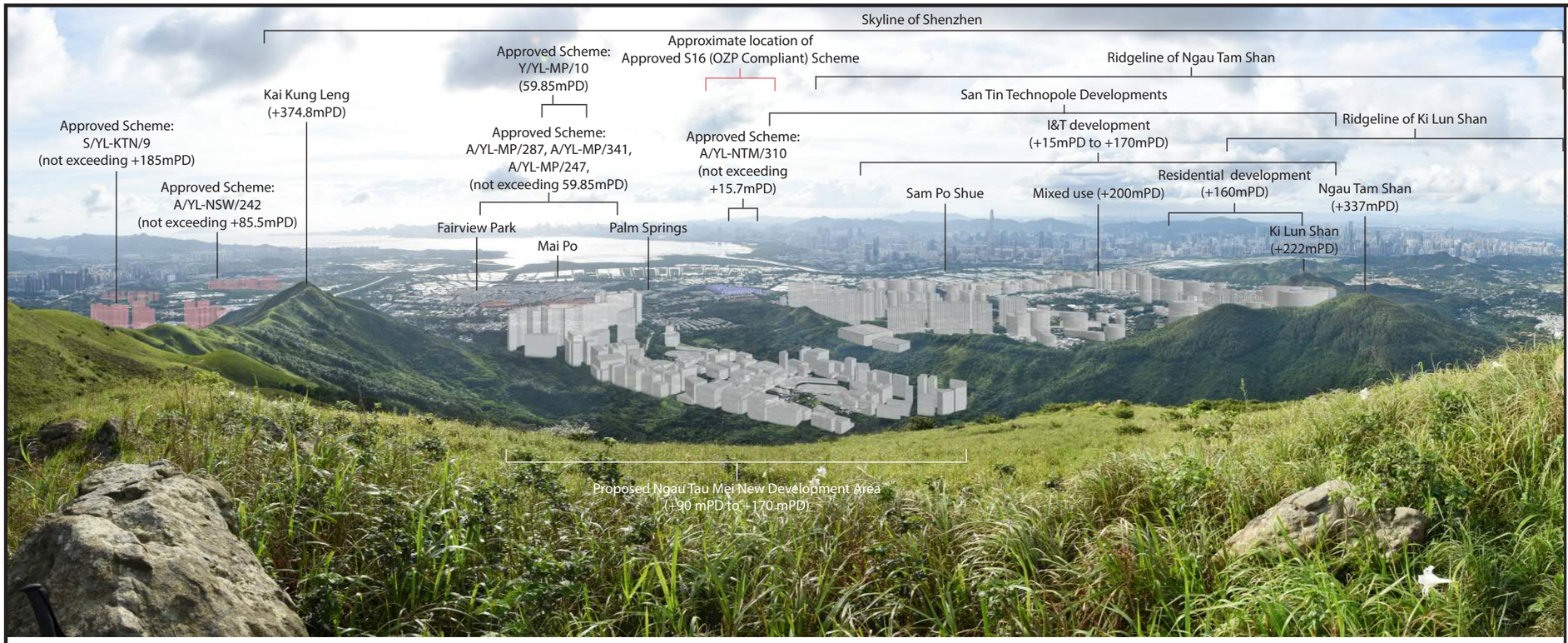
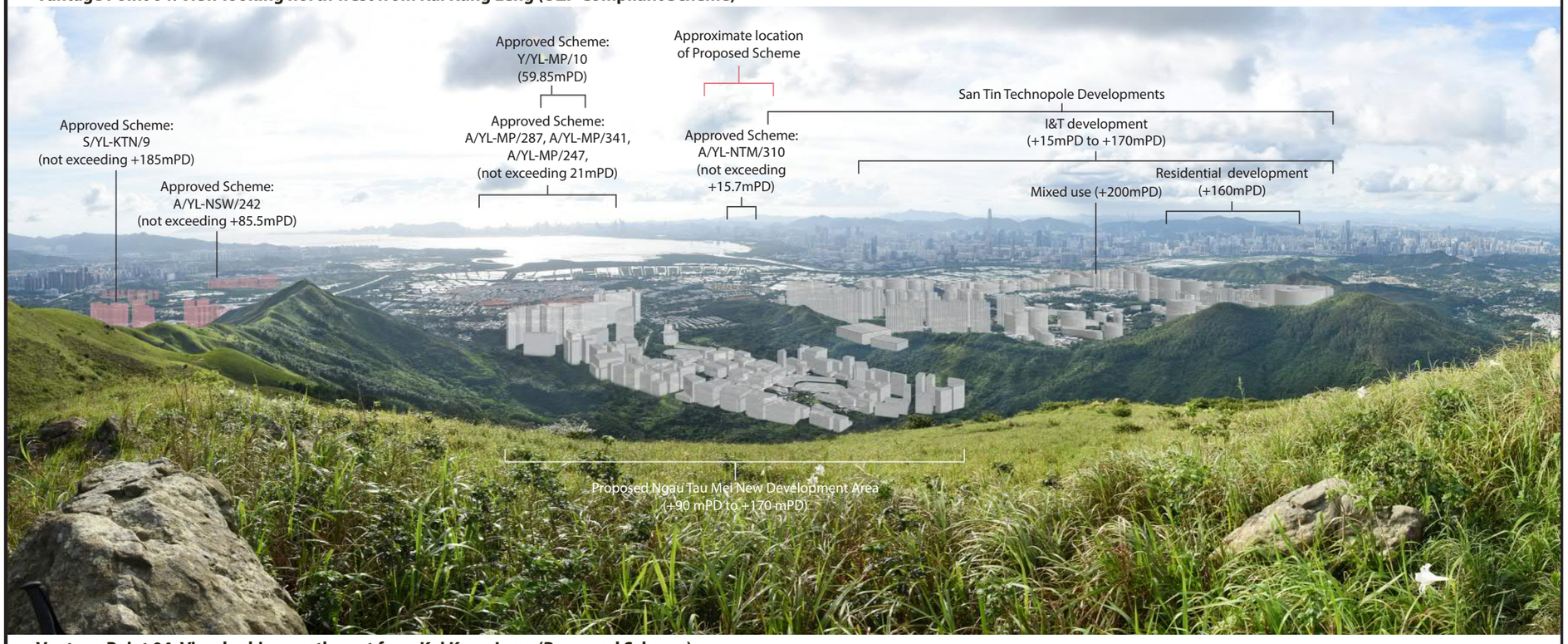


Vantage Point 04: View looking north west from Kai Kung Leng (OZP Compliant Scheme)



Vantage Point 04: View looking north west from Kai Kung Leng (Proposed Scheme)



Vantage Point 04 (VP04)

Vantage point elevation: +585mPD
Viewing distance: 3935m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.10	REV	B

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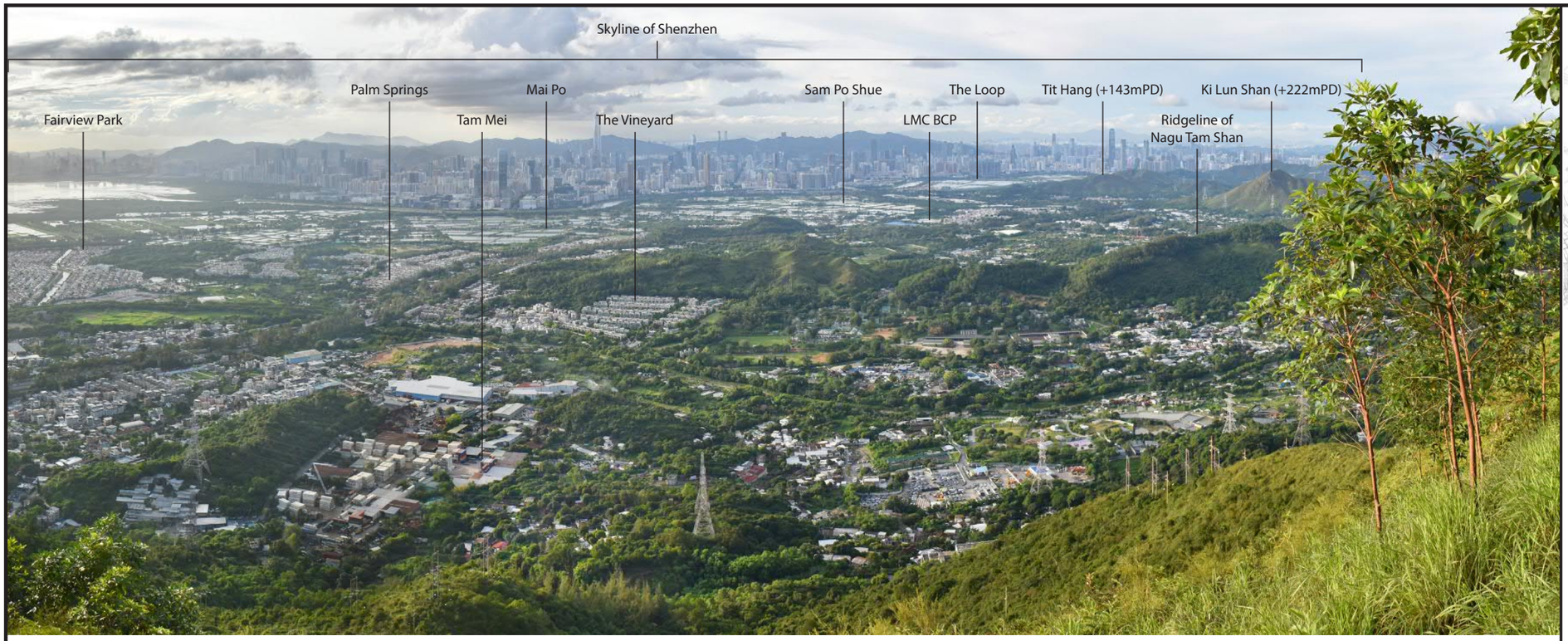
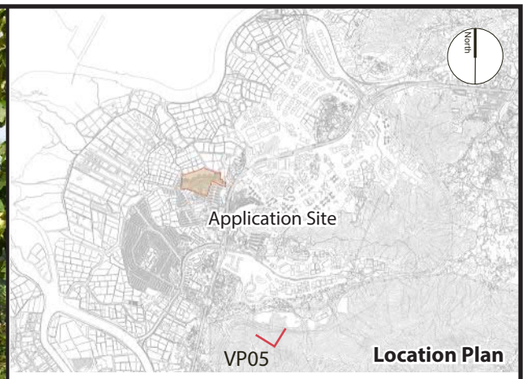


Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (Existing Situation)



Vantage Point 05 (VP05)

Vantage point elevation: +375 mPD
Viewing distance: 2830 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.11	REV	A

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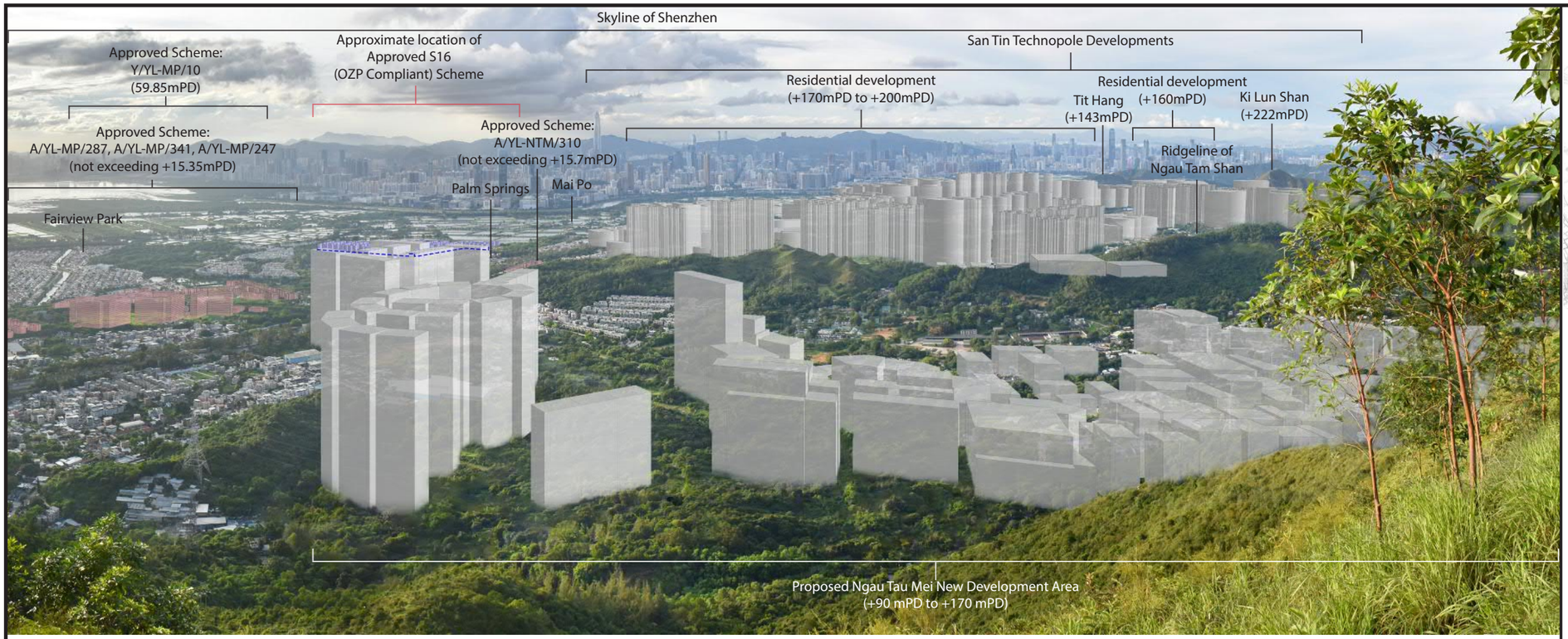
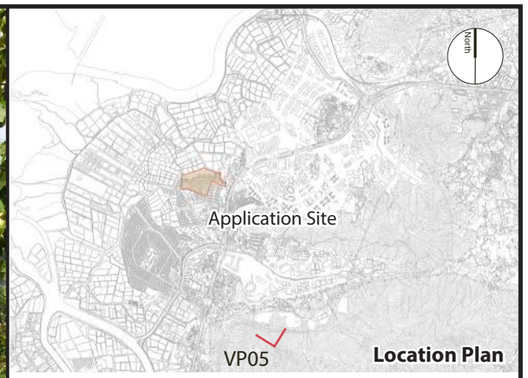
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (OZP Compliant Scheme)



Vantage Point 05: View looking north from the spur of the Kai Kung Ridgeline (Proposed Scheme)



Vantage Point 05 (VP05)

Vantage point elevation: +375 mPD
Viewing distance: 2830 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

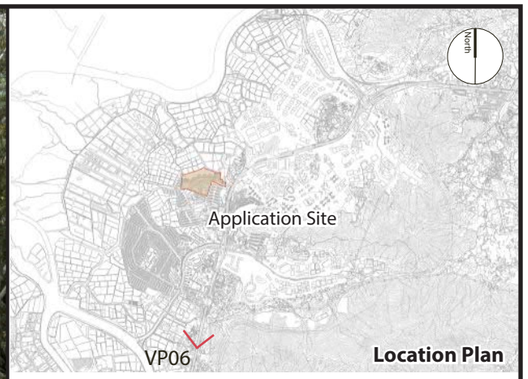
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.12	REV	B

SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (Existing Situation)



Vantage Point 06 (VP06)

Vantage point elevation: +10 mPD
Viewing distance: 2595 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.13	REV	A

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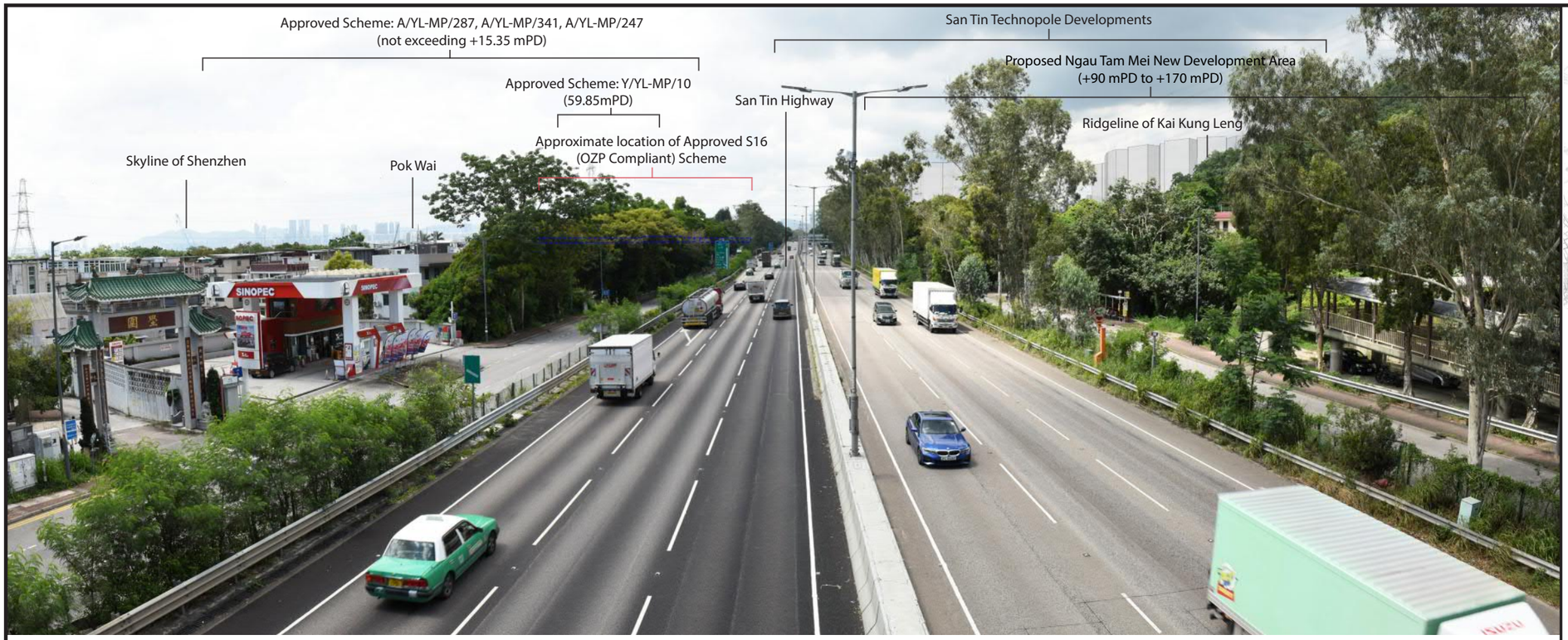
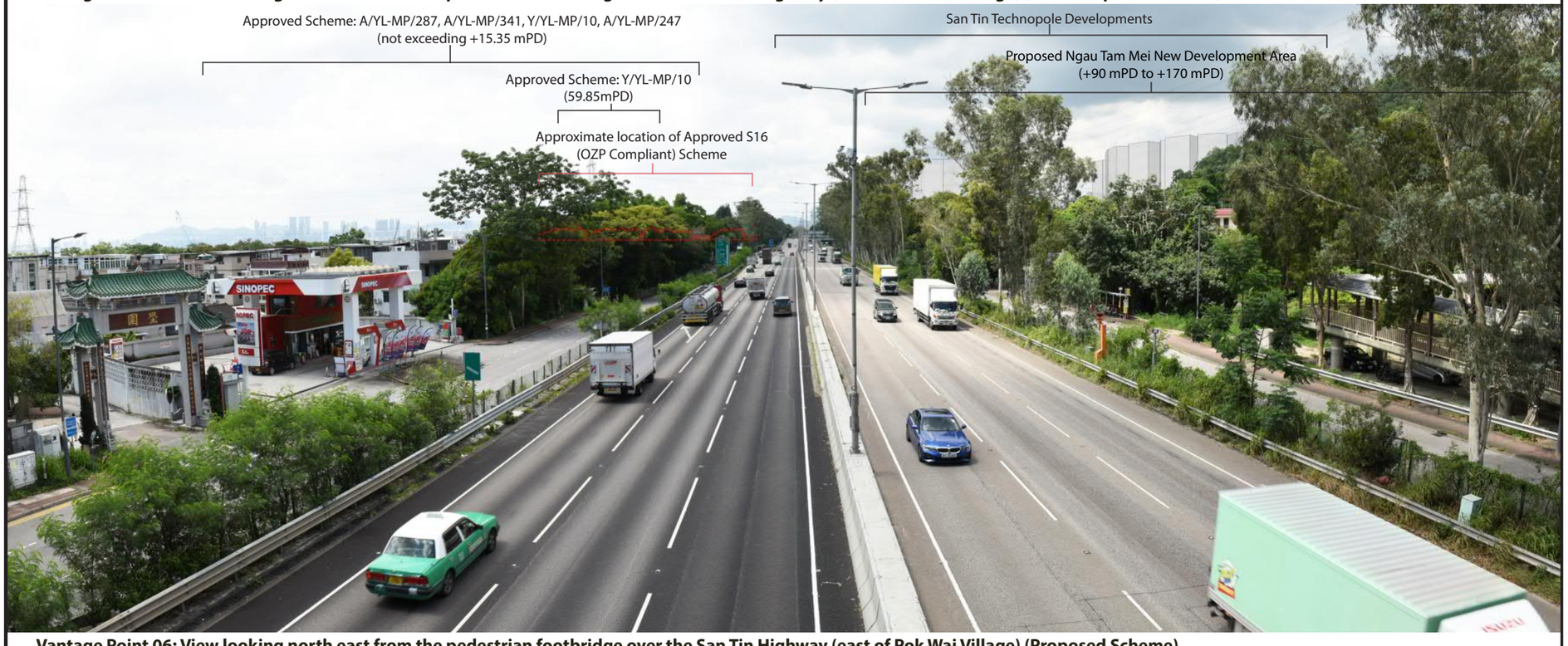
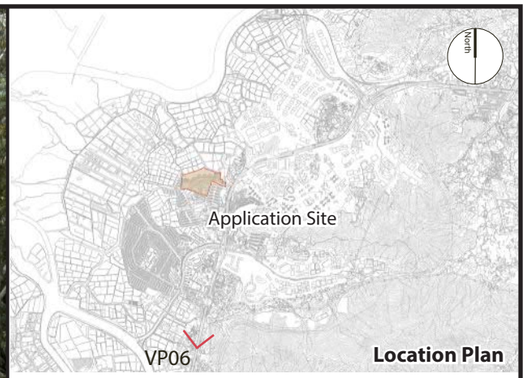
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (OZP Compliant Scheme)



Vantage Point 06: View looking north east from the pedestrian footbridge over the San Tin Highway (east of Pok Wai Village) (Proposed Scheme)



Vantage Point 06 (VP06)

Vantage point elevation: +10 mPD
Viewing distance: 2595 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

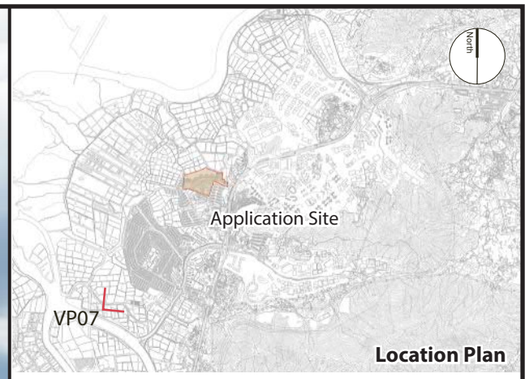
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.14	REV	B

SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (Existing Situation)



Vantage Point 07 (VP07)

Vantage point elevation: +3.2 mPD
Viewing distance: 2450 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

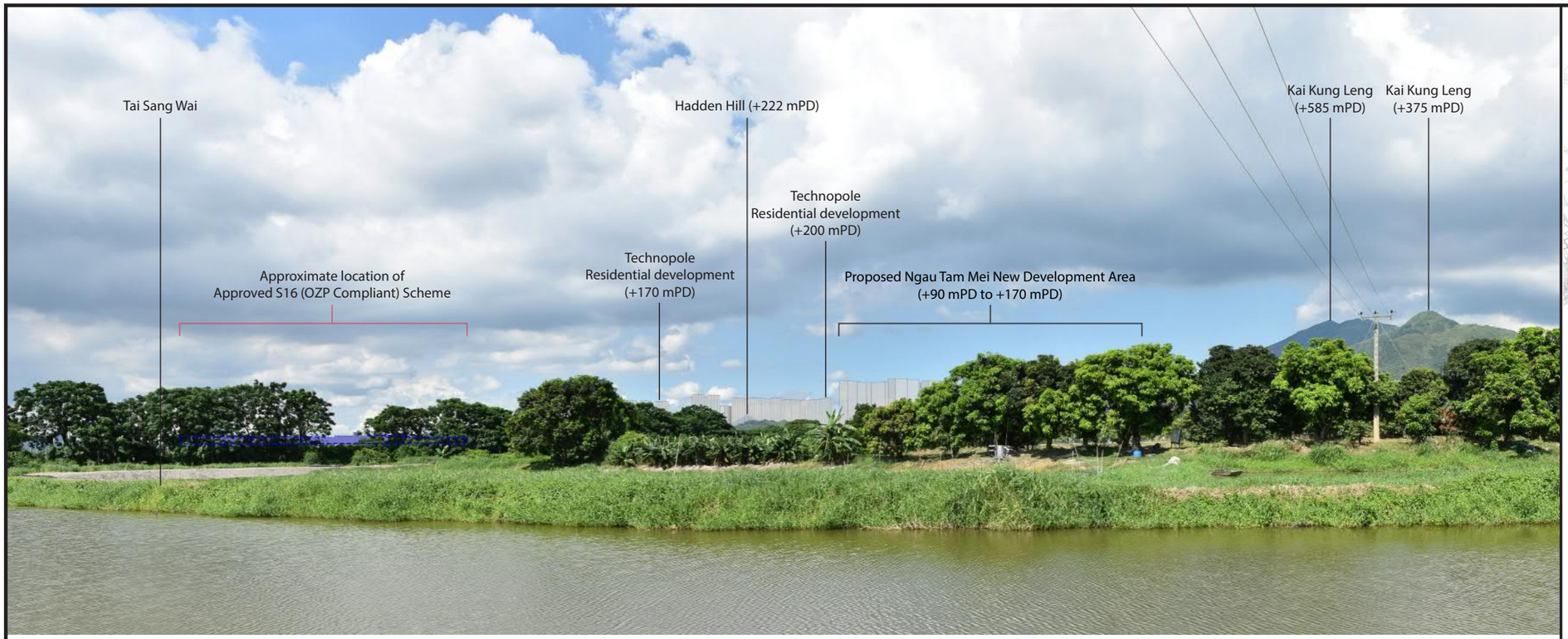
FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

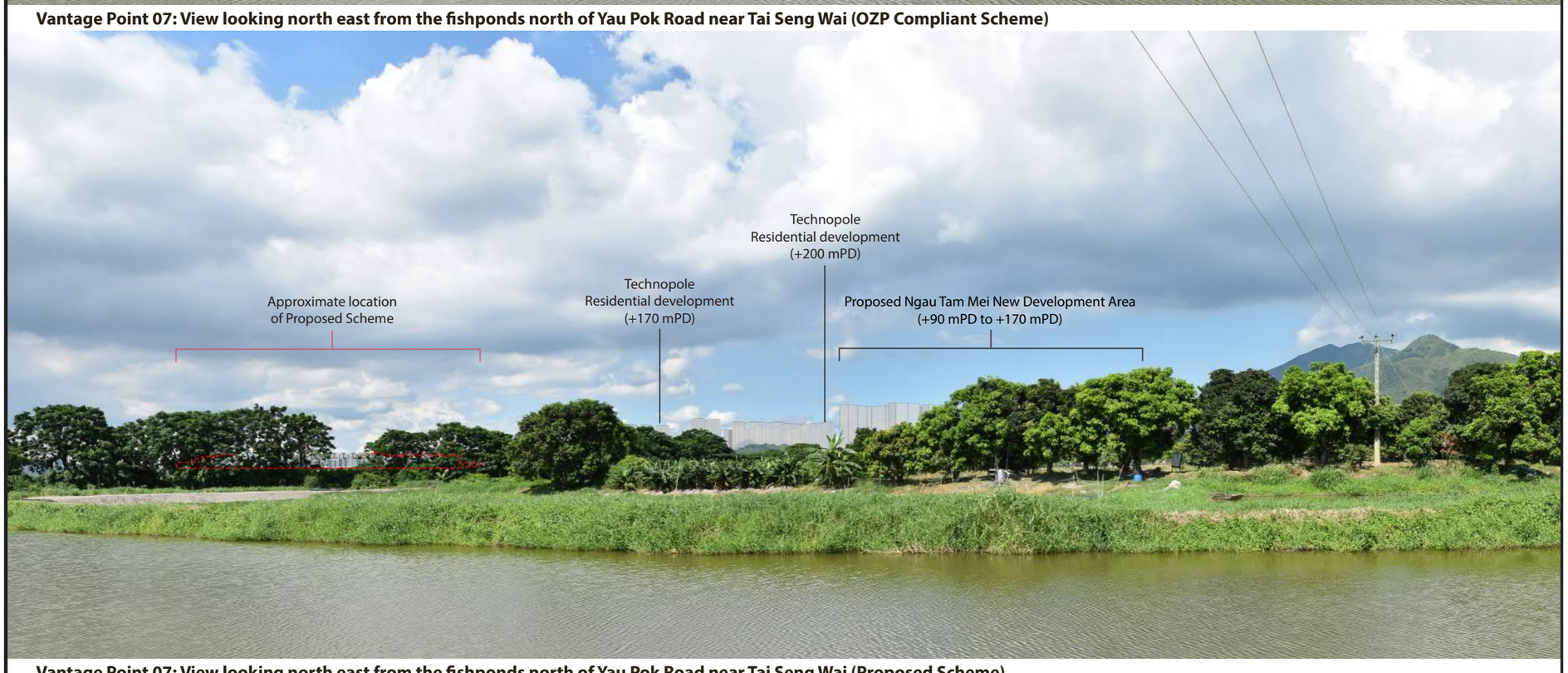
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.15	REV	A

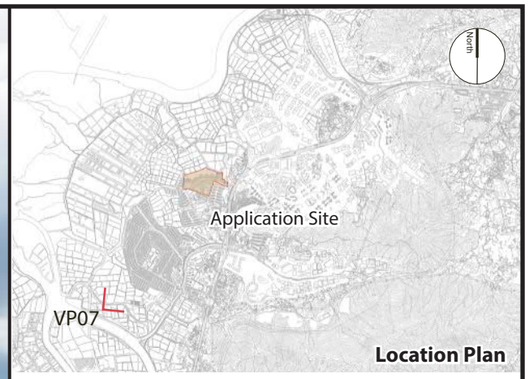
SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (OZP Compliant Scheme)



Vantage Point 07: View looking north east from the fishponds north of Yau Pok Road near Tai Seng Wai (Proposed Scheme)



Vantage Point 07 (VP07)

Vantage point elevation: +3.2 mPD
Viewing distance: 2450 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

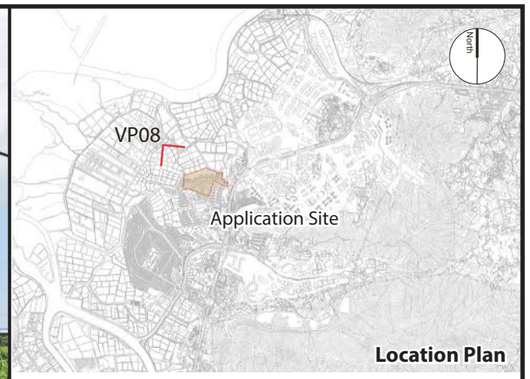
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.16	REV	A

SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (Existing Situation)



Vantage Point 08 (VP08)

Vantage point elevation: +3.9 mPD
Viewing distance: 765 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

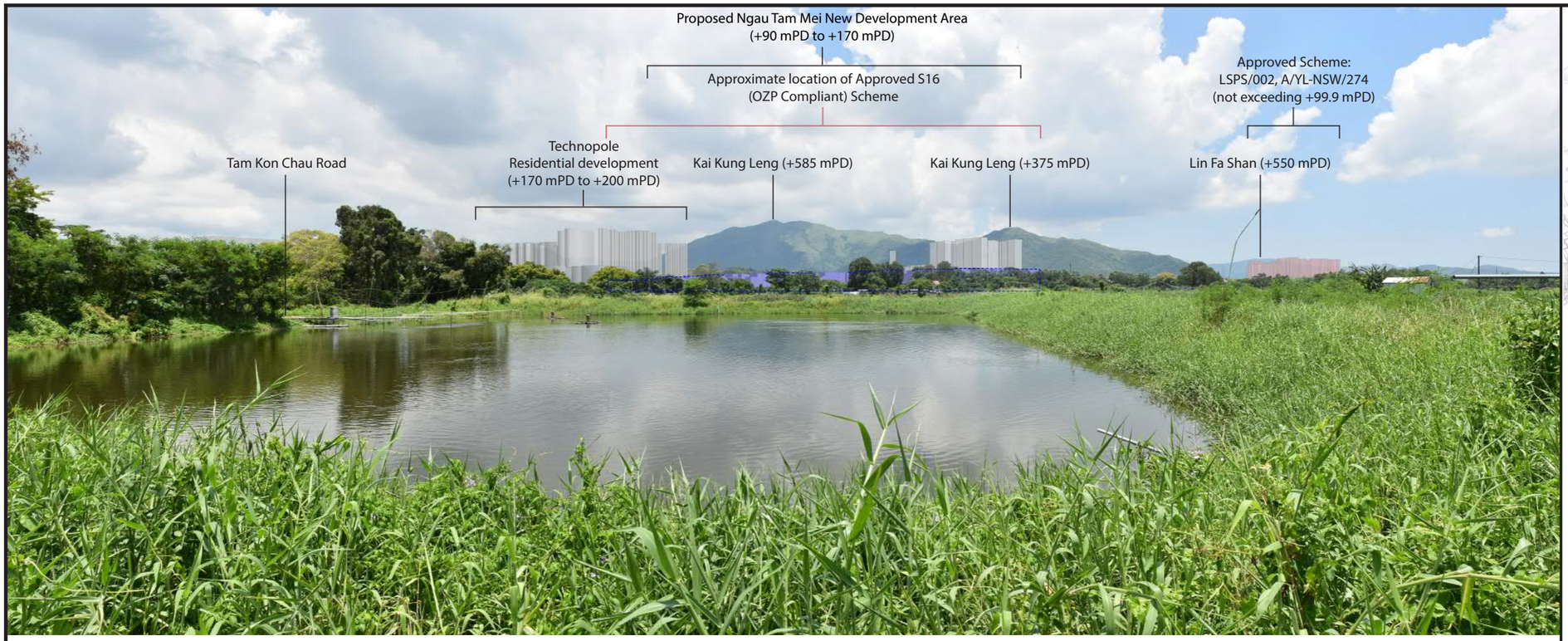
FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

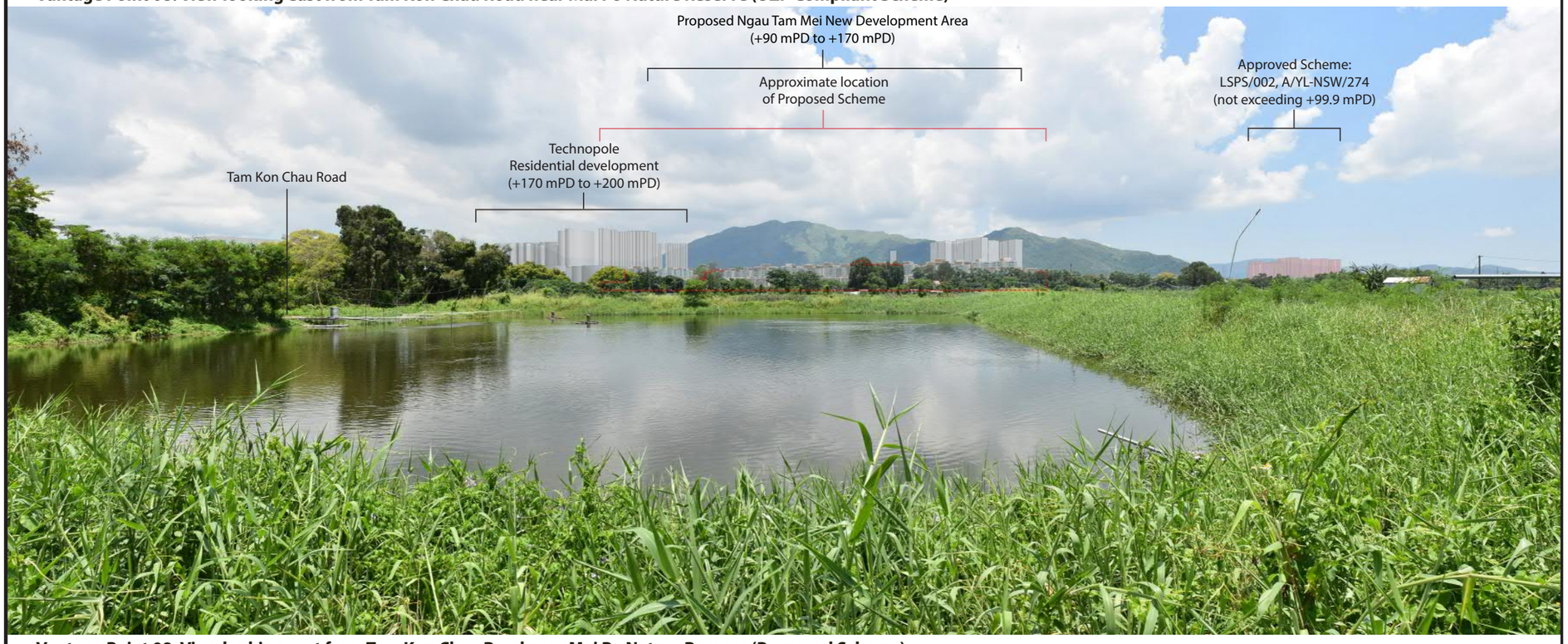
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.17	REV	A

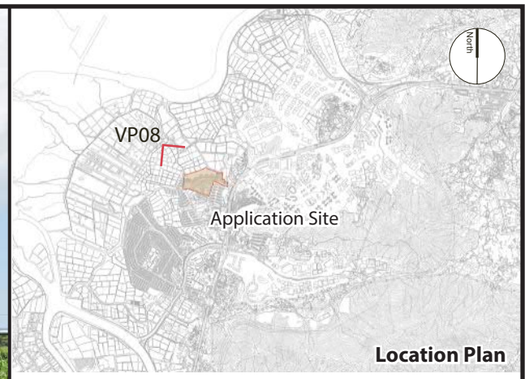
SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (OZP Compliant Scheme)



Vantage Point 08: View looking east from Tam Kon Chau Road near Mai Po Nature Reserve (Proposed Scheme)



Vantage Point 08 (VP08)

Vantage point elevation: +3.9 mPD
Viewing distance: 765 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.18	REV	A

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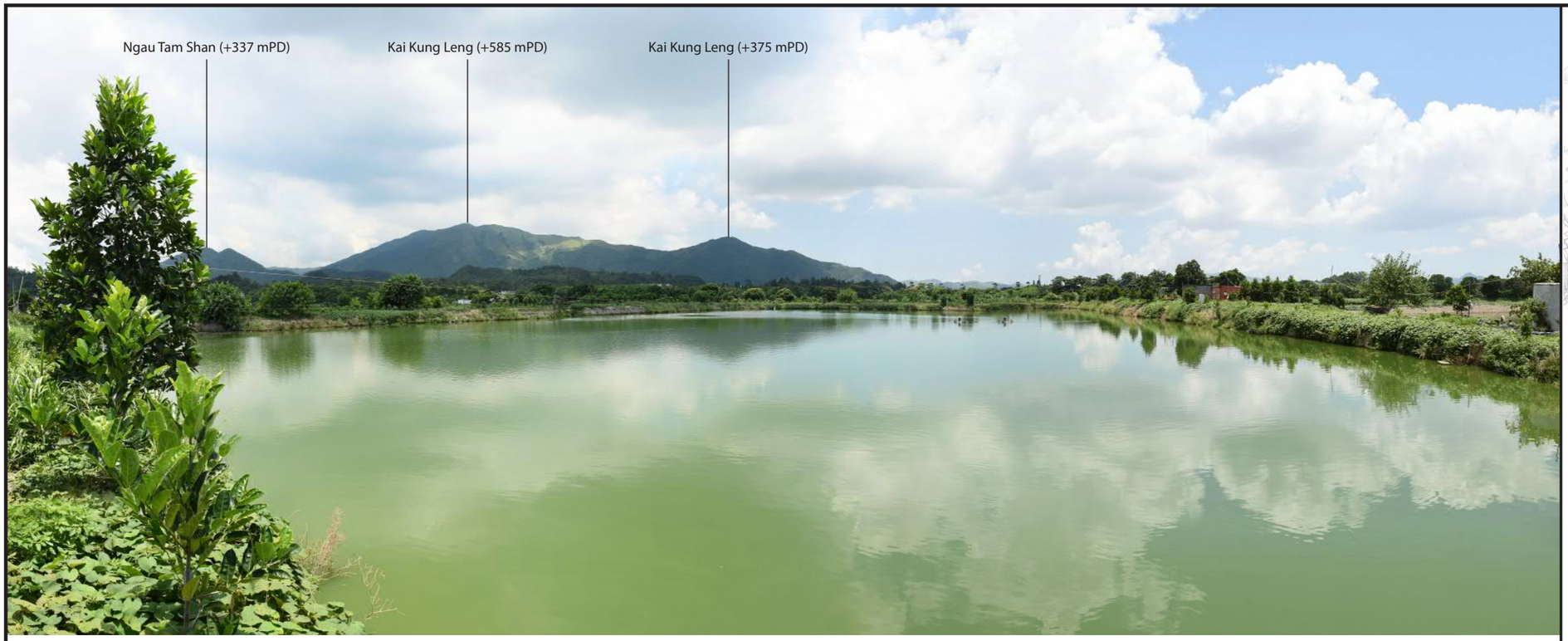
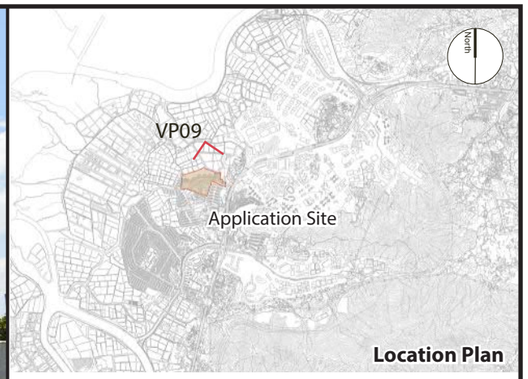
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 09: View looking south east from Tam Kon Chau Road (Existing Situation)



Vantage Point 09 (VP09)

Vantage point elevation: +3.2 mPD
Viewing distance: 550 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

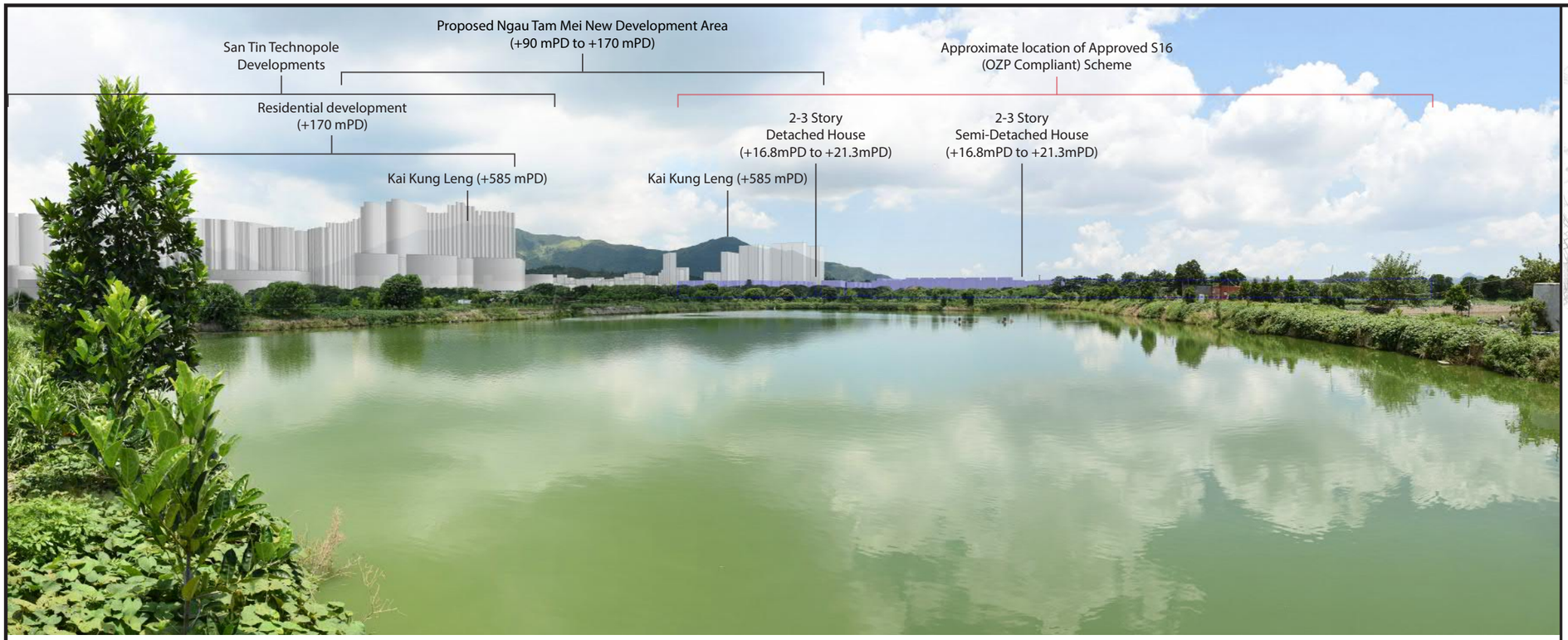
FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

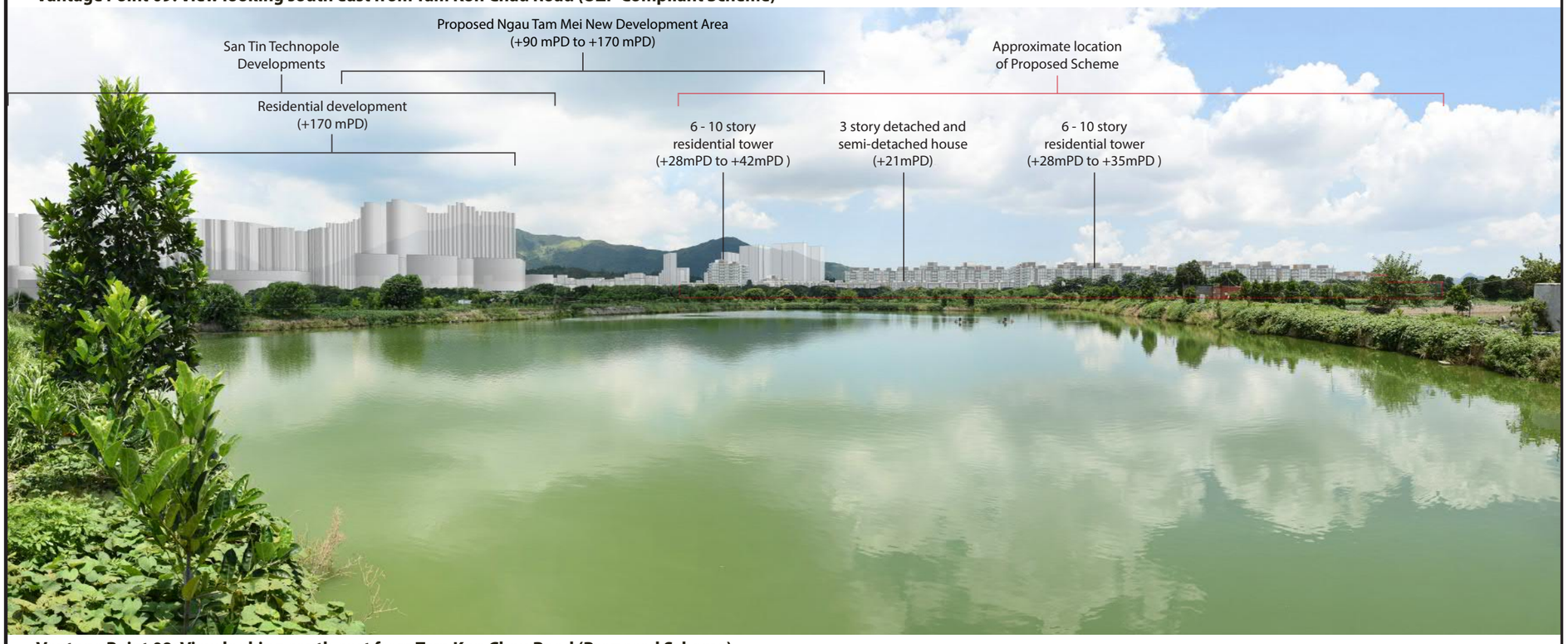
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.19	REV	A

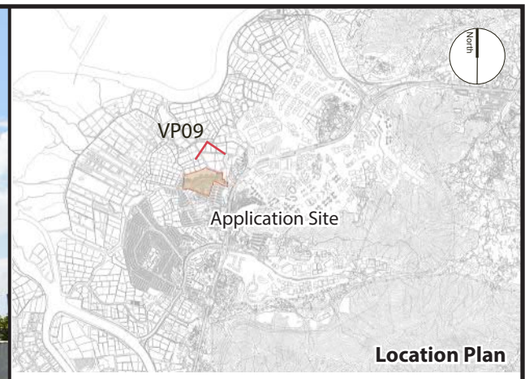
SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 09: View looking south east from Tam Kon Chau Road (OZP Compliant Scheme)



Vantage Point 09: View looking south east from Tam Kon Chau Road (Proposed Scheme)



Vantage Point 09 (VP09)

Vantage point elevation: +3.2 mPD
Viewing distance: 550 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

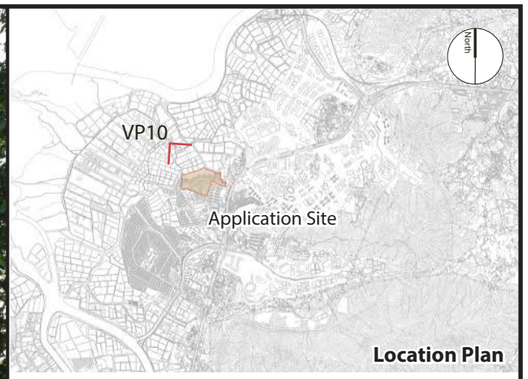
Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.20	REV	A

SCENIC Landscape Studio Limited
LANDSCAPE ARCHITECTURE, LANDSCAPE PLANNING & ASSESSMENT
12/F So Hong Commercial Building, 41-47 Jervois Street, Sheung Wan, Hong Kong
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (Existing Situation)



Vantage Point 10 (VP10)

Vantage point elevation: +5.8 mPD
Viewing distance: 720 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (Proposed Scheme)

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.21	REV	A

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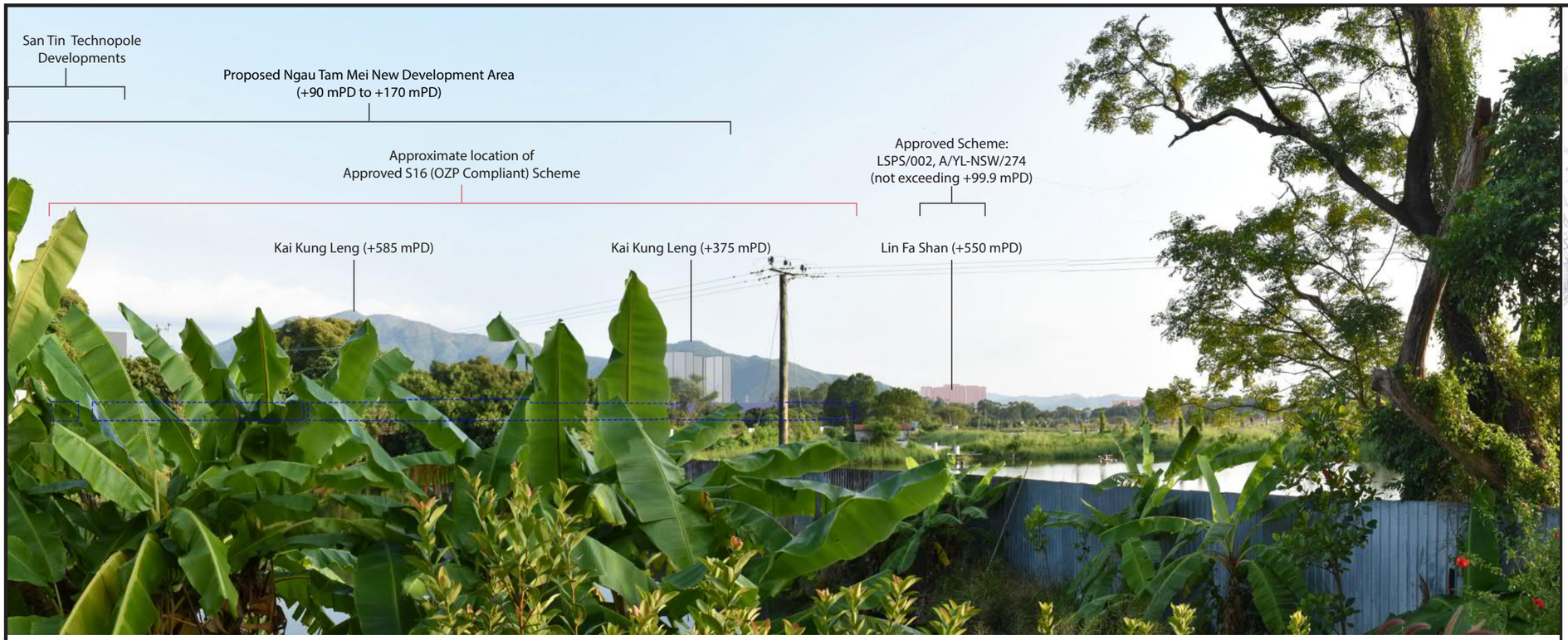
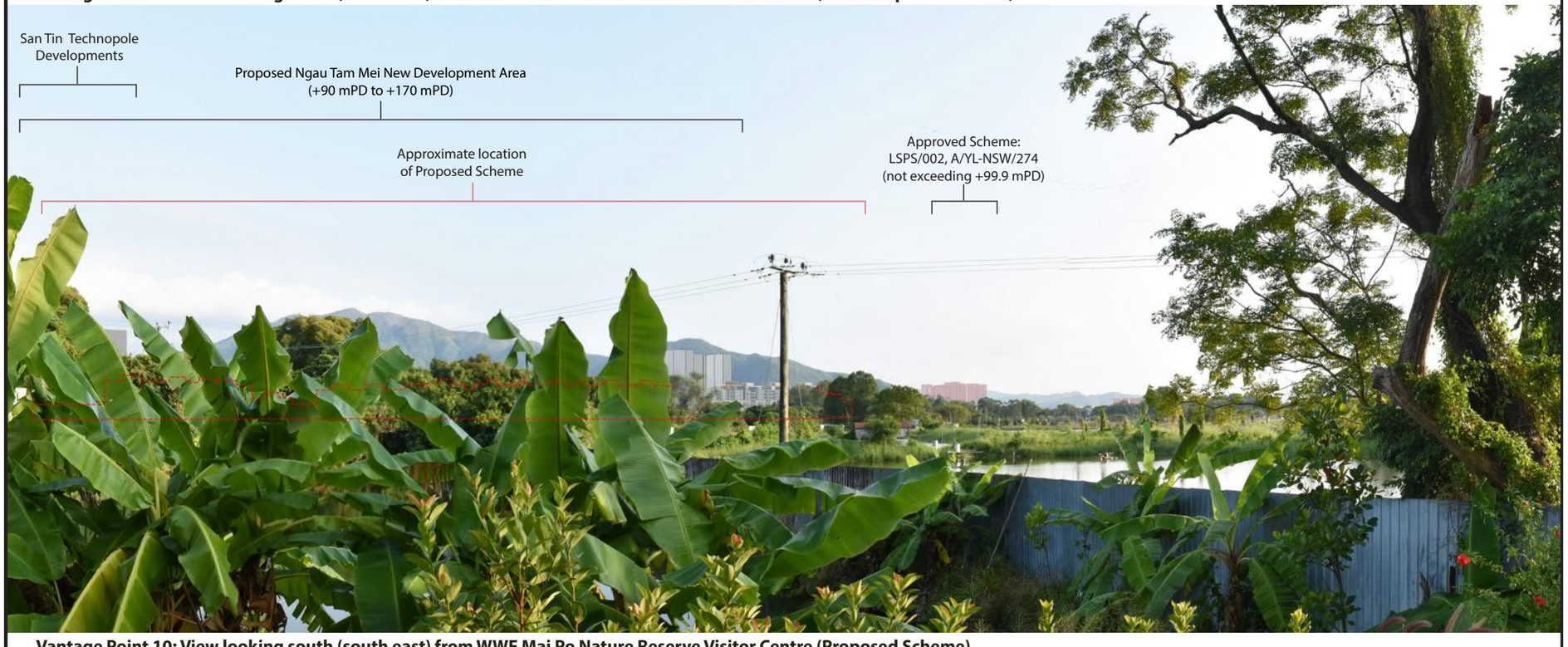
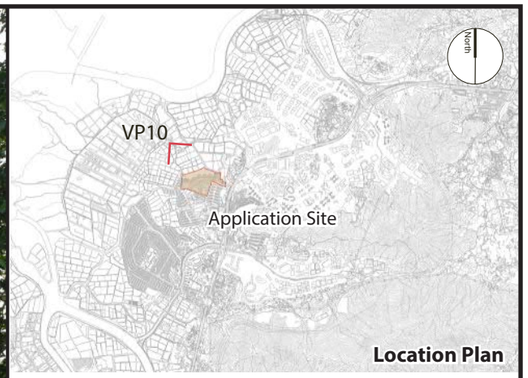
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (OZP Compliant Scheme)



Vantage Point 10: View looking south (south east) from WWF Mai Po Nature Reserve Visitor Centre (Proposed Scheme)



Vantage Point 10 (VP10)

Vantage point elevation: +5.8 mPD
Viewing distance: 720 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.22	REV	A

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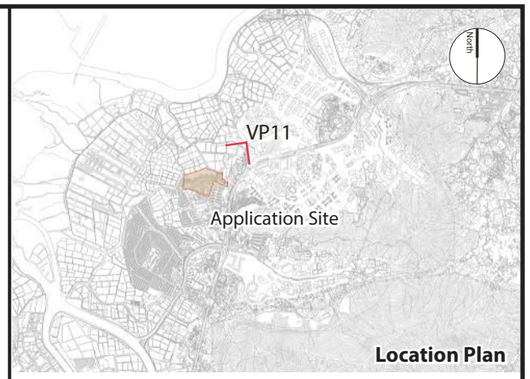
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Existing Situation)



Vantage Point 11 (VP11)

Vantage point elevation: +4.0 mPD
Viewing distance: 650 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.23	REV	A

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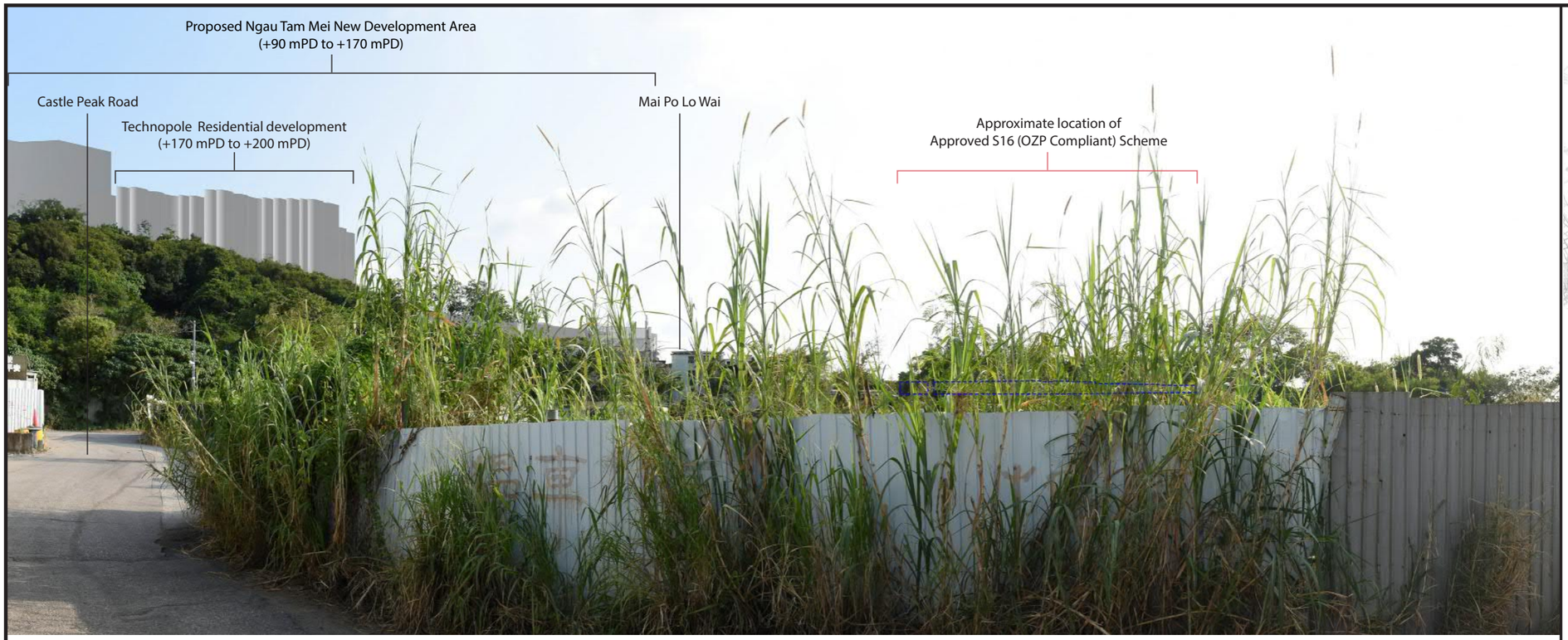
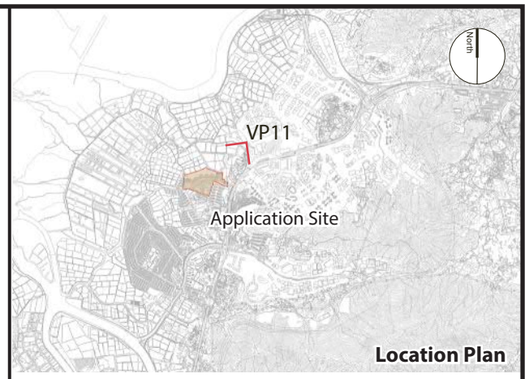
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (OZP Compliant Scheme)



Vantage Point 11: View looking south west from the proposed Sam Po Shue Wetland Conservation Park (Proposed Scheme)



Vantage Point 11 (VP11)

Vantage point elevation: +4.0 mPD
Viewing distance: 650 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.24	REV	A

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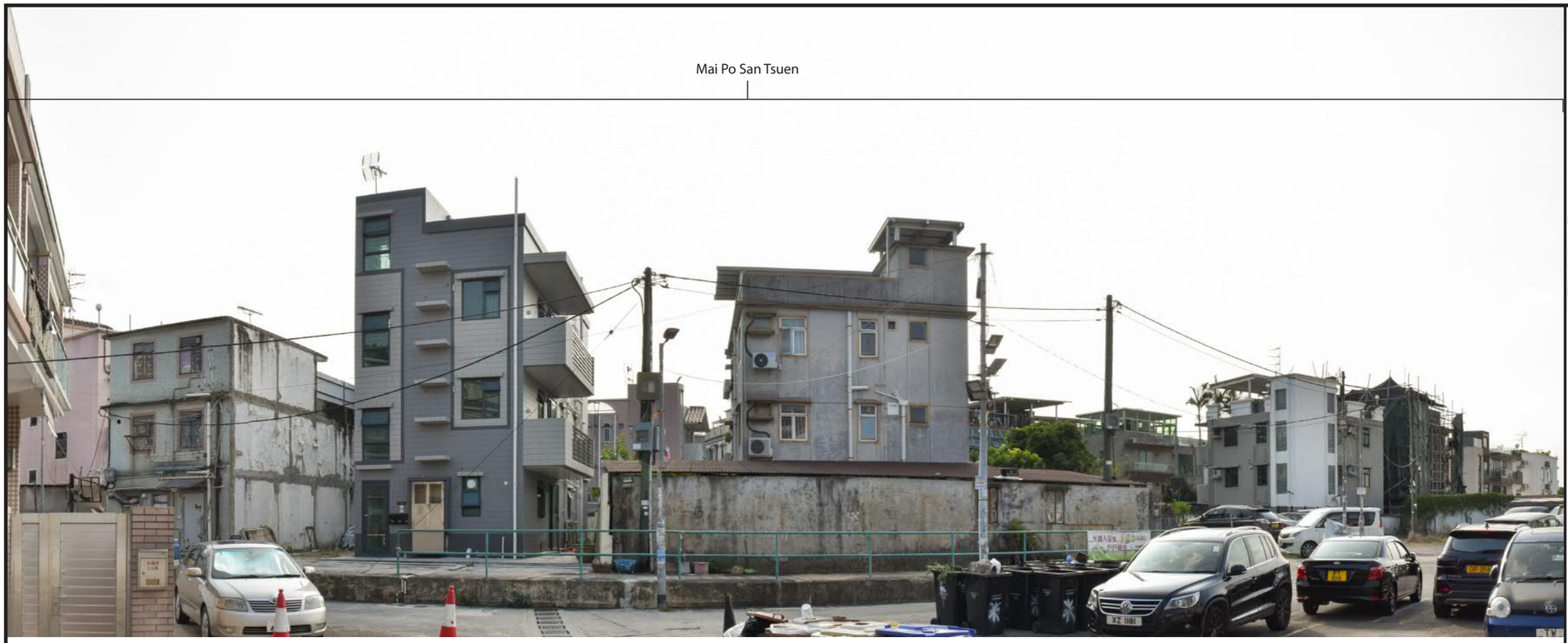
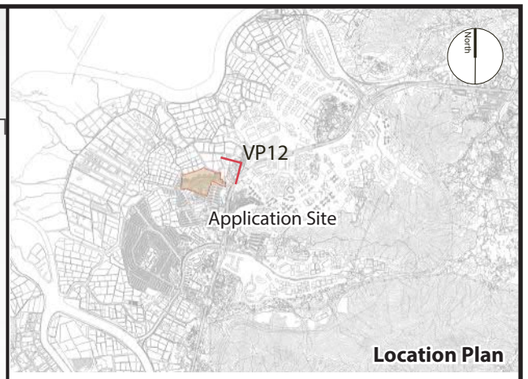
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 12: View looking west from the Tst Tong of Mai Po Tsuen (Existing Situation)



Vantage Point 12 (VP12)

Vantage point elevation: +3.5 mPD
Viewing distance: 398 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.25	REV	A

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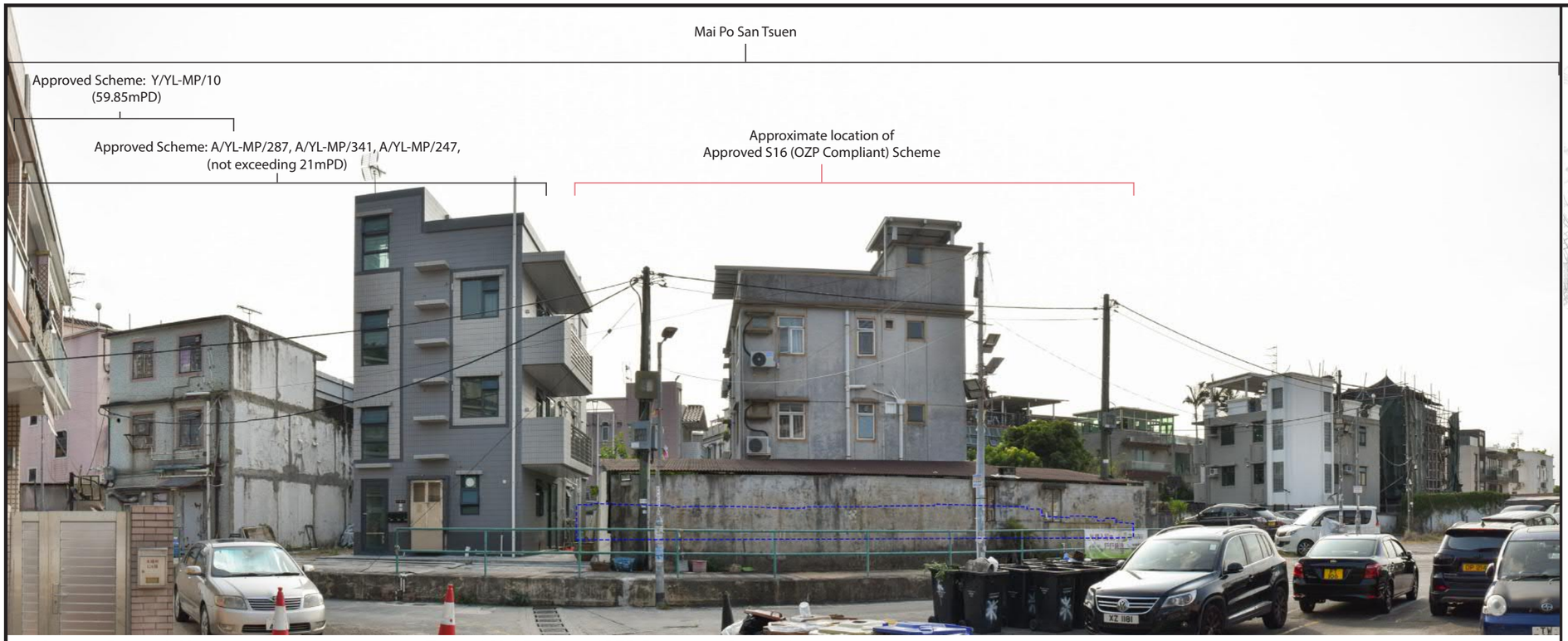
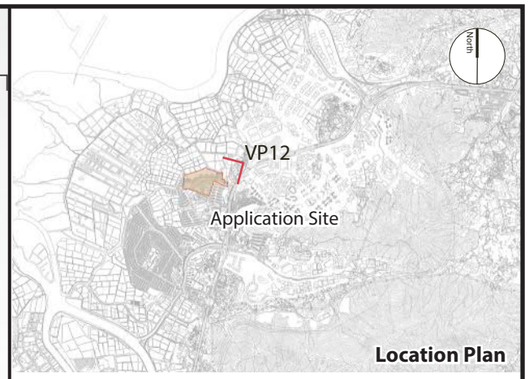
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 12: View looking west from the Tst Tong of Mai Po Tsuen (OZP Compliant Scheme)



Vantage Point 12: View looking west from the Tst Tong of Mai Po Tsuen (Proposed Scheme)



Vantage Point 12 (VP12)

Vantage point elevation: +3.5 mPD
Viewing distance: 398 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

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FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.26	REV	B

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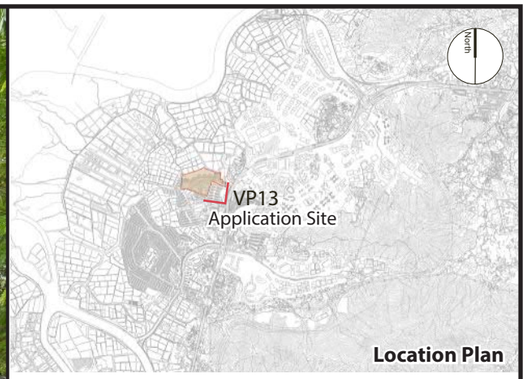
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" Zone (Existing Situation)



Vantage Point 13 (VP13)

Vantage point elevation: +6.7 mPD
Viewing distance: 330 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.27	REV	A

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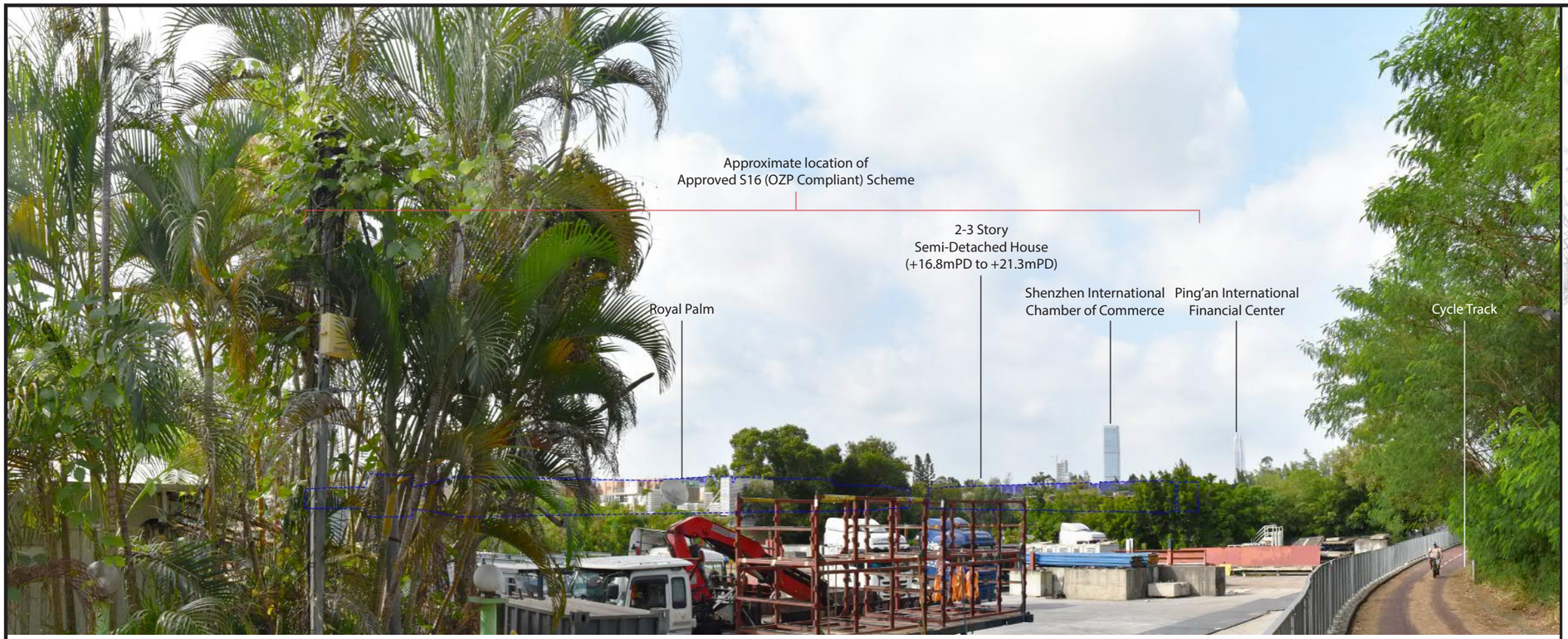
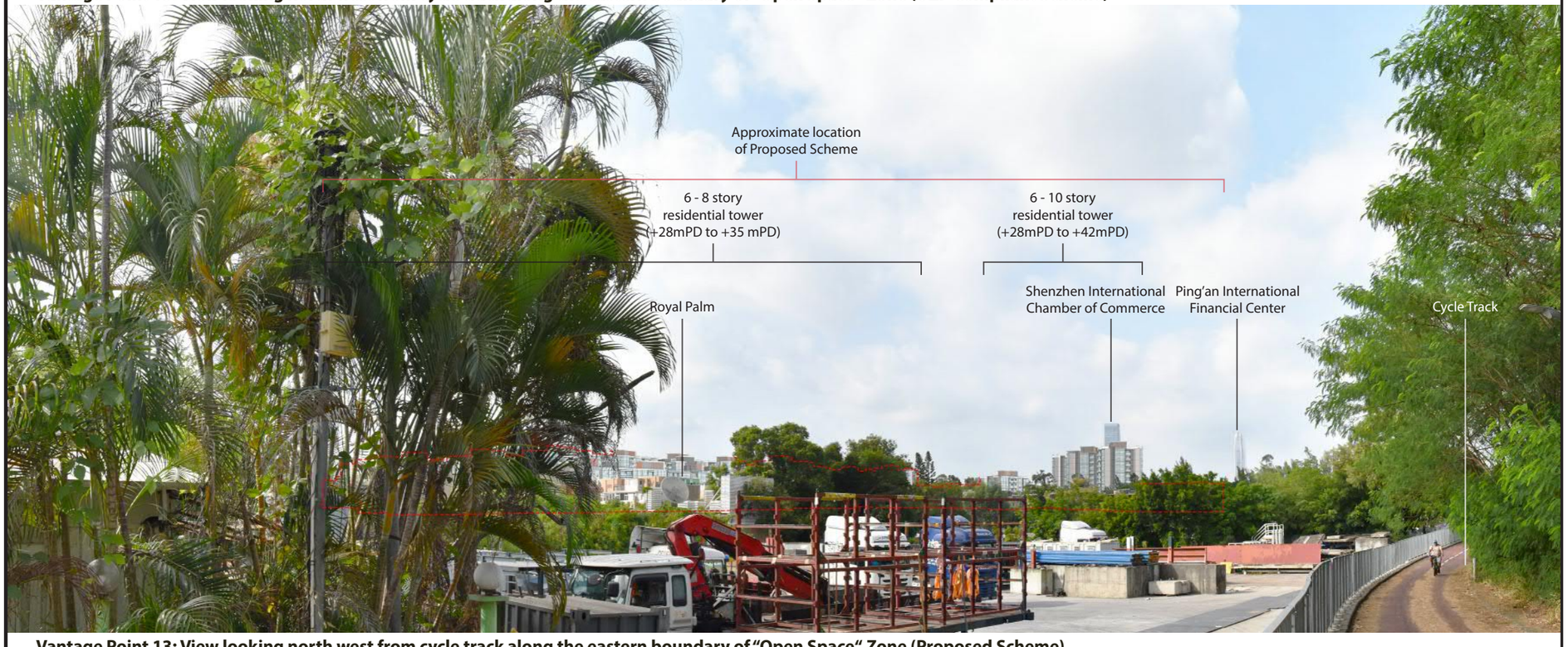
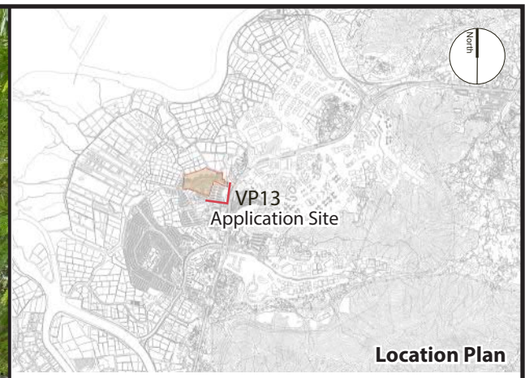
Telephone: 2468 2422
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" Zone (OZP Compliant Scheme)



Vantage Point 13: View looking north west from cycle track along the eastern boundary of "Open Space" Zone (Proposed Scheme)



Vantage Point 13 (VP13)

Vantage point elevation: +6.7 mPD
Viewing distance: 330 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

The building layout for the Proposed Ngau Tam Mei New Development Area is based on the zoning and photomontages provided in the LC Paper No. CB(1)1487/2024(04) dated 26th November 2024

A red dashed line is used to represent the extent of the Proposed Scheme where views are obscured by intervening visual objects.

FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.28	REV	A

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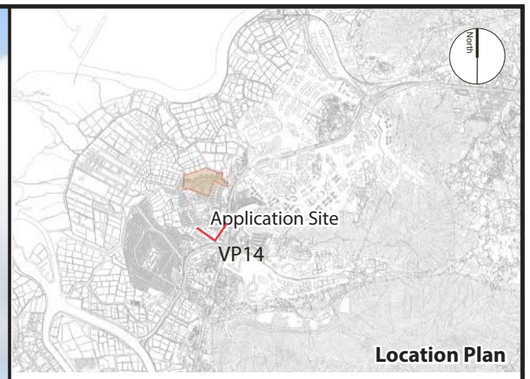
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 14:View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (Existing Situation)



Vantage Point 14 (VP14)

Vantage point elevation: +5.0 mPD
Viewing distance: 750 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.29	REV	A

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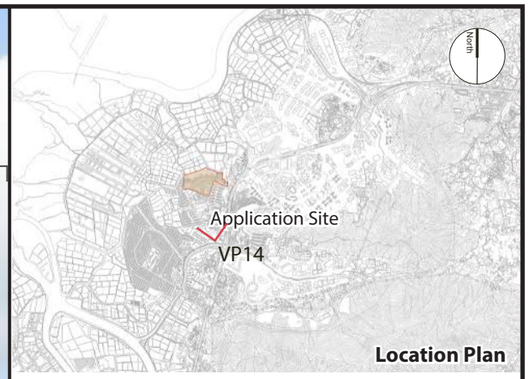
Facsimile: 3016 2422
Website: scenic@studioscenic.com



Vantage Point 14:View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (OZP Compliant Scheme)



Vantage Point 14:View looking north from the proposed Sam Po Shue Wetland Conservation Park adjoining Yau Mei San Tsuen (Proposed Scheme)



Vantage Point 14 (VP14)

Vantage point elevation: +5.0 mPD
Viewing distance: 750 m
Maximum height of Proposed Development: +42.0 mPD
Maximum height of Approved S16 (OZP Compliant) Scheme Development: +21.3 mPD

Note:
The building layout for the San Tin Technopole Development is based on the Landscape Master Plan contained in the approved EIA for Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation and the Building Heights from the Draft San Tin Technopole Developments Outline Zoning Plan (S/STT/1) dated 8th March 2024.

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FIGURE TITLE

Section 12A Application Amendment to the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Visual Impact Assessment: Photomontages

SCALE	N.T.S.	DATE	Apr 2025
CHECKED	CJF	DRAWN	WL
FIGURE NO.	Figure 7.30	REV	A

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Facsimile: 3016 2422
Website: scenic@studioscenic.com

Section 12A Rezoning Application

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in D.D. 101

Revised Supporting Planning Statement
September 2025

Applicant:
Profit Point Enterprises Limited

MASTERPLAN
Planning and Development Advisors
領賢規劃顧問有限公司

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Appendix 7: (Revised) Water Supply Impact Assessment
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Appendix 9: (Revised) Traffic Impact Assessment
Appendix 10: (Revised) Visual Impact Assessment
Appendix 11: (Revised) Air Ventilation Assessment
Appendix 12: (Revised) Landscape Master Plan (Including Tree Preservation Proposal)

List of Consultants

Aurecon Hong Kong Ltd
AXXA Group Limited
LWK & Partners (HK) Ltd
Masterplan Limited
Mott MacDonald Hong Kong Limited
Scenic Landscape Studio Ltd
WSP Hong Kong Limited

Executive Summary

S1. This application is made under section 12A of the Town Planning Ordinance, with regards to the Application Site on the "Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8" (the "OZP"). The Application Site is located at Wo Shang Wai, Yuen Long. Castle Peak Road – Mai Po and San Tin Highway are to the east of the Application Site, while the Site is easily accessible via Mai Po South Road off Castle Peak Road – Mai Po. This application aims to increase the maximum plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3 with a maximum building height ("BH") adjusted from 6-storeys (i.e. maximum building height permissible on the OZP) to not more than 10-storeys (excluding 1 storey of basement), by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. The current proposal is incorporated with improved design and planning merits, as compared to the previously approved section 16 planning application No. A/YL-MP/344.

S2. In recent years, a changing context of the overall planning approaches of the New Territories North have evolved, including the implementation of the Northern Metropolis Development Strategy. The Government is actively taking forward the development of the Northern Metropolis and is commissioning a series of local and strategic transport infrastructure projects which would create capacity for the higher development intensity in the area.

S3. In July 2024, the Town Planning Board ("TPB") considered and agreed to a new OZP at San Tin, which would materialize the major development node of the "San Tin Technopole" in a new future development context based on closer integration with Shenzhen. In September 2024, the Chief Executive in Council approved the new OZP. The new OZP has defined a new development context in the planning area for ***co-existence of development and conservation***, with a focus on driving both ***innovation and technology development and quality housing supply*** in the district.

S4. The proposed increase in development intensity is to optimize the development potential of the Site, in view of the future drastic transformation in the development context, emerging trend of increasing development intensity in other nearby sites, major infrastructure development. The Application Site would be able to leverage on the upgrades of the surrounding infrastructure, which would provide capacity to increase development intensity of the Site. The technical assessments have

indicated that with mitigation measures, there would not be any adverse technical impact arising from the proposed development. The ecological function of the completed WRA remains intact and unaffected, while technical assessments have demonstrated that the increased development intensity would have no adverse impact to the surrounding traffic network, sewage capacity, drainage, water supplies, wetland ecology, landscape, visual, air ventilation, and land-use character; while the proposed scheme will continue to uphold its planning intention and function in the Wetland Buffer Area.

S5. The Applicant is aware of the housing and community facilities shortfall in Hong Kong and the Site has already been intended for residential use with previous planning approvals. The intention now is to better utilize the land resources in view of the surrounding transformations and available infrastructure. The amendments proposed in this application would allow the Application Site to blend in with and strike a good balance between the nearby development intensity of the San Tin Technopole (i.e. plot ratios of 6.5 and building heights of up to 200mPD) and existing surrounding private residential clusters (i.e. around 3-storey houses). It provides a practical option to contribute to housing supply in the Northern Metropolis, while allowing co-existence of optimised development potential and nature conservation.

(If there is any inconsistency or ambiguity between the English version and the Chinese version, the English version shall prevail)

摘要

S1. 本申請依據《城市規劃條例》第 12A 條提出，擬議就申請地點將「米埔及錦繡花園分區計劃大綱核准圖編號 S/YL-MP/8」作出修改。申請地點位於元朗和生圍，青山公路-米埔和新田公路位處申請地點以東，由青山公路-米埔經米埔南路便能便捷到達申請地點。申請旨在將申請地點之地積比率由 0.4（即分區計劃大綱圖上的最高許可地積比率）提高至 1.3，最高建築高度由 6 層（即分區計劃大綱圖上的最高許可建築高度）調整至不超過 10 層（不包括 1 層地庫）。與先前獲城市規划委員會批准的第 16 條規劃申請編號 A/YL-MP/344 相比，擬議發展之設計和規劃優點有所改善。

S2. 近年來，新界北的整體規劃境況已明顯改變，尤其包括北部都會發展策略的實施。政府正積極推動北部都會的發展，並令速建設一系列本地和跨境策略性運輸交通基礎設施項目，為該區更高的發展能力創造動力。

S3. 城市規劃委員會於 2024 年 7 月同意在新田制定新的分區計劃大綱圖，旨在與深圳更緊密融合，實現「新田科技城」此主要發展。行政長官會同行政會議於 2024 年 9 月已批准了新的大綱圖，締造一個發展與保護共存的新發展環境，重點是推動該區的創新和科技發展配以優質住房配套供應。

S4. 擬議之發展密度是為了充分利用申請地點的發展潛力，考慮到未來發展環境轉變、附近其他地點發展密度相應增加的新趨勢、以及主要基礎設施發展所帶來的便利交通。申請地點將能夠利用周邊優化的基礎設施，提高發展能力。各技術評估結果亦顯示擬議發展方案採取緩解措施後不會產生任何不良影響。建成後的濕地保護區生態功能仍然完好無損，同時增加的發展密度不會對周圍的交通網絡、排污能力、排水、供水、濕

地生態、景觀、視覺、空氣流通和土地使用等範疇產生不良影響。擬議方案將繼續維持其在濕地緩衝區的規劃意向和功能。

S5. 緊於香港的房屋及社區設施短缺，該片土地已在先前的規劃批准下用作住宅用途以為未來房屋土地供應出一分力。現在申請能充份更利用土地資源，並考慮到周圍的規劃環境和基礎設施。本申請方案中建議的修訂將使申請用地與毗鄰的新田科技城（即 6.5 的地積比率和高達 200mPD 的建築高度）以及周圍現有的私人住宅集群（即約 3 層住宅）相互融合協調，特別提供了一個務實而可行的發展機遇，既有助於北部都會區的住房配套供應，又兼顧發展潛力和自然保護。

(如果英文版本和中文版本之間有任何不一致或不一致，以英文版為準)

1. Introduction

1.1 This application is made under section 12A of the Town Planning Ordinance, with regards to the Application Site on the "Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8" (the "OZP"). This application aims to increase the maximum plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3 with a maximum building height ("BH") adjusted from 6-storeys (i.e. maximum building height permissible on the OZP) to not more than 10-storeys (excluding 1 storey of basement), by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.2 This supporting planning statement will provide an overview of rationale and justifications for this rezoning application. The major topics that would be covered include a review of the existing and future development context, relevant planning applications background, proposed scheme, technical feasibility, proposed amendments to the OZP, and planning assessment and justifications.

2. The Application Site and Its Surroundings

2.1 ***The Application Site***

2.1.1 The Application Site is located at Wo Shang Wai, Yuen Long. Castle Peak Road – Mai Po and San Tin Highway are to the east of the Application Site, while the Site is easily accessible via Mai Po South Road off Castle Peak Road – Mai Po. It is also generally bounded by fishponds to the north, residential developments namely Royal Palms, Palm Springs and Wo Shang Wai Village to the south, and Mai Po San Tsuen to the east. The Site falls under the MP OZP, and is zoned "OU(CDWRA)". A location plan is provided in **Figure 1**.

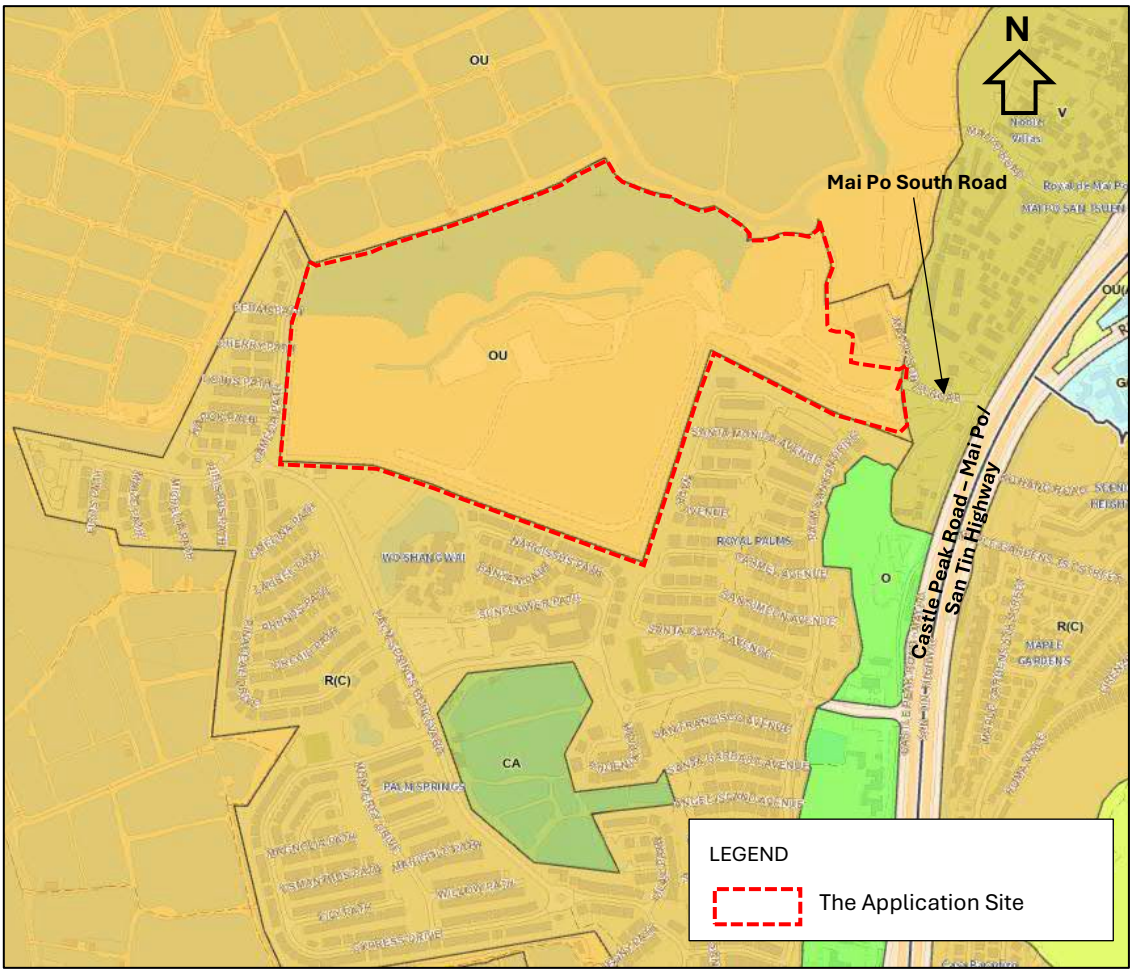


Figure 1: Indicative Location of the Application Site on the OZP

2.2 ***Existing Site Conditions***

2.2.1 The Site has been underutilized for years and is currently in a vacant land with wild grass and partly paved. It is capable of speedy implementation as it is ready for construction. **Figure 2** shows the current site condition.



Figure 2: Photo of the existing site condition

2.3 ***Site Constraints***

2.3.1 The major site constraints of the Site that has restricted its development intensity, include (**Figure 3**):

a) MTRCL railway protection zone to the east of the Site.
b) The completed Wetland Restoration Area portion in the Site.
c) The proposed Sam Po Shue Wetland Conservation Park (SPS WCP) to the north of the Site.
d) The existing low-density private residential developments in the surroundings.

2.3.2 In view of these major site constraints, the residential portion has been designed to a scale and form to be compatible to, and mitigate the impact to the surroundings.

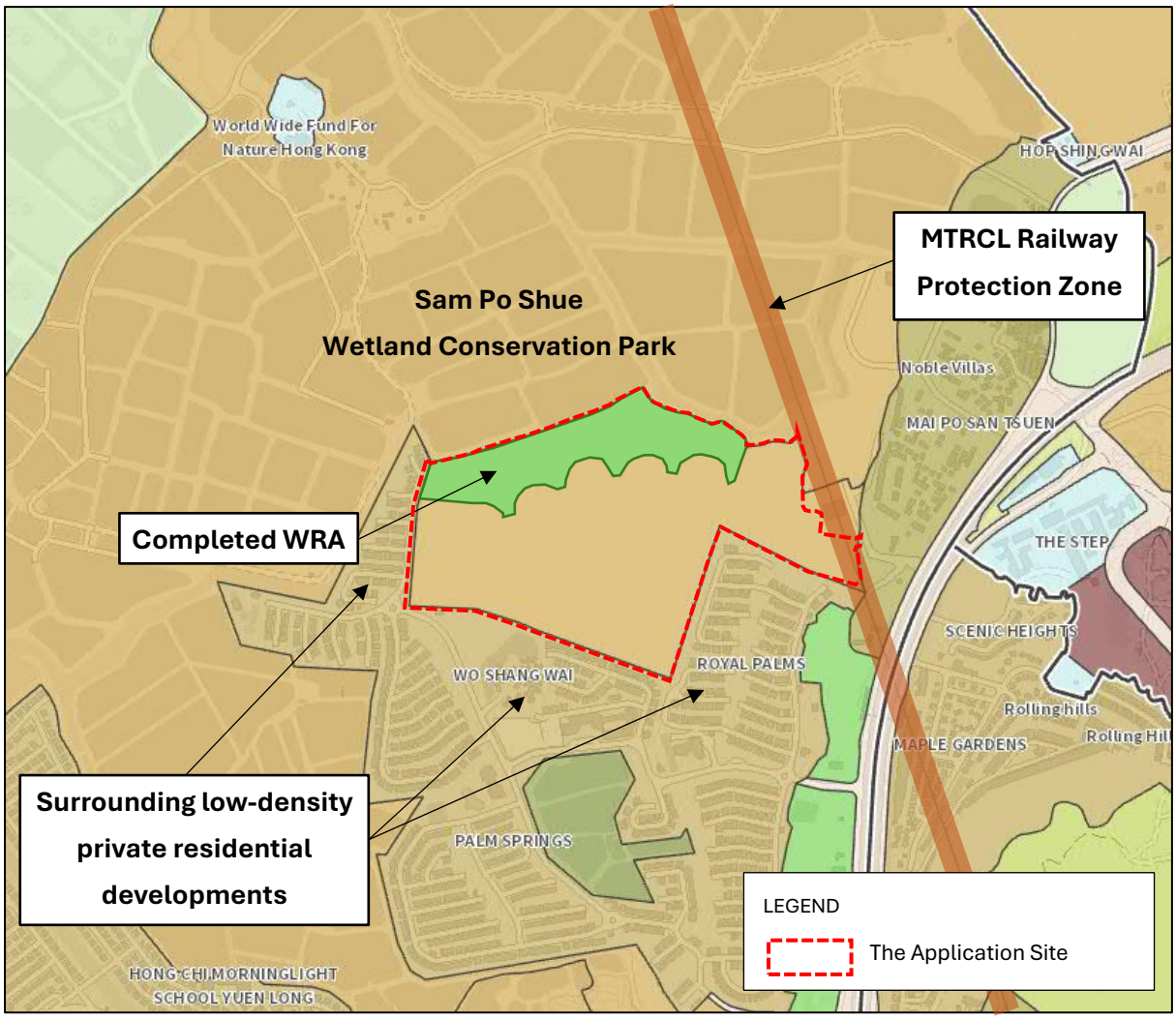


Figure 3: Major Site Constraints

2.4 ***Surrounding Developments***

2.4.1 The Site is surrounded by various existing and planned residential developments and villages houses, as well as fish ponds.

2.4.2 To the immediate east of the Site are the MTRCL's Mai Po Ventilation Building for the Express Rail Link (XRL) project and a village cluster called Mai Po San Tsuen. Further to the east are major roads / highway (e.g., Castle Peak Road – Mai Po Section and the San Tin Highway) in the San Tin area. Private residential developments are located next to the Site, including to the west is Palm Springs (West); to the south is the Palm Springs (East), and to the east is Royal Palms. Moreover, there are some existing open storage uses and lorry parking spaces to the further northeast.

2.4.3 To the north of the Application Site is the proposed SPS WCP, made up of mainly large areas of continuous fishponds and wetlands.

2.5 ***Statutory Planning Context***

2.5.1 The Application Site is currently zoned "OU(CDWRA)". The planning intention of the zone states that:

"This zone is intended to provide incentive for the restoration of degraded wetlands adjoining existing fish ponds through comprehensive residential and/or recreational development to include wetland restoration area. It is also intended to phase out existing sporadic open storage and port back-up uses on degraded wetlands. Any new building should be located farthest away from Deep Bay."

2.5.2 The Remarks to the Notes states that:

(a) Application for permission of use or development… shall be in the form of a comprehensive development scheme to include wetland restoration proposal. An applicant shall prepare a layout plan and other documents showing the following information for consideration of the Town Planning Board:

(i) the proposed land uses, development parameters, the nature, position and heights of all buildings to be erected in the area;

(ii) an environmental impact study report, including but not limiting to an ecological impact assessment and a visual impact assessment, to examine any possible environmental, ecological and visual problems that may be caused to or by the proposed development or redevelopment during construction and after completion and the proposed mitigation measures to tackle them;

(iii) landscape proposals;

(iv) a traffic impact study report to examine any possible traffic problems that may be caused by the proposed development or redevelopment and the proposed measures to tackle them;

(v) a drainage and sewerage impact study report to examine any possible flooding, drainage, sewerage and associated problems that may be caused to or by the proposed development or redevelopment and the proposed mitigation measures to tackle them;

(vi) programming, phasing, and implementation schedule of each component of the proposed development or redevelopment…

(c) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 0.4 and a maximum building height of 6 storeys including car park.

(d) In determining the maximum plot ratio… any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room, caretaker's office and caretaker's quarters, or recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

2.6 ***Town Planning Board Guideline No. 12C***

2.6.1 Town Planning Board Guideline No. 12C for "Applications for developments within Deep Bay Area under Section 16 of the Town Planning Ordinance" applies to the Application Site. The proposed scheme abuts the Wetland Conservation Area (WCA) and is situated within the Wetland Buffer Area (WBA).

3. Relevant Planning Applications Background

3.1 ***Previously Approved Section 16 Planning Application No. A/YL-MP/344***

3.1.1 The Application Site contains a previously approved S.16 planning application (No. A/YL-MP/344) for proposed comprehensive house and wetland restoration area on 1 March, 2024. The purpose of the S.16 application was to amend the layout of the residential portion in another approved planning application (No. A/YL-MP/229), in response to the rising demand for housing supply in the market trends. The number of flats was increased from 400 to 789 as compared to the A/YL-MP/229 scheme. It would not affect the already completed Wetland Restoration Area ("WRA") portion within the Application Site. Please find the layouts and the parameter table of the previous approved S.16 planning application (No. A/YL-MP/344) in **Appendix 1**.

3.2 ***Previously Approved Planning Applications***

3.2.1 The previously approved planning applications at the Site are shown in **Table 1** below.

Table 1: Previously Approved Planning Applications at the Application Site

Application No.	Applied Use/Development	Approval Date
A/YL-MP/166	Comprehensive development and WRA	19 Sep 2008
A/YL-MP/185	An alternative layout for the comprehensive development and WRA	4 Nov 2011
A/YL-MP/185-1	Minor amendment to the approved development scheme under Application No. A/YL-MP/185	18 Jul 2012
A/YL-MP/229	An alternative comprehensive development scheme with a utility installation (sewerage treatment plant)	27 Feb 2015
A/YL-MP/291	An alternative layout and form of housing which entails a principal residence at the centre of the site	10 Jul 2020
A/YL-MP/344	Proposed comprehensive house and wetland habitat development with filling and excavation of land (amendments to Approved Application No. A/YL-MP/229)	1 Mar 2024

3.3 ***Section 6(1) Representation No. S/YL-MP/7-R3***

3.3.1 The Applicant submitted a representation to the TPB in May 2024, in respect of the proposed amendments to the Approved Mai Po and Fairview Park OZP. The representation proposed to increase the development intensity from total plot ratio of 0.4 to 1.5, and building height from 6-storeys to 22-storeys, and provide about 5,134 flats in the OU(CDWRA) zone. The proposed representation scheme comprised 80 no. of houses that are 3-storey high, and 47 residential blocks, arranged in a configuration with a stepped building height band with the lowest building height of 6 to 8-storeys closest to the wetland areas, and increases gradually to 12, 18 and 22-storeys that are farthest from the wetland areas at the south of the Site. Please refer to **Appendix 2** for the representation scheme.

3.3.2 The representation was not upheld for the following reasons by Town Planning Board: "The site-specific proposals submitted by the representers are considered

inappropriate to be taken on board as insufficient details are available or the proposals are not supported by any technical assessments. The current land use zonings and the associated Notes and ES for the concerned sites under both STT OZP and MP OZP have already taken into account relevant planning and technical considerations and are considered appropriate"

3.3.3 In the TPB Paper No. 10973, Para. 5.3.7.2, the Planning Department also indicated there was a lack of technical assessments to justify the technical feasibility of the proposed increase in development density of the site, and was not compatible to the surrounding low-rise village/ residential developments.

3.3.4 In view of the feedback of TPB and PlanD in the process of this Representation, we have taken their advice and proceeded with the current application, with full technical feasibility; an investigation of how the current scheme fits in with the wider planning context of medium-density developments, springing from the new major development nodes (such as STT and NTM New Development Area); the reduction of our original development intensity from total plot ratio 1.5 to 1.3, maximum building height of 22-storeys down to 10-storeys, to ensure the current scheme is compatible to the surrounding developments; and the inclusion of planning merits to demonstrate the benefits the scheme could bring to the community.

4. Land Administration

4.1 After the previous planning approvals, the Applicant applied to the Lands Department for a land exchange under planning permission of application No. A/YL-MP/229, and a land grant was executed on 29 January, 2021.

4.2 Under the planning permission of the previous application No. A/YL-MP/229, one of the conditions was (g) – the submission and implementation of a funding arrangement proposal for ensuring the long-term maintenance and management of the Wetland Restoration Area. On 25 January 2021, the Applicant made a one-off lump sum donation to the Environment and Conservation Fund ("ECF"). An agreement between the Applicant and the ECF was made on 26 January 2021. The conservation agent of the Applicant has been carrying out the maintenance and management plan and the funding agreement is fully applicable to this application.

5. Environmental Impact Assessment Ordinance

5.1 The WRA has been completed under a previously approved application, and its conservation management plan has been implemented and put in place since 2010. The main ecological function of the WRA is to provide habitat for bird species in the surrounding wetland area.

5.2 The residential portion in the site is subject to the Environmental Impact Assessment Ordinance (EIAO). Approvals pertinent to EIAO include:

i. Environmental Impact Assessment (Register No.: AEIAR-120/2008) for the development at the site approved on 31 July 2008.

ii. Environmental Permit (No. EP-311/2008) for the construction and operation of the development issued on 9 September 2008, the latest one being 19 December 2017 (EP-311/2008/E).

iii. Variations to the Environmental Permit reflecting the approved development schemes have been approved, the latest one being 19 December 2017 (No. VEP-538/2017).

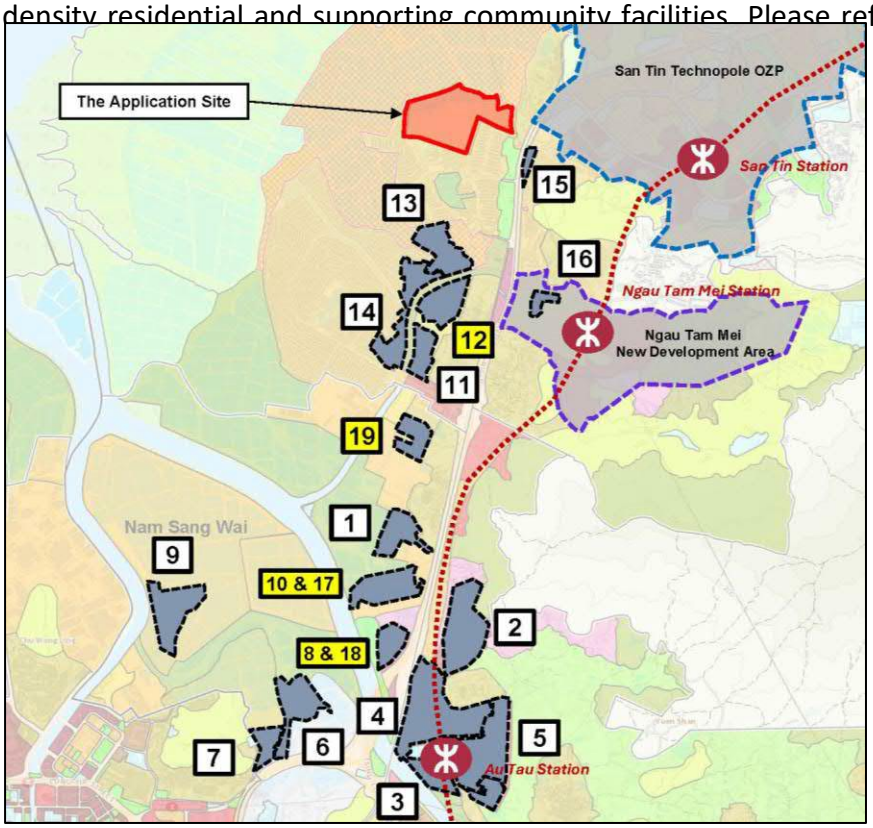
5.3 Since the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO, the Applicant undertakes to review the EIAO implications at later stage and confirm with the EPD. The Applicant will observe and ensure the proposed development will comply with all statutory requirements under the EIAO.

6. Development Context

6.1 ***The Increase in Development Intensity of Comprehensive Residential Developments in the Vicinity***

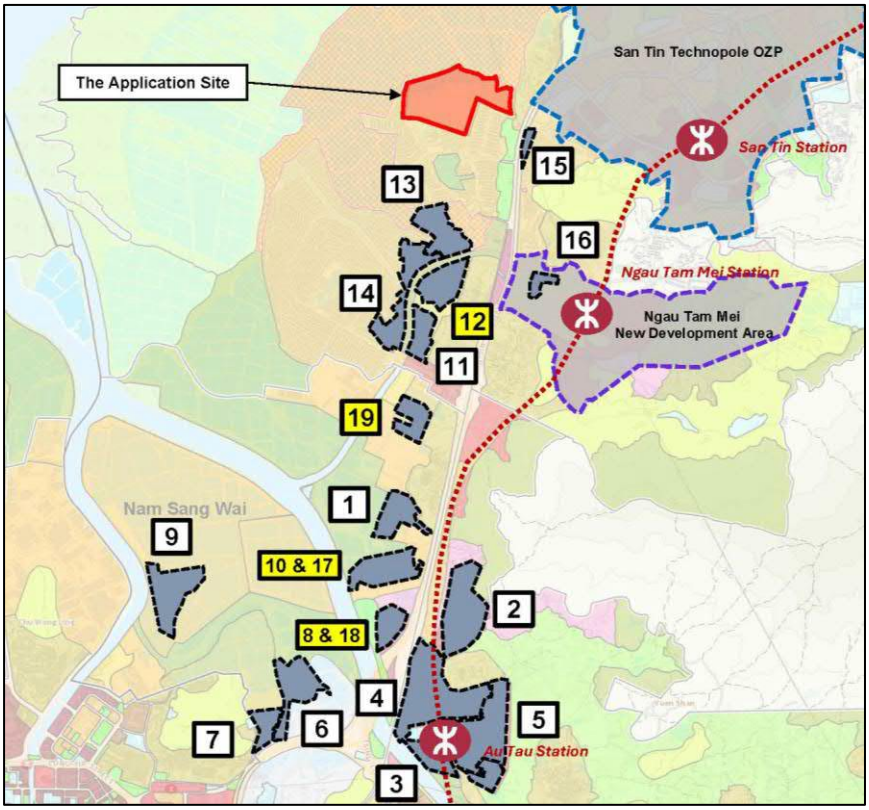
6.1.1 The Northern Metropolis covers a total area of 30,000 hectares, which is about one third of the total area of Hong Kong. It comprises various existing new towns in the New Territories North, some NDAs, and some expanded areas. In the Policy Address 2022, the development of Northern Metropolis is one of the policy priorities as it is the new engine for growth. The Policy Address 2023 further suggested that the Northern Metropolis will become a major hub for Hong Kong to integrate into the overall development of China.

6.1.2 Drawing on the policy momentum of the Northern Metropolis Development Strategy, many locations in the vicinity of the Application Site is under-going or has gone through the increase of development intensity and infrastructure upgrade, especially the Northern Link Main Line and the future Northern Metropolis Highway. In recent years, land-use zonings for comprehensive residential developments that are similar to the Application Site, have obtained approval from Government for increased development intensity and have proceeded with implementation of medium to high-density residential and supporting community facilities. Please refer to **Table 2** and



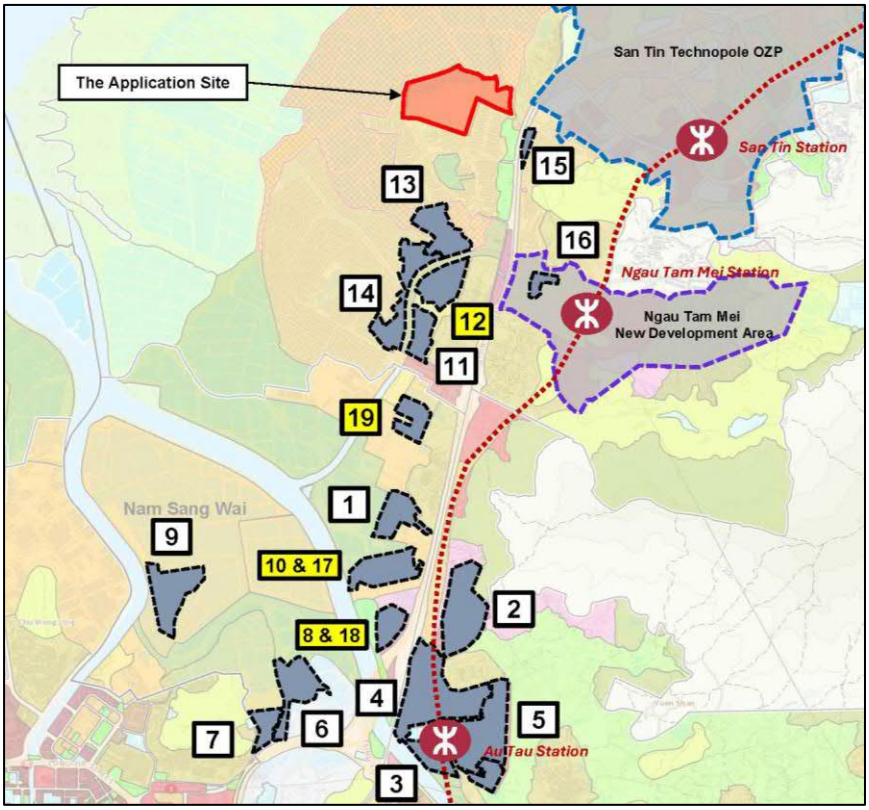
6.1.3 **Figure 4** for the locations of the developments.

6.1.4 With reference to **Table 2** and



6.1.5 **Figure 4**, Item 1 (Application No. Y/YL-NSW/7) (i.e. "Approved Rezoning") was recently approved by the TPB in November 2023, for upzoning from PR 0.4 to 1.5 and building height restriction increase of up to 15-storeys high, while retaining the original planning intention. The Approved Rezoning also went through the OZP amendment process, as amendment Item E, and was upheld by the TPB in December 2024. The Approved Rezoning site has a similar planning context and the identical zoning of "OU(CDWRA)" as the Application Site. It is in proximity and situated on the west side of the San Tin Highway; within the same Wetland Buffer Area (WBA); at the fringe of a Wetland Conservation Park (i.e. Nam Sang Wai Wetland Conservation Park); and there are low-density houses in proximity to the Approved Rezoning site.

6.1.6 With reference to **Table 2** and



6.1.7 **Figure 4**, Item 6 (Land Sharing Pilot Scheme at Tung Shing Lei) (i.e. "Approved LSPS"), which comprises public and private housing and associated supporting infrastructures, was endorsed in principle by the Chief Executive in Council in November 2022. Subsequently, it went through the OZP amendment process and was upheld by the TPB in December 2024. The Approved LSPS was to rezone the existing low-density zoning to a high-density zoning in an area of mainly rural character, to allow public and private housing developments with a plot ratio of about 3.23, and building heights of 26-storeys (not more than 100mPD).

6.1.8 The surrounding land-use character is under-going major changes and adopting a development model to coincide with the future development context of the NMDS. The Application Site is amid this change, and it is a suitable juncture to follow the development trend and contribute to the socio-economic growth of the New Territories North.

Table 2: Similar Approved Comprehensive Developments in the District

Item No.	Application No.	Type	Zoning	Date Approved	Maximum Parameters	
1	Y/YL-NSW/7	Private Housing	OU CD(WRA)	2023 November	PR 1.5	15-storeys
2	N/A	Sha Po Public Housing	R(A), R(C)3 & GIC	2023 (agreed by TPB)	PR 6.7	185 mPD
3	A/YL-KTN/663	Private Housing	CDA	2020	PR 1.67	17-storeys
4	A/YL-KTN/118	Park Yoho - Existing Private Housing	CDA	2012	PR 1.25	11 to 17-storeys (62.5 mPD)
5	A/YL-KTN/604	Private Housing	CDA(1)	2019	PR 1.254	12 to 18-storeys
6	N/A	LSPS Tung Shing Lei	R(D)	2022	PR 3.23	26-storeys
7	A/YL-NSW/274	Private Housing	U	2021	PR 2.29	21-storeys (75mPD)
8	Y/YL-NSW/3	Commercial (Hotel)	OS	20168	PR 1.5	11-storeys
9	A/YL-NSW/242	Private Housing	OU CD(WEA) & SSSI(1)	2021	PR 2.76 (based on development site area)	26-storeys
10	A/YL-NSW/241	Private Housing	OU CD (WRA)	2017	PR 0.4	4-storeys
11	A/YL-MP/287	Private Housing	R(D)	2020	PR 0.2	2-storeys
12	Y/YL-MP/10	Private Housing	R(D) to R(C)1	2025 Jul	PR 1.59	16-storeys
13	A/YL-MP/247	Private Housing	OU CD(WPA)	2016 2020 EOT	PR 0.2	3-storeys
14	A/YL-MP/341	Light Public Housing	R(C)	2023	PR 0.64	3-storeys
15	A/YL-NTM/310	Private Housing	R(C)	2014	PR 0.48	3-storeys
16	A/YL-NTM/470	Transitional Housing	R(D)	2024	PR 1.29	4-storeys
17	Y/YL-NSW/8	Private Housing	OU(CDWRA) to OU(CDWRA)1	2025 Feb	PR 2.3	29-storeys 115mPD
18	Y/YL-NSW/9	Private Housing	I(D), OS and Road to R(E)	2025 Feb	PR 2.73	29-storeys 115mPD
19	A/YL-NSW/314	Private Housing	OU CD(WRA)	2025 Feb	PR 0.4	5-storeys 19.6mPD

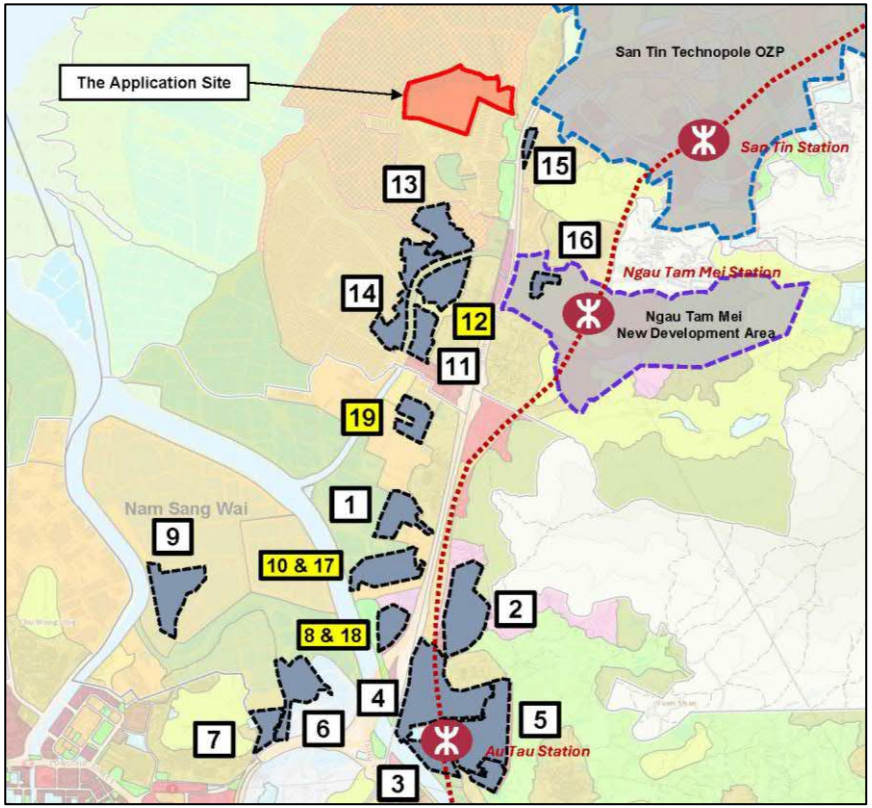


Figure 4: Indicative Locations of Similar Approved Comprehensive Developments in the District

6.2 ***On-going Applications for Upzoning Private Residential Development***

6.2.1 There have been many submitted and on-going applications that are being processed by the TPB, for upzoning private housing sites into medium-density developments in the district. These applications have proposed plot ratios of between 1.23 to 5 and building heights of 16 to 35 storeys. Similar to this current application, many of them have already obtained planning approval for lower-density housing developments. This reveals the development trend in the New Territories North and demonstrates how the underutilized sites in the district could be used for residential developments. A list of submitted and on-going upzoning private residential applications is provided **Table 3** in below. Please refer to **Figure 5** for the locations of the applications.

Table 3: On-going TPB Applications for Upzoning Private Residential Developments

Item No.	Application No.	Type	Proposed Zoning	Maximum Parameters	
A	Y/YL-MP/8	Private Residential	R(C)1	PR 1.23	16-storeys
B	Y/YL-MP/7	Private Residential	R(C)1	PR 1.28	16-storeys
C	Y/YL-NTM/5	Private Residential	R(C)	PR 5	35-storeys
D	Y/YL-MP/11	Private Residential	R(D)	PR 1.51	16-storeys

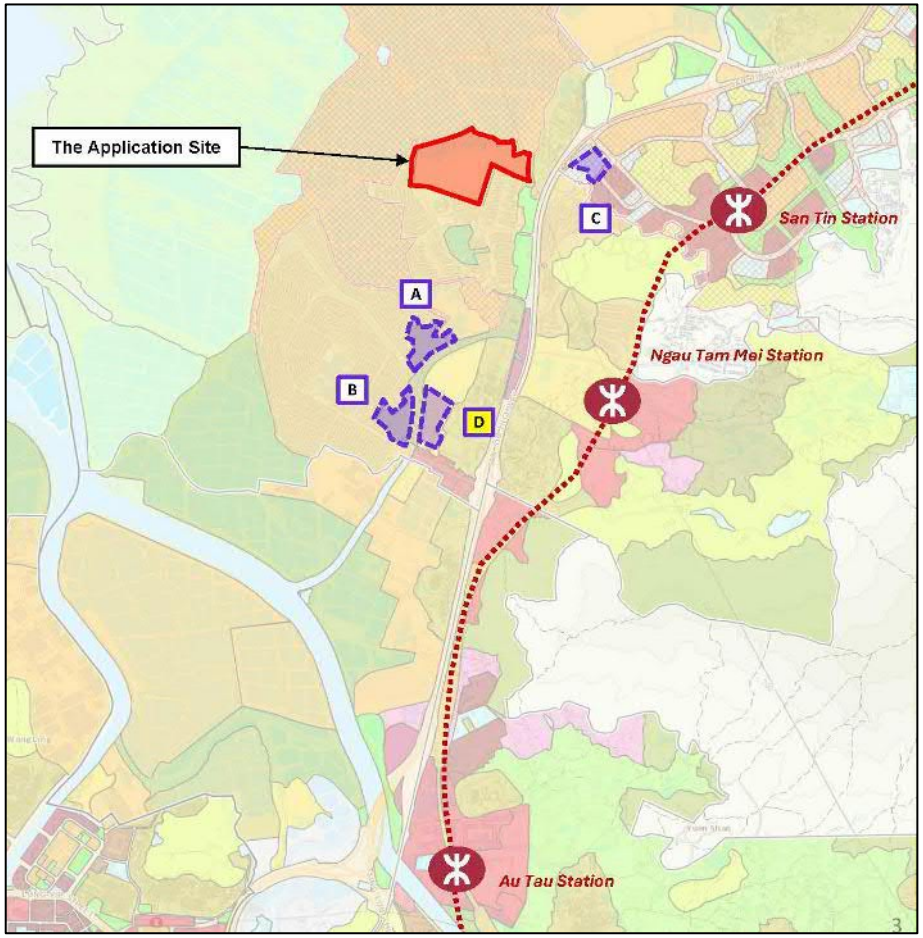


Figure 5: Locations of the On-going Upzoning Applications

6.3 ***The High-density Developments of San Tin Technopole***

6.3.1 The San Tin Technopole Outline Zoning Plan No. S/STT/2 was approved on 20 September 2024. The north-west portion of San Tin Technopole is right adjacent to the "SPS WCP". The development intensity and building height of future developments in the San Tin Technopole will be progressively stepped towards the south-east from 15mPD, 35mPD, 75mPD, to 105mPD and higher. The area will be transformed from rural setting to sub-urban mixed use new town. This standard configuration enables the development intensity closest to the WCP to be at the lowest, and gradually increases to high-density developments further away, so to create a balanced form of development that minimize impact to the WCP, while allowing optimal development potential of the scarce land resources. (**Figure 6**)

6.3.2 With reference to the revised Recommended Outline Development Plan ("RODP") for the land use proposal of the San Tin Technopole published in February 2024, the public and private housing sites will have a domestic plot ratio of 6 to 6.5. There will be high-rise development clusters in the south-western part of the San Tin Town Centre. These housing sites are about 450m away from the Application Site and the area will be transformed into a high-density residential neighbourhood. Similar to the stepped building height profile of the San Tin residential developments, the north-west portion of the Application Site is right next to and directly interfacing with the WCP, hence it will also adopt building height bands that decreases towards the south-east. With the evolving strategic planning context, the proposed increase in plot ratio and building height of the Application Site is deemed appropriate.

6.3.3 The Application Site is located at the periphery of the San Tin Technopole, accessible to the San Tin Highway, and is within 1.2km from the planned San Tin MTR Station. While the San Tin Technopole is an example of striving for co-existence of development and conservation, the proposed development is in line with such principle.

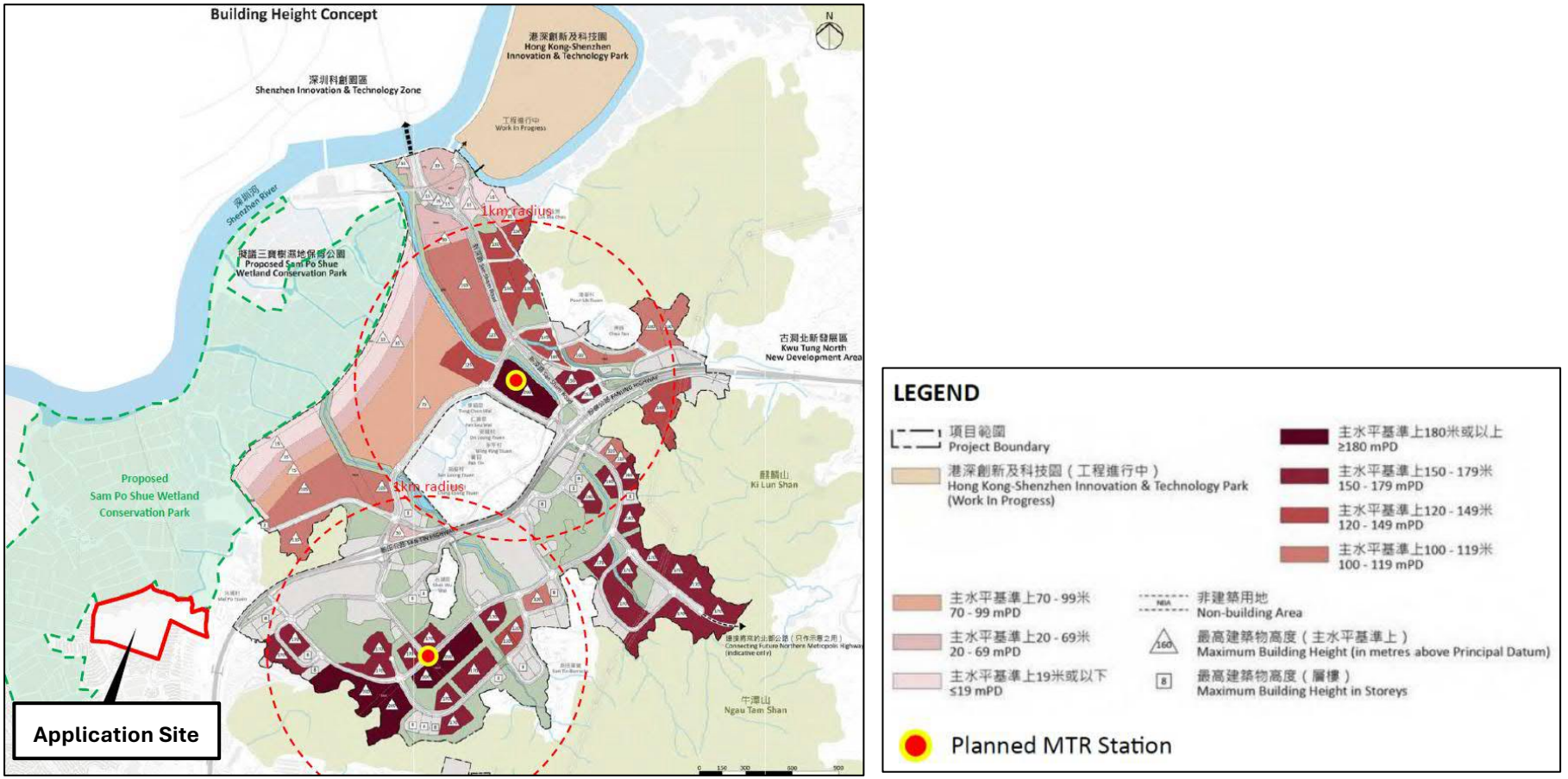


Figure 6: The Correlated Development Context of San Tin Technopole and Application Site[1]

[1] Basemap Source: Building Height Concept Figure 6 of the San Tin Technopole OZP (Draft Explanatory Statement)

6.4 ***The Northern Link and Future Developments in Ngau Tam Mei***

6.4.1 The planned MTR Northern Link ("NOL") Main Line will connect the existing Kam Sheung Road Station and the future Kwu Tung Station, with 3 intermediate stations at Au Tau, Ngau Tam Mei and San Tin. It will serve as an important railway network for the Kwu Tung North NDA and San Tin Technopole, which would unleash the development potential around its stations. The Application Site is about 1.3km and 1.5km away from the planned San Tin Station and Ngau Tam Mei Station respectively, and there is enormous potential to extend development near the two new NOL stations.

6.4.2 The Government began a study in 2021 to review land uses in Ngau Tam Mei (NTM). It aimed to make better use of the existing brownfield cluster and unleash the area's development potential created by the planned NTM Station of the NOL. In November 2024, the development proposal of NTM New Development Area was made public by the Government, and the public engagement process was initiated. NTM is earmarked for a University Town, integrated hospital, and new residential developments and supporting facilities, to accommodate a population of about 30,000, as well as new job opportunities.

6.4.3 Given the large-scale infrastructure improvements as well as the enhanced accessibility in the northwestern part of Yuen Long, there is an absolute need to up-zone the Site and unleash its great potential for residential development.

6.5 ***Research on Private Housing Targets***

6.5.1 In the 2023 policy address, Government has identified sufficient land for developing public housing flats to go above the supply target, while major research institutions such as Our Hong Kong Foundation ("OHKF") have reported that completions of private housing flats beyond the next five years (2028-2032), are expected to decline and is uncertain to meet private housing targets.[2] Jones Lang LaSalle also reported

[2] Our Hong Kong Foundation (April 2023). Land and Housing Policy Research Report.

annual private housing completion in the coming years (2026-2028) is expected to decrease by 44% as compared to the previous two years.[3]

6.5.2 According to OHKF, despite an improved predicted average annual completion figure of private housing units in 2023-2027 and the Government's policy of streamlining statutory and administrative procedures, based on currently known projects, the OHKF suggested that completions in 2028-2032 could tail off and reach only 13,900 units (below the targets). While the Northern Metropolis Development Strategy holds the key to long-term housing supply, there is a lack of supporting infrastructure facilities and this would hinder housing supply. OHKF has repeatedly proposed that the Northern Link is a strategic opportunity to enable Government to proactively increase the development intensity in New Territories to create large-scale urbanization and stimulate economic growth of the New Territories.

6.5.3 Compared with the previously approved S.16 planning applications, the proposed rezoning would provide various types of housing including detached houses, semi-detached houses, and flats of different sizes. The existing development restrictions on the OZP are no longer suitable for meeting the demand for housing and catalysing emerging changes.

[3] Jones Lang LaSalle (Nov 2023). Hong Kong Residential Sales Market Monitor.

7. Proposed Scheme

7.1 ***Design Concept of Master Layout Plan***

7.1.1 The Applicant aspires to create a medium-density residential development at a unique location by the San Tin Technopole, with a quality living environment that is in co-existence and harmony with the wetland and natural surroundings. The WRA is already completed and integrated with the wetland ecosystem to the north, while it will continue to act as a mitigation wetland between the construction phase of the residential portion and the WCA. The residential portion will contain a medium-density, residential development with a maximum plot ratio of 1.3 and a maximum GFA of about 269,879m^2. It is comprised of 3-storey houses adjacent to the WRA, and 6 to 10-storeys residential blocks (not more than +42mPD) in the central and southern edge locations, erected over one basement level, including an underground carpark for each phase. It adopts a stepped building height profile with building heights of 6-storeys at the southern boundary, then increases to 10-storeys at the central portions of the Site, and decreases down to 3-storey houses towards the WRA in the north. Supporting clubhouse facilities for residents' recreational and leisure needs are provided in each phase of the development. It will provide about 3,562 residential flats, with an average flat size of about 74.7m^2, and accommodate a design population of (about) 9,974.

7.1.2 Please refer to **Figure 7** for the Master Layout Plan and **Appendix 3** for the full set of architectural drawings.

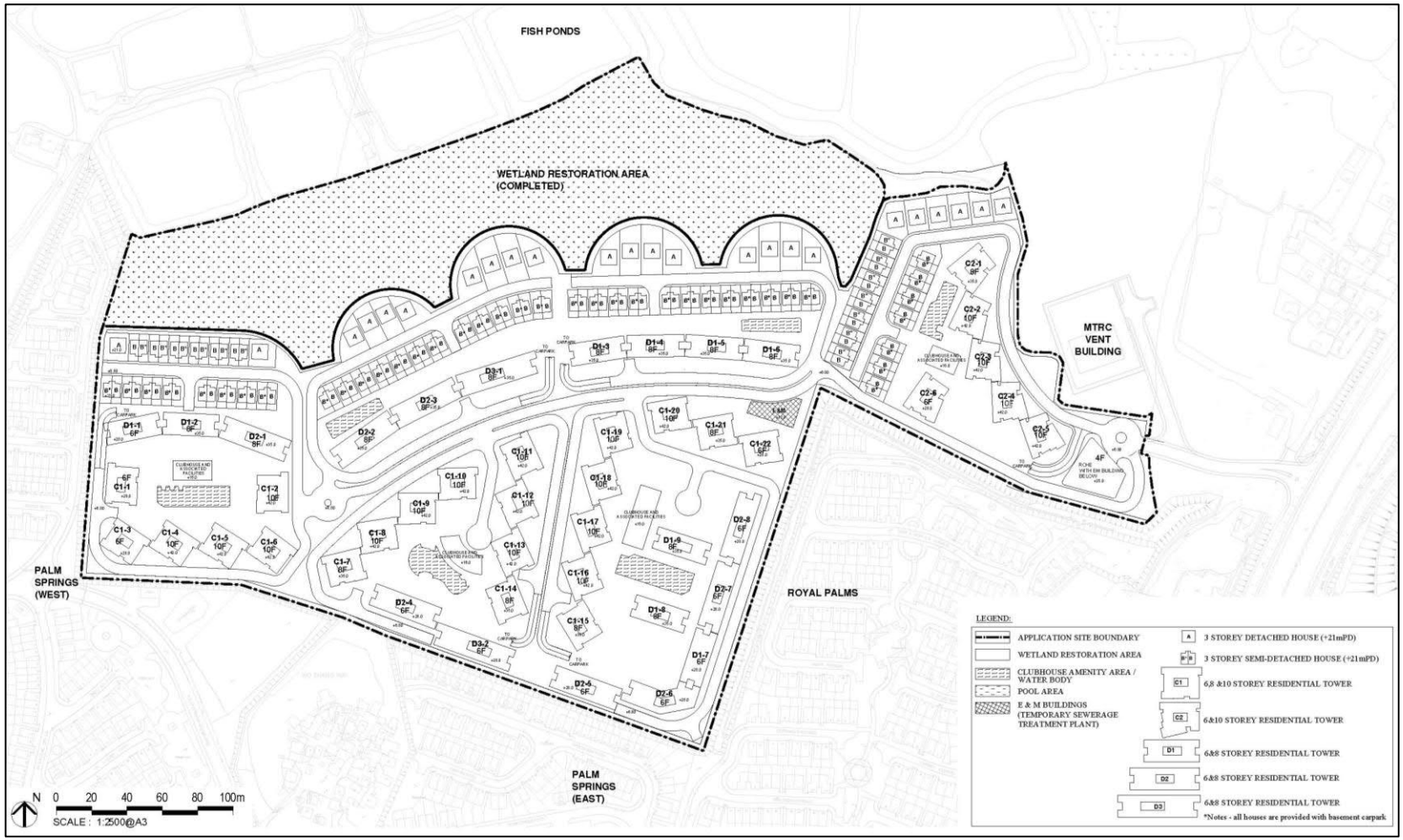


Figure 7: Master Layout Plan of the Proposed Development

7.2 ***Indicative Development Parameters***

7.2.1 The indicative development parameters are provided in **Table 4** below.

Table 4: Indicative Development Parameters

Application Site Area (about)	**207, 408 m^2**
Areas of the Site (about)	
Wetland Restoration Area	47,400 m^2
Communal Open Space	21,203 m^2
Communal Landscape and Communal Perimeter Landscape	38,761m2
Private Garden	15,444 m^2
Residential Portion	
Total Plot Ratio (about) Domestic Plot Ratio (about) Non-Domestic Plot Ratio (about)	1.30 1.28 0.02
Total GFA (about) Maximum Domestic GFA (about) Maximum Non-Domestic GFA (about)[4]	269,879 m^2 266,079 m^2 3,800 m^2
Site Coverage (not more than)	25%
Total Number of Units (about)	3,562
Average Unit Size (Approx.)	74.7 m^2
Ancillary Recreational Facilities (Clubhouse GFA) (about)	11,581 m^2
Estimated Population (about)	9,974 *
Building Height (about)[5]	
3-storey House (128 nos.)	+21 mPD
6-storey Residential Tower (12 nos.)	+28 mPD
8-storey Residential Tower (16 nos.)	+35 mPD
10-storey Residential Tower (19 nos.)	+42 mPD
Clubhouse (2-storey) (4 nos.)	+16 mPD

[4] Non-domestic GFA includes RCHE only, and excludes clubhouse and E&M.

[5] Rounded up to the nearest integer. Please refer to Appendix 1 for the exact figures.

Residential Care Home for Elderly cum E&M Building (4-storey)	+25 mPD
E&M Building (TSTP)	+12 mPD
Residential Car Parking Provisions	
Residential (private cars)	1,514
Visitors'	200
Accessible Parking Space	6
Motorcycle Parking Space	42
Loading / Unloading Bay for Heavy Good Vehicles	47
Bicycle Parking Space	764
RCHE (100-places) Car Parking Provisions	
Ancillary Private Car Parking Space	3
Loading Bay for Light Good Vehicles	1
Ambulance Lay-by	1
Taxi/Private Car Pick-up/Drop-off Space	1

Remarks:

* Based on person per flat-ratio of 2.8.

7.3 ***Communal Open Space and Landscaping***

7.3.1 The scheme has dedicated a large proportion of area (i.e. about 47% land area of the residential portion) for communal open space, landscaping, and gardens. There are pockets of landscaped open spaces scattered around the site, encouraging residents to enjoy the outdoors, creating visual interest and a lush walking environment. There will be communal landscaping along the internal roads, the perimeter of the Site and the pedestrian pathways.

7.4 ***Responsive Building Heights on Visual Amenity***

7.4.1 The proposed scheme contains building heights arranged to ensure the buildings do not disrupt surrounding visual or landscape character. It emphasizes sustainable development, architectural quality, and effective use of land use, maintaining liveability and aesthetic coherence.

(a) Responsive building heights, where disposition and orientation of proposed blocks are designed to minimize the potential impact on the visual amenity of the wetlands and fishpond areas to the north and west.

(b) The proposed architectural scheme adopts a staggered layout which creates a visually more interesting form, introducing different planes and areas of light and shade which serve to break-up the visual mass or bulk of the proposed development.

(c) Introduction of three visual corridors, and building separation to break up the combined development frontage and avoid potential wall effect.

(d) Location of car parking in the basemen to maximize the area available for landscaping amenities.

7.5 ***Visual Corridor, Building Separations, Setback and Gaps***

7.5.1 Introduction of a visual corridor and two building separations on a north south axis and setbacks to the west and east which serve to break up the combined development frontage and avoid a potential wall effect. The gaps between buildings extend above the height of the low-rise houses at the northern edge of the Proposed Scheme, an area which is partially occupied by existing and proposed tree planting within the landscape buffer and fish pond bunds when viewed from the photomontage vantage points.

7.5.2 These visual corridors and design measures are explained and shown in the VIA (**Appendix 10**), while the breezeway/ wind corridors are explained and shown in the AVA report (**Appendix 11**).

7.6 ***Cycling Facilities***

7.6.1 The proposed development will promote the sustainable traveling mode of cycling to its residents and visitors. The bicycle parking spaces will be provided in the basement level of the Site, and the existing and planned cycling network of the North West New Territories can be accessed at the entrance of the site via Mai Po South Road.

7.7 ***Residential Care Home for the Elderly***

7.7.1 The proposed development would provide a 100-place Residential Care Home for the Elderly (RCHE) and supporting facilities, in a 4-storey building at the east of the Site, next to the access road. The RCHE cum E&M Building would be designed to comply with the specifications and requirements under the planning standards and relevant regulations. The RCHE would cater to the shortfall against the planned provision for such community facilities in the wider context.

7.8 ***Internal Roads or Driveways***

7.8.1 The entrance of the Site on the access road connecting to Castle Peak Road – Mai Po will be an east-west two ways main driveway running through the Site, which also serves as the Emergency Vehicular Access. It will lead to access ramps to the basement carpark. The internal driveways are aligned to branch out and serve the frontages of the houses, residential, and other buildings for drop off movements.

7.9 ***Basement Carparking***

7.9.1 The carpark will be underground in the basement level, and will be extended to serve all the houses and residential buildings in the Site. Internal transport facilities including car parking spaces and loading/unloading bays have been increased in accordance with the changes in unit sizes and numbers. The provision is in accordance with the Hong Kong Planning Standard and Guidelines ("HKPSG"). The Basement Carpark Plan is provided in **Appendix 3.**

7.10 ***Preliminary Phasing Plan***

7.10.1 The development will be constructed and occupied in six phases. This is indicated in **Figure 8**. The anticipated completion year of the entire development (including all the phases) is 2031.

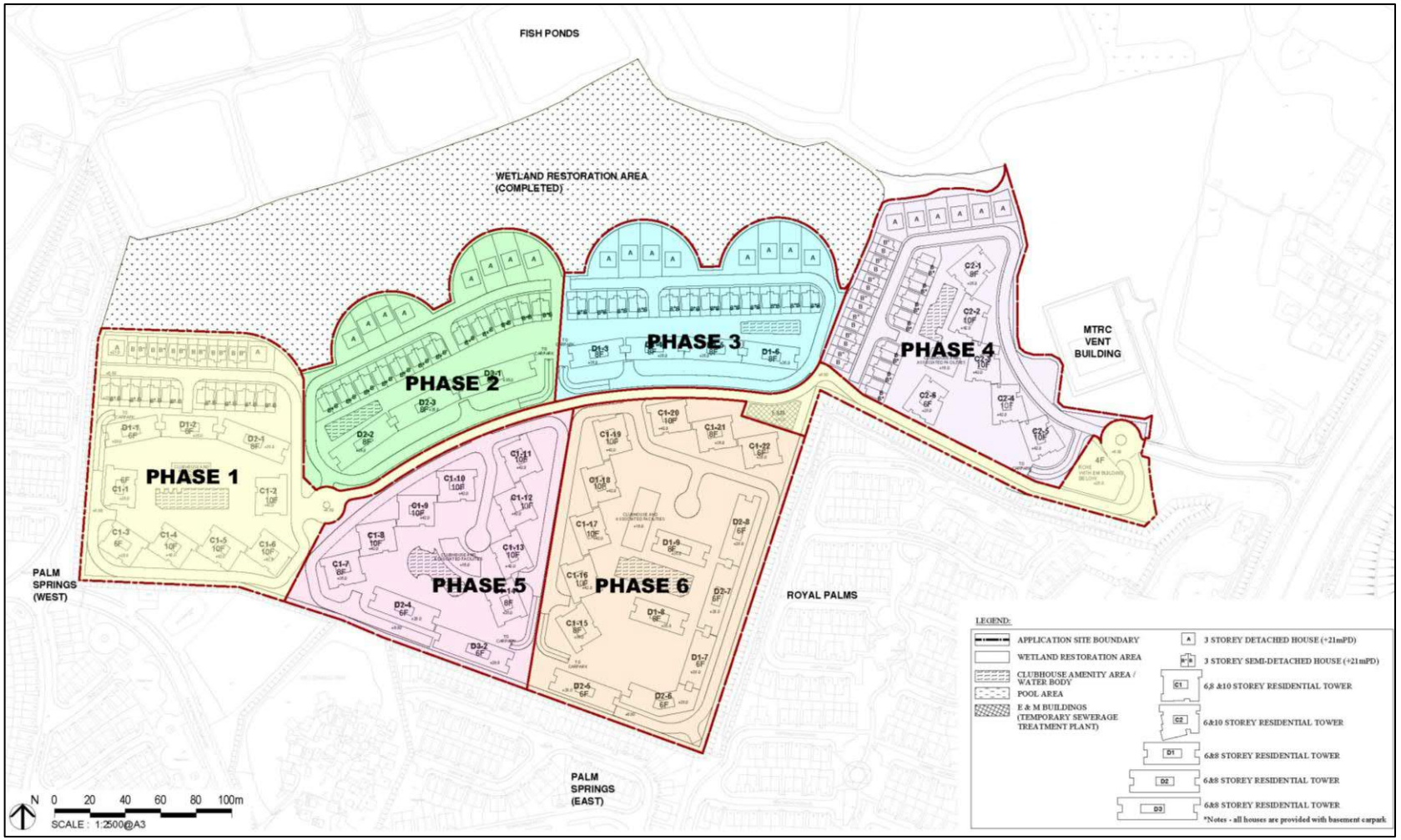


Figure 8: Preliminary Phasing Plan

8. Technical Feasibility

8.1 ***Environmental Assessment***

8.1.1 Reference is made to the Environmental Assessment in **Appendix 4** which provides environmental considerations including air quality, noise, water quality and waste of the proposed development. With the implementation of mitigation measures during both the construction and operation phases, there will be no adverse environmental impacts as a result of the proposed development.

8.2 ***Drainage Impact Assessment***

8.2.1 The Drainage Impact Assessment in **Appendix 5** demonstrates that the drainage facilities will be of sufficient capacity to cater for the stormwater runoff. In case of unexpected rainfall events, water retention facilities are put in place to ensure there will not be runoff to the wetland portions of the site. The drainage system of the WRA will remain independent from that of the residential component.

8.3 ***Sewerage Impact Assessment***

8.3.1 The Sewerage Impact Assessment in **Appendix 6** concludes that the sewerage system within the Application Site will be designed to facilitate the future connection to the San Tin/ Lok Ma Chau (STLMC) Effluent Polishing Plant (EPP), which is targeted to come into commission in 2031 to meet the anticipated first population intake. This is according to the approved EIA-302/2023 of the STLMC Development Node, STT OZP, and strategic government policy documents. No adverse sewerage impact will be incurred because of occupation of the Application Site. In case there is program mismatch, the Applicant has provided two contingency options in the assessment, including a Temporary Sewage Treatment Plant (TSTP)[6] to treat and discharge the effluent into the Mai Po Tributary; or a pipe connection to the public network of the Yuen Long Sewerage Treatment Works. The proposed connection to the EPP and contingency options would be explored with the relevant Government departments.

[6] Considering the minor structure of the TSTP, there is no need to demolish the structure when decommissioned.

8.4 ***Water Supplies Impact Assessment***

8.4.1 The Water Supplies Impact Assessment in **Appendix 7.** The proposed development is required to connect to existing or planned water supply networks in the surroundings. The Applicant has proposed to connect to the surrounding public water supply network in two options of alignment and connection. The two options would be explored with the relevant Government departments.

8.5 ***Ecological Impact Assessment***

8.5.1 The Ecological Impact Assessment in **Appendix 8** indicated that since there are no changes proposed to the WRA or at the boundary between the residential portion and WRA, no additional direct impact to the ecological function and area of the WRA is anticipated. The WRA has also been implemented as buffer area between the residential development and the WCA; no additional impact is anticipated to the fauna species of conservation importance in the WCA. The WRA has also been functioning for over a decade, providing habitat to wildlife, and has integrated with the ecology of the surrounding wetlands. It has brought overall ecological gain to the conservation areas in the surrounding.

8.5.2 The proposed taller buildings have been considered carefully the alignment and orientation. More than 50m setback from the nearest WCA at the eastern part of Application Site is proposed while including the WRA and Palm Springs, there are more than 100m setback between the taller buildings and the WCA to the north and to the west. No significant adverse ecological impacts are anticipated due to the proposed amendments. With the implementation of all the mitigation measures, no adverse impact to the wildlife and ecological function and area of the WRA and WCA is anticipated.

Extra Ecological Merits

8.5.3 In addition, the project team has explored extra ecological merits of the proposed development, including (**Figure 9**):

(a) Wildlife viewing points, with vegetation screening, at the edge and outside of the WRA, and at the roof-top of the residential blocks, to raise the public awareness and education of biodiversity in the wetlands of this area.

(b) Landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds).

(c) Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

(d) A 5m buffer planting within the residential portion of the Site, with 1 to 2 rows of trees to screen residential development and prevent disturbance to the WRA. This is an increased buffer planting area compared to the previous approved s16 scheme, with a 2.5m buffer planting within the residential portion.

(e) Only low-rise buildings (about +21mPD) adjacent to the WRA and within 50m buffer from the nearest fishponds (i.e. land zoned as "OU(WCP)" so that the proposed development would not lead to adverse ecological impacts.

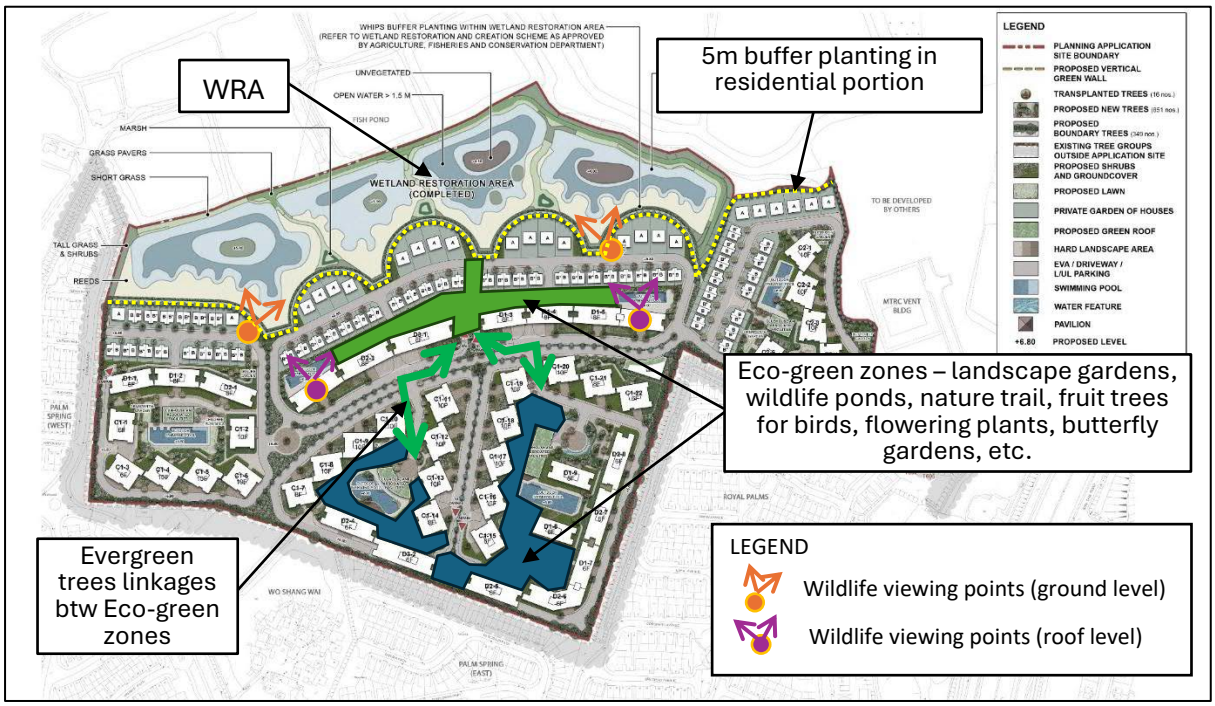


Figure 9: Extra Ecological Merits of the Proposed Scheme (indicative)

8.6 ***Traffic Impact Assessment***

8.6.1 The Traffic Impact Assessment in **Appendix 9** concludes that the traffic generated by the proposed development can be absorbed by the future road improvements of the San Tin Technopole. In case of program mismatch, sensitivity tests have been carried out to demonstrate with proper mitigation, including road and junction improvement works, that there would not be adverse impact to the traffic network. Particularly, with appropriate bus service enhancements and planned junction improvement at Fairview Park Interchange, the proposed development would not cause any adverse traffic impact to the road network.

8.7 ***Visual Impact Assessment***

8.7.1 The Visual Impact Assessment in **Appendix 10**, concludes that the proposed development, in general, will not result in adverse visual impacts in the existing and future development context. The disposition and orientation of the proposed blocks is designed to minimise the potential impact on the visual amenity of the Wetland Restoration Area, the future SPS Wetland Conservation Park; and the fish pond areas to the north and west. A comparison was made between the Proposed Scheme and Baseline Scheme [i.e. Approved Section 16 (OZP Compliant Scheme)]. The Approved S16 (OZP compliant) Scheme has maximum building height of around +21.3 mPD with the predicted visual impacts ranging from Moderately Adverse to Negligible. For the most part, the impacts arising from both the Approved (OZP compliant) Scheme and the Proposed Scheme are not significantly different owing to a combination of the viewing distances, the panoramic nature of the available view and the scale of the adjacent committed and planned developments. Based on this assessment the Proposed Scheme would not have a significant additional impact compared with the Approved (OZP) Compliant Scheme. In fact, it is envisaged that the proposed development would be compatible in scale, form and building height to the future development context of the nearby San Tin Technopole; intermixed with high, medium, and low-density developments.

8.8 ***Air Ventilation Assessment***

8.8.1 The Air Ventilation Assessment in **Appendix 11** concludes that according the simulation results, the proposed scheme of medium-density development, compared to the approved low-density baseline scheme, the overall performances on pedestrian wind environment are comparable under both annual and summer conditions.

8.9 ***Tree Preservation and Removal Proposal***

8.9.1 A Tree Preservation and Removal Proposal is included in the Landscape Master Plan in **Appendix 12**. The 1,200 new trees as approved from the previous planning applications are proposed to be planted.

8.10 ***Landscaping, Private Open Space and Greenery***

8.10.1 The open spaces and greenery of the proposed development are accompanied by the Landscape Master Plan (LMP) in **Appendix 12** and shown in **Figure 10**.

8.10.2 The landscaping design ensures that the proposed development will sensitively integrate into the surrounding areas through naturalistic interface treatments and minimizes any visual impact. The LMP will adopt the following design features:

(a) Landscaped open space to create an attractive, lush landscape setting for the buildings and to provide visual and airflow permeability. These open spaces will be punctuated by tree clusters throughout the Site as a strong node and visual landmark within the development.

(b) Communal gardens with outdoor activity areas, children play area and fitness area for the recreational enjoyment of residents and their visitors.

(c) Green roofs and vertical greens are proposed at various locations to enhance existing greenery.

(d) Landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds).

(e) Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

(f) The perimeter of the Site will be mass planted with fast-growing trees and shrubs to rapidly create a landscape greenbelt buffer between the development and adjacent areas. A 3m wide landscape buffer zone has been allocated at the perimeter of the Site. The design of the boundary wall will be designed to minimize potential visual impacts.

(g) The clubhouse will be landscaped to provide a relaxed, resort-like atmosphere and will incorporate shade trees, ornamental shrubs and groundcovers, as well as buffer planting around the edges of the Site.

8.10.3 In accordance with the open space requirement in the Hong Kong Planning Standard and Guidelines, $1m^2$ of open space per person is required. Not less than $9,974m^2$ open space will be provided for designed population of 9,974 residents. The total open space achieves the required provision. In accordance with the requirement of PNAP APP-152, an area of not less than 30% of the total greenery will be provided for the proposed development.



Figure 10: Landscape Master Plan of the Proposed Development

9. Proposed Amendment to the OZP

9.1 The proposed amendment to the Plan to meet this proposal at the Application Site would not require any changes to the existing zoning of "OU(CDWRA)" in the OZP per se (note that the "OU(CDWRA)" zone in the OZP only contains the Application Site). As such, the change required to meet our proposal is to update the Notes of the OZP, in the "OU(CDWRA)" zone, Remarks (c) and explanatory statement para. 9.9.3, as follows (with changes shown in bold, strikethrough, and highlighted texts):

- Remarks (c): No new development, or addition, alteration and/or modification to or redevelopment of an existing building (except developemnt or redevelopment to 'New Territories Exempted House') shall result in a total development and/or redevelopment in excess of a maximum plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park and not exceeding 42mPD**, or the plot ratio, site coverage and height of the building which was in existence on the date of the first publication in the Gazette of the notice of the interim development permission area (IDPA) plan for Mai Po and Fairview Park, whichever is greater.

- Explanatory Statement, Paragraph 9.9.3: To be in line with the rural setting which is mainly village houses, to minimize visual impact and to take into account the capacities of local road network and infrastructure in this area, development or redevelopment shall not result in a total development or redevelopment intensity in excess of a total plot ratio of ~~**0.4**~~ **1.3** and a maximum building height of ~~**6 storeys including car park**~~ **10 storeys excluding 1 storey of basement for car park and not exceeding 42mPD**. Minor relaxation of the plot ratio and/or building height restrictions may be considered by the Board on application under section 16 of the Ordinance. The criteria given in paragraph 8.5 above would be relevant for the assessment of minor relaxation of building height restrictions. Each application will be considered on its own merits.

10. Planning Assessment and Justifications

10.1 ***Proposed Amendments would continue to Comply with the Planning Intention of "OU(CDWRA)"***

10.1.1 The proposed amendment to the notes of the "OU(CDWRA)" zone, only involves relaxation of PR and BH restrictions without changing the planning intention of the subject zone. The planning intention would continue to be to develop comprehensive residential development to include wetland restoration area as a means of incentive for the restoration of degraded wetlands adjoining existing fishponds. The completed WRA would continue its ecological function, while the residential portion continues to be designated for residential land use. The current proposal is to increase the development intensity of the residential portion to an acceptable level, which is compatible with the surroundings; technically feasible, with no adverse impact to the site and surroundings; and provides planning merits that benefit the community.

10.2 ***In Line with the Northern Metropolis Development Strategy***

10.2.1 The strategic development context of the Northern Metropolis is already planned, and higher density developments are emerging in the land-use character. The whole area would undergo major changes in development land-use and infrastructure upgrade, and the integration with the bordering city of Shenzhen will become more apparent. Along these lines, the increase of development intensity of suitable locations in the Wetland Buffer Area should be supported, especially when a recent and nearby case (No. Y/YL-NSW/7) has been approved by the Board, and completed the OZP amendment process.

10.2.2 The overarching trend of "co-existence of development and conservation" will be evident throughout the landscape, and as shown in the exemplar case of the San Tin Technopole, this is the most appropriate and forward-planning approach to create a balanced development model in the North New Territories area.

10.3 ***Conform to Development Trend of Upzoning Comprehensive Developments in the Area and Infrastructure Upgrades of San Tin Technopole***

10.3.1 As mentioned, the future development context is transforming from low-density rural setting to high-density developments, supported by major infrastructure upgrades and supporting facilities. The proposed development is targeted for completion at a period that would coincide with the available infrastructure capacity that is planned at San Tin Technopole. It would be in line with the principles of San Tin Technopole for co-existence of development and conservation.

10.3.2 There have been many similar approved comprehensive residential developments in the nearby area of the Application Site, reflecting the impetus for appropriate development intensity of higher density developments is coming into place, led by the large-scale transport infrastructural projects in the area. The proposed private housing scheme has a comparable development intensity to the planned/committed developments in the vicinity, and will help capture the benefit to be brought by the NOL.

10.4 ***Compatible to its Surrounding Planning Context***

10.4.1 The proposed increase in development intensity is compatible with the existing surrounding land uses. The accompanying technical assessments have demonstrated that there will not be any adverse impact to the wetland ecology of the SPS WCP, and the proposed scheme complies with the principle of no-net-loss in wetland. The increased development intensity of the residential portion is insignificant as it would not create negative off-site disturbance impact, or lead to both loss in area and function of the existing wetland and fish ponds, and the conservation of continuous and adjoining fish ponds is maintained.

10.4.2 The proposed scheme is also compatible in scale and land-use to the surrounding low- to medium-density housing neighbourhood on the west side of the San Tin Highway. In view of the significant future transformations in built environment and infrastructure that would be brought about with the major development nodes on the east side of the San Tin Highway, the proposed scheme is suitably positioned within this high-density, intermixed with medium and low-density development context. Development trend of increasing intensity of similar comprehensive residential

developments in the area. This is evident in the recent approvals of planning applications and OZP amendments in the vicinity for upzoning and relaxation of development intensity. (e.g. Y/YL-NSW/7, Y/YL-NSW/8, Y/YL-NSW/9, Y/YL-MP/10 and Land Sharing Pilot Scheme at Tung Shing Lei LSPS002)

10.5 ***Compliance with Town Planning Board Guideline No. 12C***

10.5.1 The proposed scheme is in compliance with the Guideline, as supported by the technical assessments and discussed in this Planning Statement, as follows: -

(a) Proposed changes in layout of the internal road, landscaping, and number of houses (not abutting the WRA) are not anticipated to have any impact on the WRA and the wetlands in the WCA.

(b) The approved and completed WRA component will not be affected by this application and will continue to meet the requirements of this Guideline.

(c) The proposed scheme is compatible with the surrounding land uses in terms of the relationship with the rural and wetland setting, and the visual and landscape quality of the area.

(d) The proposed scheme has carefully considered environmental impacts in terms of noise, air and water qualities, traffic, drainage and sewerage impacts, provision of infrastructure and visual impact.

(e) The Sewerage Impact Assessment concludes that the proposed scheme will not add to the pollution loading of the Deep Bay Area.

(f) The proposed scheme complies with the principle of "no-net-loss in wetland" as it does not lead to both loss in "area" and "function" of the existing wetland and fish ponds, and the conservation of continuous and adjoining fish ponds is maintained.

(g) The proposed scheme complies with the planning intention of the WBA, which is "to protect the ecological integrity of the fish ponds and wetland within the Wetland Conservation Area and prevent development that would have a negative off-site disturbance impact on the ecological value of fish ponds."

10.6 ***The Dire Need to Provide Private Housing Supply in the Next 5 to 10 Years***

10.6.1 The report published by the OHKF found that the private housing supply in the coming decade would tail off. Therefore, the proposed development would provide private flats to offer an alternative private housing supply to help alleviate the over-inflated property prices. The proposed scheme is in line with contributing to this demand for private housing and the Site is immediately available for development.

10.6.2 Moreover, the proposed development provides additional private housing supply to support the proposed I&T development in San Tin Technopole. It helps to diversify housing choices for future residents, including medium-rise apartments and low-rise houses. As the site is at the fringe neighbourhood of the San Tin Technopole, it should be utilised to generate more housing supply to echo with the vision of the NMDS and to achieve "balanced living and working opportunities" as desired by the Government. The recent amendment of the San Tin Technopole OZP has raised comments from the representations and Board members on the importance of creating more private housing supply in the area to attract professional talents and to diversify the housing options and supporting facilities. In response, the Government indicated that there may be potential to adjust the public to private flat production ratio for a higher proportion of private housing, subject to changing planning circumstances, social aspirations, and development needs.

10.7 ***The Planning Merits of the Proposed Private Housing Scheme***

Compared to the Previously Approved S16 Application No. A/YL-MP/344

10.7.1 The current proposed scheme is a medium-density development with 3,571 private flats, which would contribute a greater number of flats to the medium and long-term private housing supply.

Better Air Ventilation at the Pedestrian Level Compared to Previously Approved Scheme

10.7.2 The AVA has demonstrated that the building disposition and form would also contribute to better air ventilation at the pedestrian level, enhancing the comfort and well-being of residents and visitors.

Landscape Merits

10.7.3 The current proposed scheme would contain landscape merits, in the form of abundant landscaped gardens, ponds, and nature trails. These would contribute to the public education and awareness of wetland and biodiversity conservation of residents and visitors. Contains landscape gardens and ponds with recreational walk/ nature trail are introduced to create potential ecological habitat. Butterfly garden and lily pond garden are proposed with native vegetation, fruit trees and flowering plants to provide as an education area for ecological biodiversity (including birds). Blue and green linkage is strengthened through enhanced streetscape planting, and heavy standard trees lining the internal roads.

10.7.4 From public education standpoint, providing wildlife viewing points, with vegetation screening, at the edge and outside of the WRA, and at the roof-top of the residential blocks, to raise the public awareness and education of biodiversity in the wetlands of this area.

Community Facility

10.7.5 The current proposed scheme would contain a RCHE that would cater to the demand for such community facilities in the district-wide context. It is anticipated that there would be an insufficient supply of such facilities in the future planning provision of the district.

Increased Buffer Planting

10.7.6 An increased buffer planting (from 2.5m to 5m compared with the approved application No. A/YL-MP/344) within the residential portion of the Site, with 1 to 2 rows of trees to screen residential development and prevent disturbance to the WRA. This is an increased buffer planting area compared to the previous approved s16 scheme, with a 2.5m buffer planting within the residential portion. The total buffer planting width is 7m.

10.7.7 Only low-rise buildings (about +21mPD) adjacent to the WRA and within 50m buffer from the nearest fishponds (i.e. land zoned as OU wetland conservation park), so that the proposed development would not lead to adverse ecological impacts.

Compared to the Existing Site Conditions

10.7.8 The increased development intensity of the proposed private housing development will optimize the scarce land development potential at the existing site, and provide quality private housing to contribute to the long-term housing supply shortage.

A Vacant and Undeveloped Site Condition for a Long Time

10.7.9 The residential portion of the Application Site has been vacant and in an undeveloped/ construction state for over a decade. The site is currently vacant, ready for construction and does not require resumption of land. In its current state, it would be capable of speedy implementation.

Unique and Attractive Living Environment to Attract Global IT Talent

10.7.10 The Site is the only comprehensive residential zone that is closest to the San Tin Technopole, and is situated at a unique location to be at the fringe and interface of the wetland ecosystem to the north, and permissible residential developments to the south. It would offer a unique and attractive living environment of a quality private residential neighbourhood to attract global professional talents to work close to the San Tin Technopole.

Urban Design Merits

10.7.11 The proposed scheme contains a stepped building height profile that was carefully designed with variation and gradation, to respect the wetland habitats to the north, and blend in with the existing private houses to the south, while creating an interesting and unique building profile.

10.7.12 The central spaces of the residential portion of the site have the tallest buildings at 10-storeys. This building height at maximum 10-storeys are in fact medium-rise and compatible with the development context of the Technopole and transformation of the existing residential neighborhood, and has no adverse visual or ecological impact to the surroundings. The buildings heights descend from the central area to the north of the site, facing the WRA and SPS WCP are kept to the lowest at 3-storeys. The buildings heights also descend to the south of the site, facing the private residential neighborhood are at a reasonably low height of 6-storeys, and blend in with the adjacent houses.

10.7.13 The scheme has dedicated a large proportion of area (i.e. about 47% land area of the residential portion) for communal open space, landscaping, and gardens. There are pockets of landscaped open spaces scattered around the site, encouraging residents to enjoy the outdoors, creating visual interest and a lush walking environment. There will be communal landscaping along the internal roads, the perimeter of the Site and the pedestrian pathways.

10.8 ***No Insurmountable Technical Issues***

10.8.1 The technical assessments have demonstrated that the proposed scheme is technically feasible. It has taken into account various constraints including environmental, ecological, infrastructure capacities and urban design considerations. There are no insurmountable technical issues, and contingency scenarios for program mismatch with government developments have been provided.

11. Conclusion

11.1 The Applicant has obtained planning permissions from TPB for low-density residential developments. The clear trend of increasing development intensity in the area and the materialization of the San Tin Technopole, have revealed a significant opportunity for upzoning at the Site. This application aims to better utilize the scarce developmpent potential of the Site in response to evolving strategic planning context in the area and to increase private housing supply while striking a balance for conservation of the wetland areas. Given the proximity to the San Tin Highway, and high-density

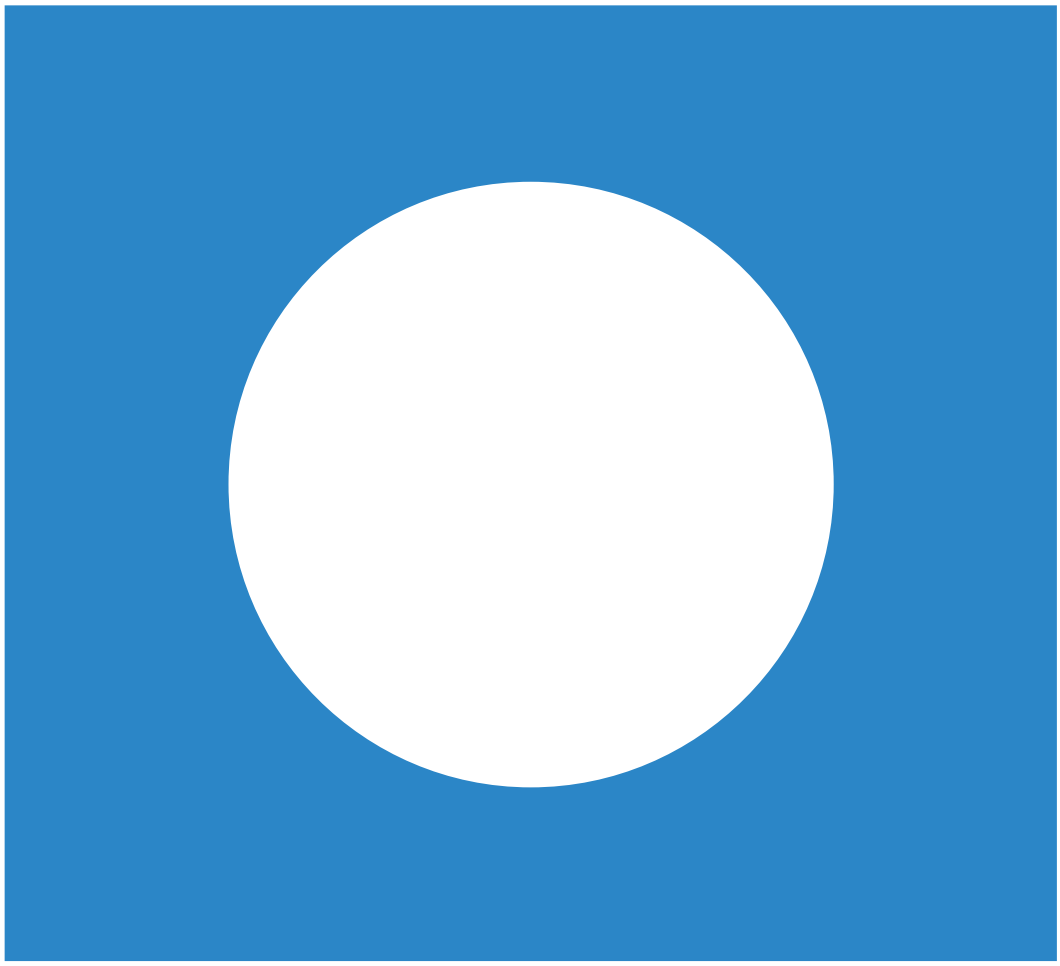
developments and infrastructure upgrades of STT OZP, it is proper to increase the development intensity of the Application Site.

11.2 The proposed medium-density private housing at the Application Site is suitable, compatible and technically feasible at its location and to the future planning context. It will enable the private sector to take an active part in the provision of housing to meet the long-term housing shortfall and bring the application site in line with the nearby San Tin Technopole in an integral manner from area planning perspectives.

11.3 Therefore, the Board is invited to favourably consider the proposed amendment to OZP as put forward in this planning application.

Masterplan Limited – Planning and Development Advisors
September 2025

MOTT MACDONALD



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

September 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Air Ventilation Assessment - Initial Study

September 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

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1 Introduction

1.1 Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the Approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	38,761m^2
Private Garden	15,444m^2
Domestic Components	
Plot Ratio (Approx.) Domestic (Approx.) Non-Domestic (Approx.)	1.3 1.28 0.02
Total GFA (Approx.) Maximum Domestic GFA (Approx.) Maximum Non-Domestic GFA (Approx.)	269,879 m^2 266,079m^2 3,800 m^2
Site Coverage (not more than)	25%
Total Number of Units	3,562
Average Unit Size (Approx.)	74.7m^2
Ancillary Recreational Facilities (Approx.)	11,581 m^2
Estimated Population	9,974*
Completion Year	2031
Building Height	
3-storey House	+21mPD
6--storey Residential Tower	+28mPD

8-storey Residential Tower	+35mPD
10-storey Residential Tower	+42mPD
Clubhouse (2-storey)	+16mPD

Remarks:
* Based on person per flat ration of 2.8.

1.2 Study Objectives

In order to assess if any potential adverse air ventilation impacts might be induced on the surrounding pedestrian wind environment due to the proposed residential development, a site-specific AVA-IS using Computational Fluid Dynamics (CFD) has been conducted to demonstrate that the building's potential impact on the local wind environment has been duly considered by comparing the Proposed Scheme with a Baseline Scheme.

The objective of this study is to assess quantitatively the potential air ventilation impacts of the Proposed Scheme and the Baseline Scheme on the surroundings using the methodology of AVA, based on the "Housing Planning and Lands Bureau – Technical Circular No. 1/06, Environment, Transport and Works Bureau – Technical Circular No. 1/06" issued on 19th July 2006 (the Technical Circular) and "Technical Guide for Air Ventilation Assessment for Development in Hong Kong – Annex A" (the Technical Guide) of the Technical Circular.

2 Site Characteristics

2.1 Project Site and Its Surrounding Area

The Project Site is located at Wo Shang Wai, Yuen Long, with an area of approximately 207,408 m^2. The Project Site is currently a land area zoned as OU(CDWRA) under the Approved Mai Po and Fairview Park Outline Zoning Plan No. S/YL-MP/8 ("OZP"). Location of the Project Site is shown in **Figure 2.1**.

There are fish ponds from the south to the north of the Project Site and mountains such as Ki Lun Shan, Ngau Tam Shan and Pine Tree Hill at the east of the Project Site. Please refer to **Appendix E** for the topography around the Project Site.

To the north of the Project Site lies a cluster of low-lying fishponds within the "Other Specified Uses" ("OU") zone. Royal Palms with building height of approximately 16mPD under "Residential (Group C)" ("R(C)") zone is located at the east and southeast of the Project Site. Mai Po Ventilation Building with building height of approximately 21.5mPD under OU (CDWRA) zone lies to the east of the Project Site. There is also a cluster of village houses under "Village Type Development" ("V") zone at the east of the Site across Mai Po South Road, namely Mai Po San Tsuen with building height of approximately 12.7mPD.

To the south of the Project Site lies a cluster of residential developments under R(C) zone, namely Wo Shang Wai Village, Palm Springs – Arcadia and Palm Springs Plaza with building height of approximately 7.7mPD, 16mPD and 13.6mPD respectively.

To the west and southwest of the Project Site also lies a cluster of residential developments under R(C) zone, namely Palm Springs – Westwood with building height of approximately 16mPD. To the further west of the Project Site across Palm Springs – Westwood is a low-lying area with numerous fishponds under OU zone.

Figure 2.1 shows an overview of the Project Site and its surroundings. **Figure 2.2** shows an overview of the Project Site and its surroundings as shown on the OZP. The building height for the existing developments in the vicinity of the Project Site are listed out in **Table 2.1**.

Table 2.1: Existing Developments around the Project Site

Name of Existing Developments	Building Height (mPD)
Royal Palms	14.5 - 17.7
Palm Springs - Arcadia	13.9 - 16.5
Palm Springs - Westwood	13.6 - 17.4
Palm Springs Plaza	13.6
Wo Shang Wai Village	7.7
Mai Po Ventilation Building	21.5
Mai Po San Tsuen	6.4 - 13.3

Figure 2.1: Overview of the Project Site and its Surroundings

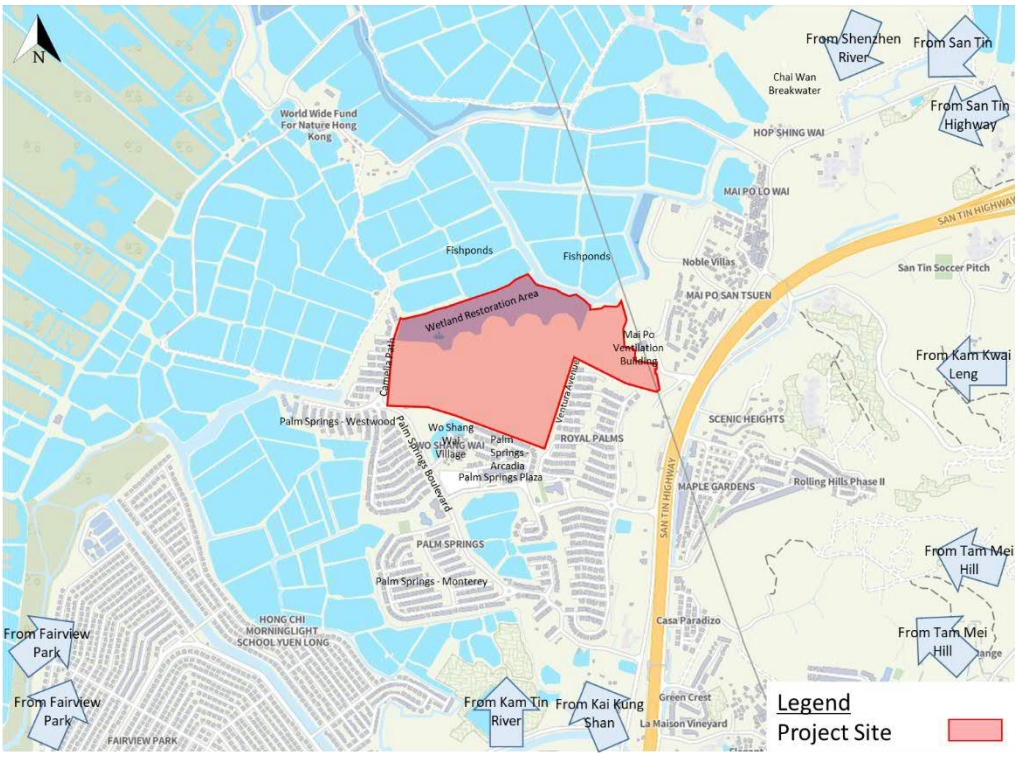
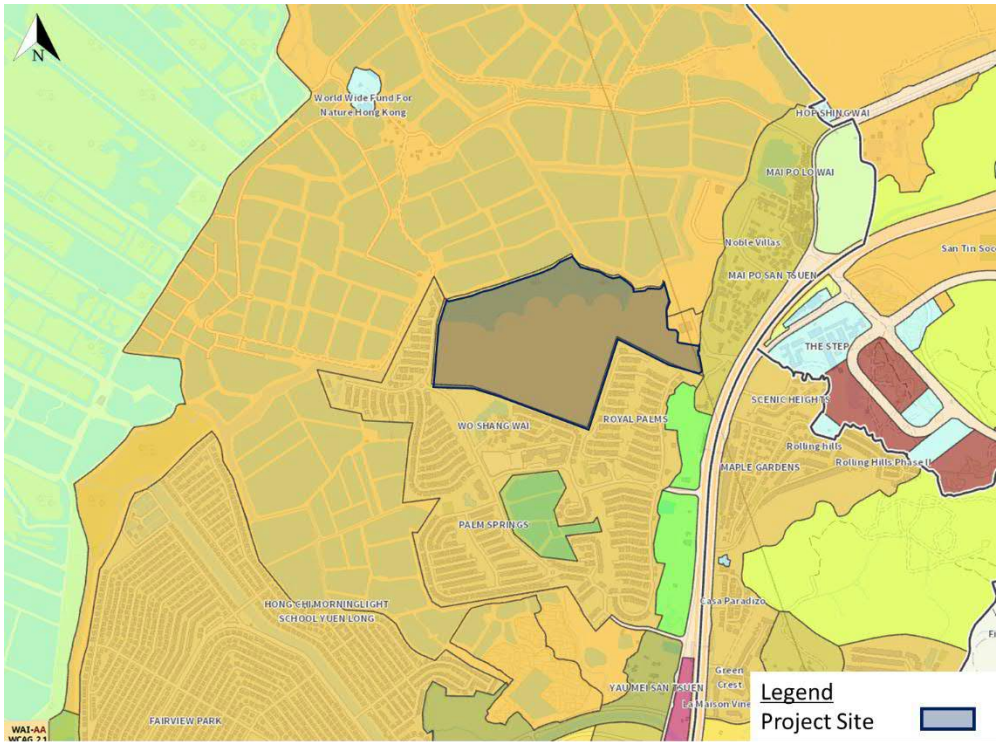


Figure 2.2: Overview of the Project Site and its Surroundings as shown on the OZP



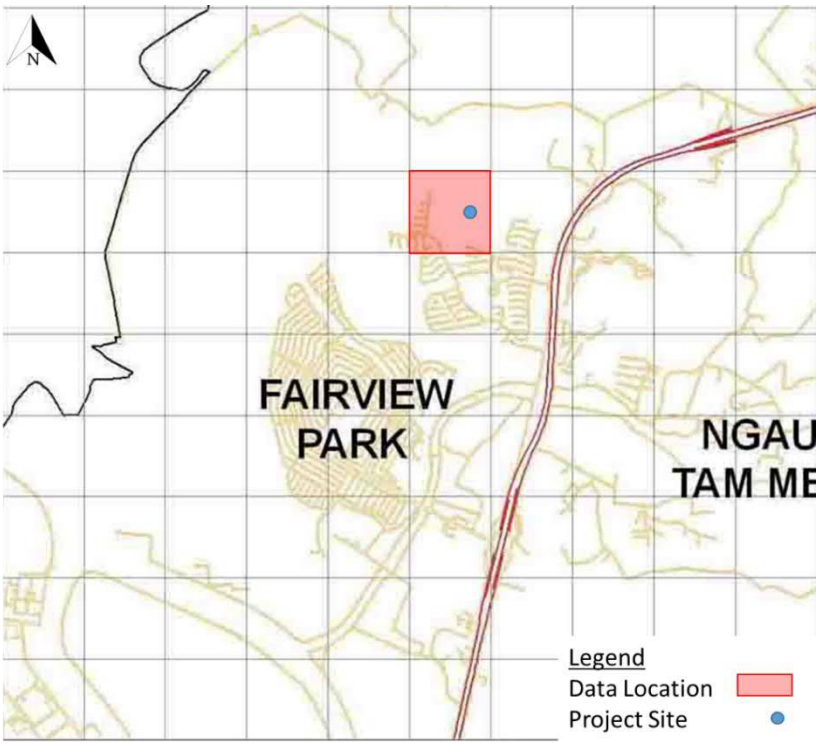
3 Wind Availability Data

The wind profile input for the CFD simulation requires wind data at different heights and at the wind boundary level. The characteristics of the site wind availability should be identified in order to investigate the wind performance of the Project Site and its surrounding area. Site wind availability data could be used to assess the wind characteristics in terms of the magnitude and frequency of approaching wind from each wind direction. In this study, the simulated Regional Atmospheric Modelling System (RAMS) wind data from Planning Department (PlanD) has been used for the quantitative assessment.

3.1 Site Wind Availability Data

City University of Hong Kong (CityU) utilized the meso-scale numerical model Regional Atmospheric Modeling System (RAMS) to produce site wind availability data for Hong Kong and is available at PlanD's database[1]. Based on the archived dataset, wind statistics and wind roses for each 0.5km×0.5km grid box at different height levels could be extracted. Simulated data at grid (X055, Y080) corresponds to the location of the Project Site and annual wind conditions at 500m above ground are referenced in this study. The location of grid (X055, Y080) is shown in **Figure 3.1**. The extracted wind roses show that easterlies dominate under the annual wind condition while south westerly winds dominate under the summer wind condition. **Figure 3.2** and **Figure 3.3** shows the annual and summer wind roses at 500m above ground level for grid (X055, Y080) respectively.

Figure 3.1: Location of the Selected RAMS Wind Data - Grid (X055, Y080)



[1] http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/index.html

Figure 3.2: Annual Wind Rose at 500m – Grid (X055, Y080)

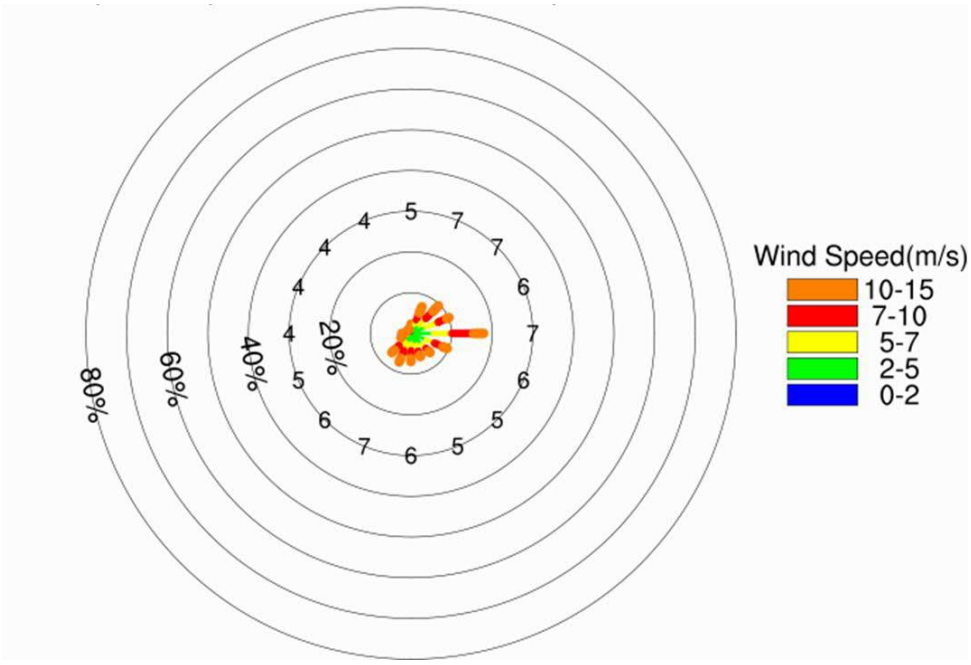
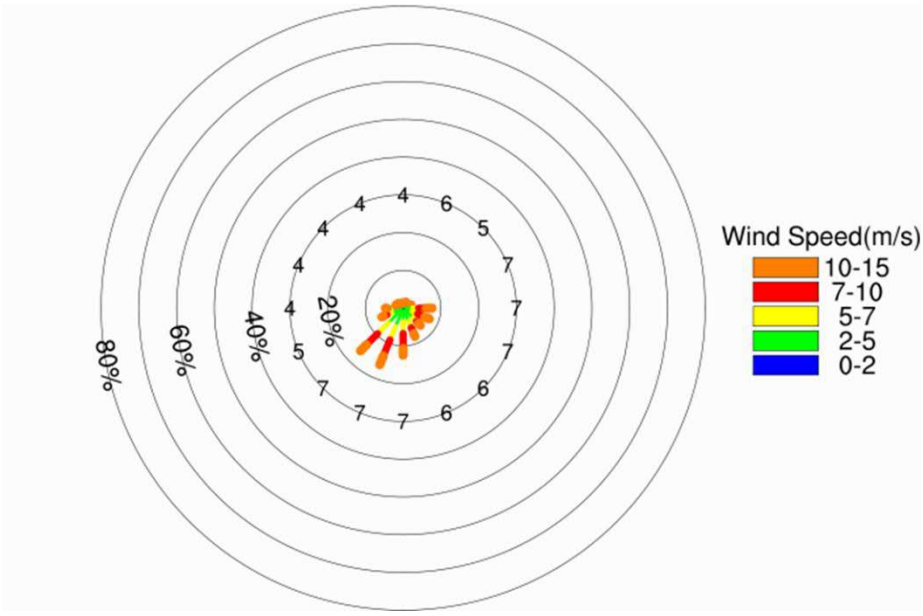


Figure 3.3: Summer Wind Rose at 500m – Grid (X055, Y080)



3.2 Annual Prevailing Wind

Nine prevailing wind directions (**bolded** in **Table 3.1**) are considered in this quantitative assessment which covers 83.2% of the total annual wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are North-Northeast (7.2%), Northeast (9.8%), East-Northeast (10.2%), East (18.1%), East-Southeast (9.8%), Southeast (6.7%), South (7.0%), South-Southwest (7.7%) and Southwest (6.7%) winds.

Table 3.1: Annual Wind Frequency at 500m

Direction	N	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SE**	SSE
Frequency (%)	2.3	**7.2**	**9.8**	**10.2**	**18.1**	**9.8**	**6.7**	6.2
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**7.0**	**7.7**	**6.7**	2.7	2.2	1.1	1.1	1.1

3.3 Summer Prevailing Wind

Seven prevailing wind directions (**bolded** in **Table 3.2**) are considered in this quantitative assessment which covers 76.4% of the total summer wind frequency, exceeding the 75% required by the Technical Guide of AVA. They are East (8.1%), East-Southeast (7.8%), Southeast (6.6%), South-Southeast (8.2%), South (12.9%), South-Southwest (16.5%) and Southwest (16.3%).

Table 3.2: Summer Wind Frequency at 500m

Direction	N	NNE	NE	ENE	**E**	**ESE**	**SE**	**SSE**
Frequency (%)	1.4	1.8	1.6	2.4	**8.1**	**7.8**	**6.6**	**8.2**
Direction	**S**	**SSW**	**SW**	WSW	W	WNW	NW	NNW
Frequency (%)	**12.9**	**16.5**	**16.3**	6.2	4.7	2.1	1.8	1.4

3.4 Wind Profile

As mentioned in Section 5.1, the RAMS wind data extracted from Planning Department's Website will be adopted in this AVA Initial Study. The wind profile data from 10 – 500m will be directly adopted as it reflects the exact wind data whereas the power law equation will be used to approximate near ground wind profile (i.e. 0 – 10m). For wind data above 500m, wind velocity shall be assumed as the wind velocity at 500m. **Figure 3.4** to **Figure 3.7** indicates the overall wind profile curve adopted for the CFD simulation.

The vertical discretization of velocity profile is approximated by using an exponential law, which is a function of ground roughness and height:

$$U_Z = U_G \left(\frac{z}{z_G} \right)^n$$

where

U_G = reference velocity at height z_G

Z_G = reference height

Z = height above ground

U_Z = velocity at height z

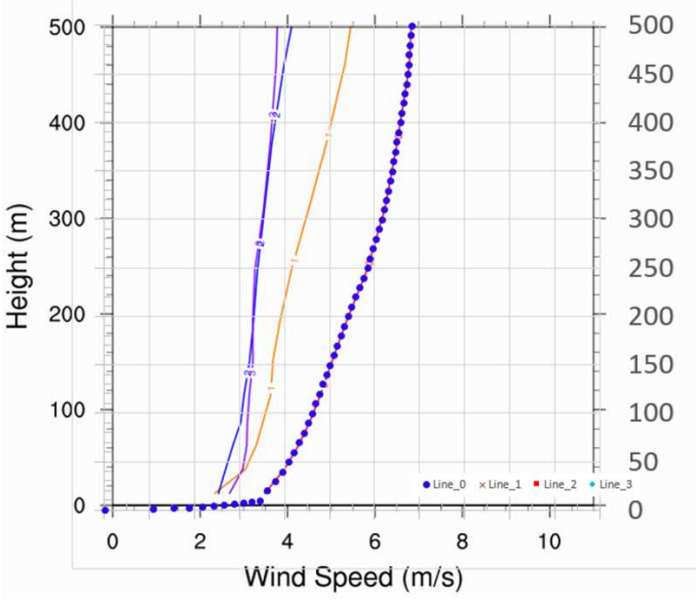
n = power law exponent

The power n is related to the ground roughness. A larger value of the power n represents the higher roughness of the ground i.e. the dense city. Alternatively, smaller n represents the lower ground roughness, i.e. the sea surface. **Table 3.3** shows the n value adopted for CFD simulation.

Table 3.3: Value of n (Power Law Exponent) Adopted for CFD Simulation

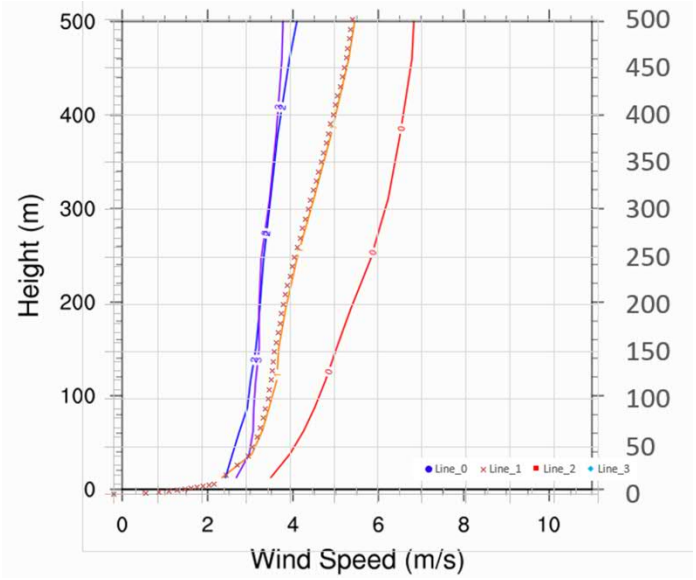
Direction	NNE	NE	ENE	E	ESE	SE
Value of n	0.35	0.35	0.35	0.35	0.35	0.35
Direction	SSE	S	SSW	SW	WSW	
Value of n	0.35	0.35	0.35	0.35	0.35	

Figure 3.4: Wind Profile Curve for Wind Directions of 22.5º - 112.4º at Grid (X055, Y080)



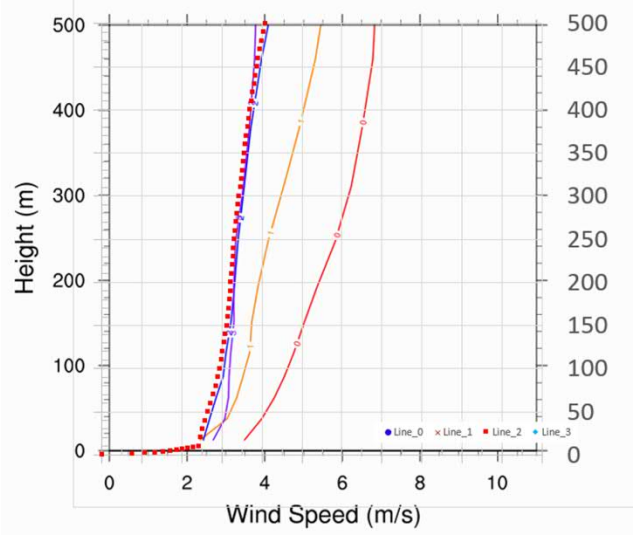
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.5: Wind Profile Curve for Wind Directions of 112.5º - 202.4º at Grid (X055, Y080)



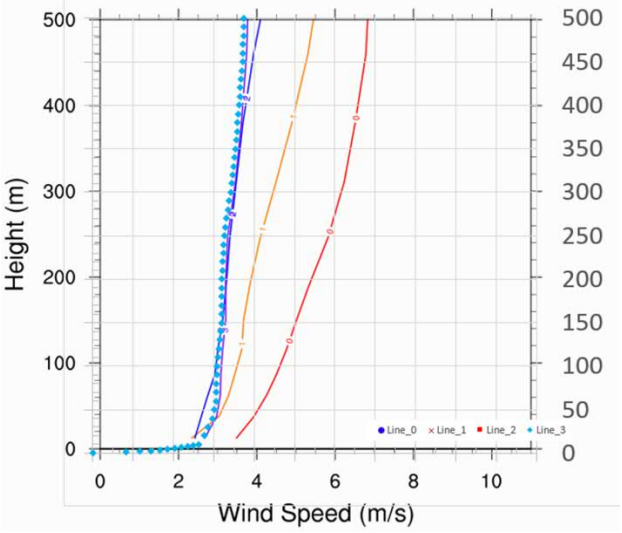
(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.6: Wind Profile Curve for Wind Directions of 202.5º - 292.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Figure 3.7: Wind Profile Curve for Wind Directions of 292.5º - 22.4º at Grid (X055, Y080)



(line – original data from RAMS, dots – input data adopted for CFD simulation)

Table 3.4 shows the data for each wind profile curve adopted in the current AVA Initial Study, which acts as the inlet boundary data in the CFD simulation.

Table 3.4: Wind Profile Data for All Wind Directions

Height	Wind Speed (m/s)			
	22.5˚ – 112.4˚	112.5˚ – 202.4˚	202.5˚ – 292.4˚	292.5˚ – 22.4˚
0	0.00	0.00	0.00	0.00
10	3.44	2.27	2.42	2.64
20	3.61	2.55	2.46	2.76
40	3.95	3.05	2.59	2.98
60	4.21	3.25	2.73	3.05
80	4.43	3.39	2.87	3.07

100	4.61	3.51	2.96	3.10
150	5.01	3.65	3.12	3.20
200	5.40	3.85	3.23	3.20
250	5.83	4.10	3.31	3.26
300	6.15	4.41	3.44	3.42
350	6.38	4.71	3.56	3.54
400	6.56	4.98	3.70	3.63
450	6.73	5.24	3.88	3.72
500	6.81	5.42	4.08	3.75

4 Design Schemes for Initial Study

Two schemes were studied for the AVA, namely Baseline Scheme and Proposed Scheme based on the design options provided by the project team.

The 3D simulation model takes information via the Geographical Information System (GIS) platform to construct the surrounding buildings and site topography. All major elevated structures such as elevated walkway have been incorporated in the simulation model. No noise barriers are located within the Surrounding Area.

In addition, the western tip of a planned/committed development of San Tin Technopole under the approved EIA Report, "*Agreement No. CE 20/2021 (CE) First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation*" is located within the Surrounding Area. It is noted that there are planned developments reserved for government reserve and workshop and related facilities of the Fire Services Department within this region but there is no available data for the planned developments. Please refer to **Appendix G** for the location of this planned / committed development.

Overviews of the whole domain 3D simulation model are provided in **Appendix H**.

4.1 Baseline Scheme

The Baseline Scheme is referred to the previous approved scheme under Planning Application No. A/YL-MP/344. It comprises of 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17.0mPD. **Figure 4.1** to **Figure 4.4** shows the simulation model of the Baseline Scheme. Architectural layout drawings of the Baseline Scheme are provided in **Appendix A**.

Chapter 11 of "Hong Kong Planning Standards and Guideline" on Air Ventilation was referenced in order to determine the good design features in the Baseline Scheme from an air ventilation standpoint. The following good design feature of the Baseline Scheme is identified and shown in **Appendix A**.

- At least 7.5m-wide building setback from the eastern site boundary.

Figure 4.1: Simulation Model of the Baseline Scheme (Part 1 of 4)

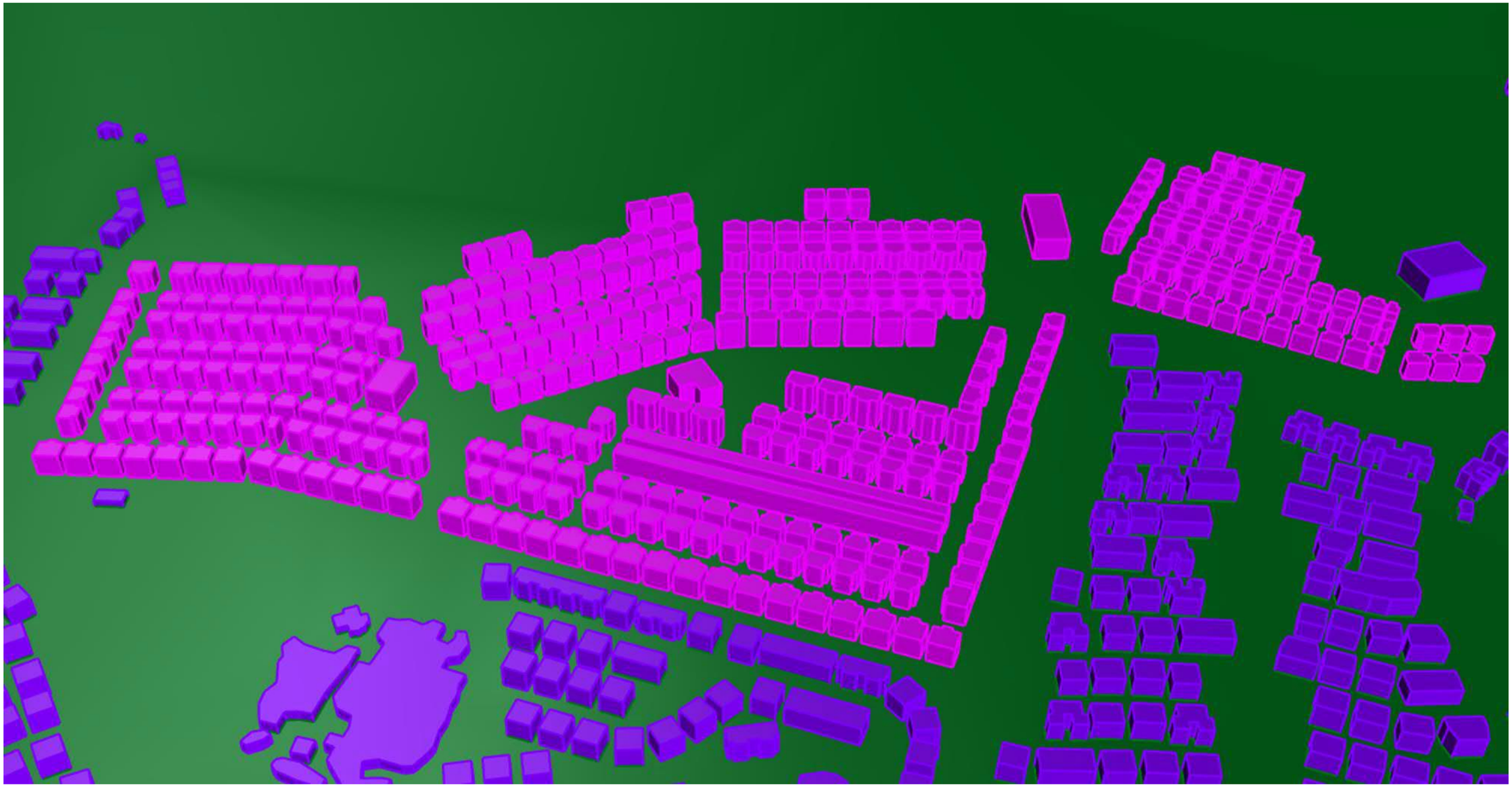


Figure 4.2: Simulation Model of the Baseline Scheme (Part 2 of 4)

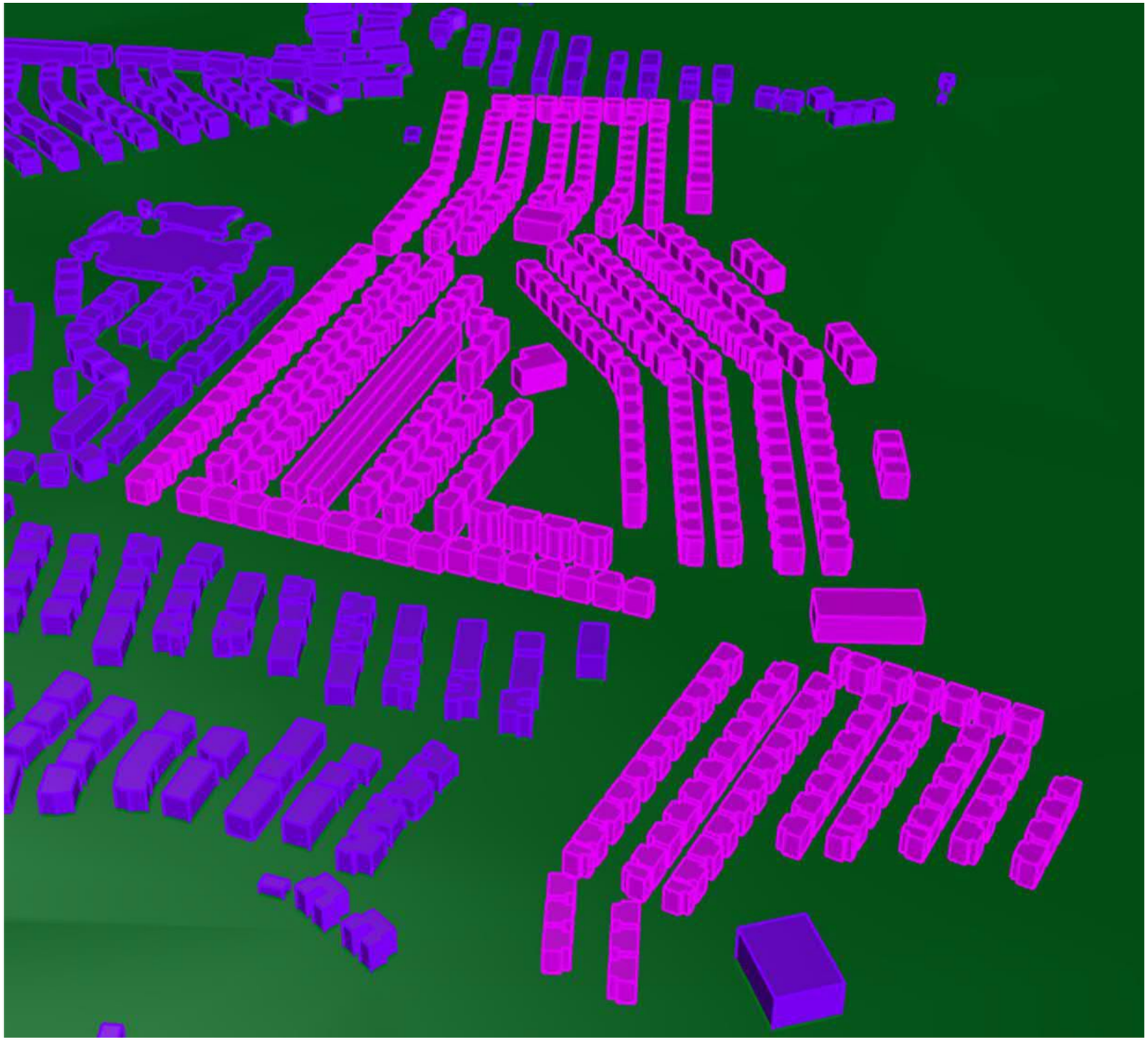


Figure 4.3: Simulation Model of the Baseline Scheme (Part 3 of 4)

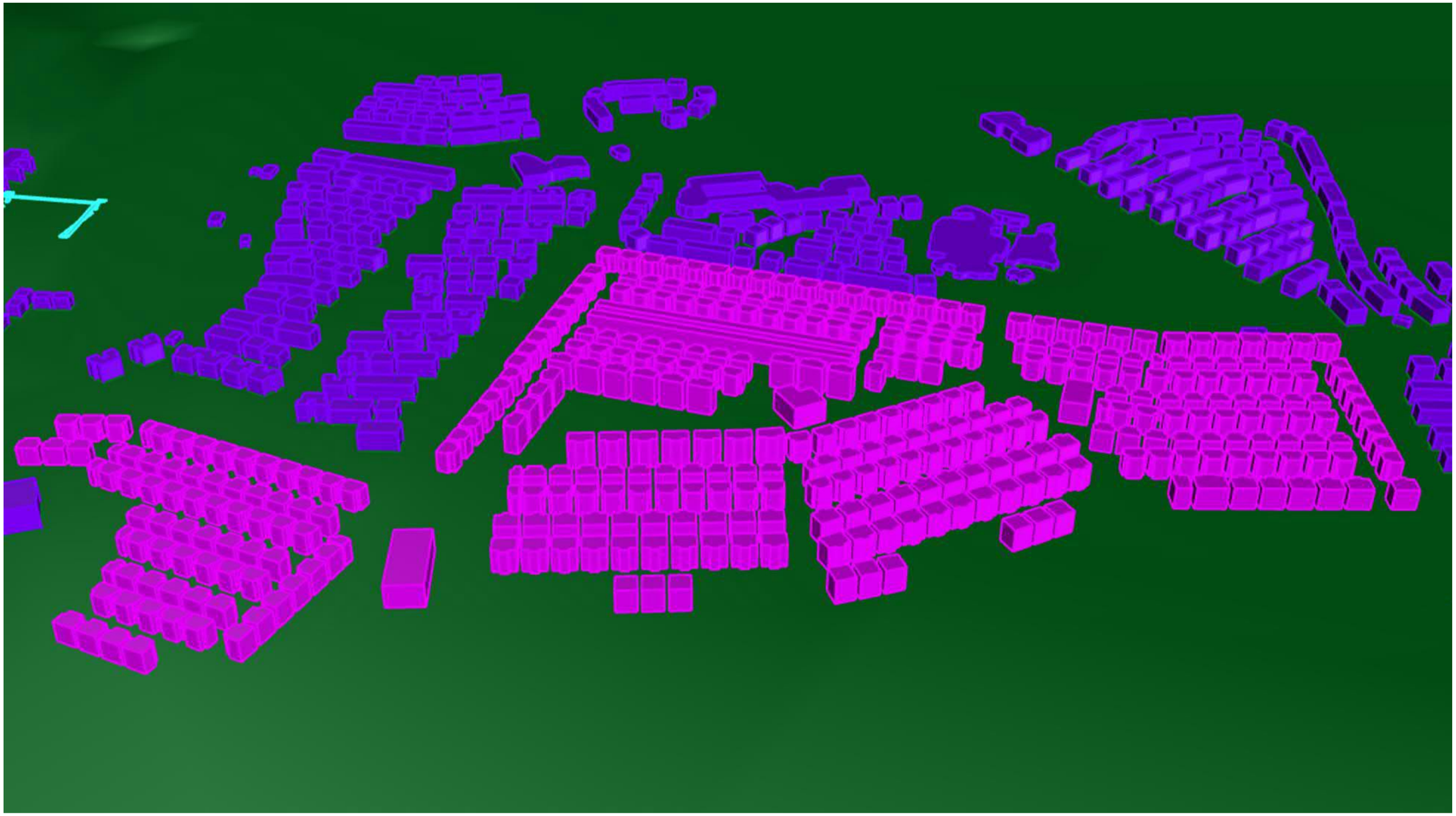
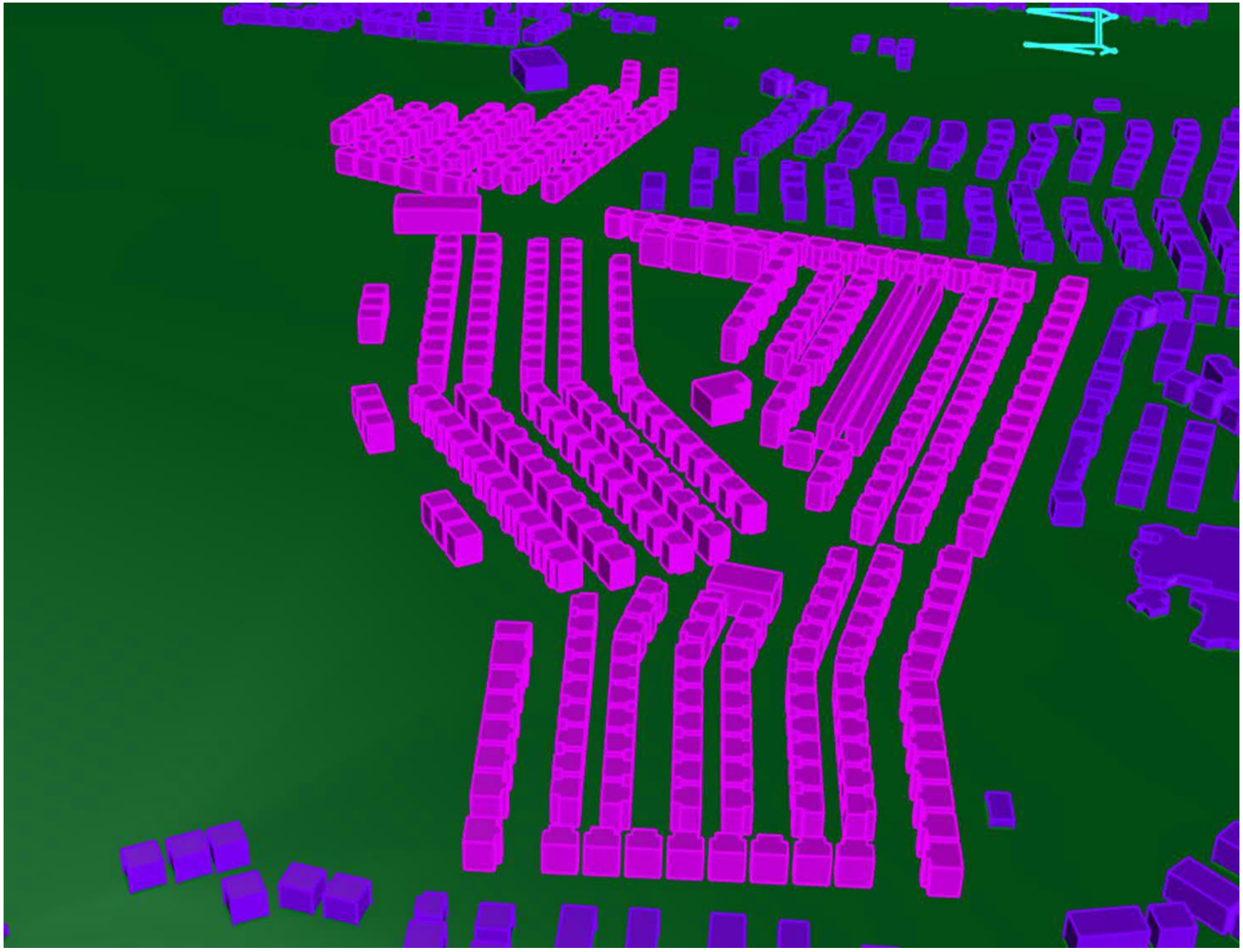


Figure 4.4: Simulation Model of the Baseline Scheme (Part 4 of 4)



4.2 Proposed Scheme

The Proposed Scheme comprises of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey Residential Care Home for the Elderly (RCHE) above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. In comparison with the Baseline Scheme, the number of buildings is reduced whilst more open spaces and building separations are introduced. The introduction of more open spaces and building separations are expected to enhance the site permeability at pedestrian level.

Chapter 11 of "Hong Kong Planning Standards and Guideline" on Air Ventilation was referenced in order to determine the good design features in the Proposed Scheme from an air ventilation standpoint. The following good design features of the Proposed Scheme are identified and shown in **Appendix B**.

- Approximate 11m-wide building separation between domestic blocks at the eastern side of the Proposed Scheme.
- Approximate 12m-wide building separation between domestic blocks at the center of the Proposed Scheme.
- Approximate 16m-wide building separation between domestic blocks at the western side of the Proposed Scheme.

Figure 4.5 to **Figure 4.8** shows the simulation model of the Proposed Scheme. Architectural layout drawings of the Proposed Scheme are provided in **Appendix B**.

Figure 4.5: Simulation Model of the Proposed Scheme (Part 1 of 4)

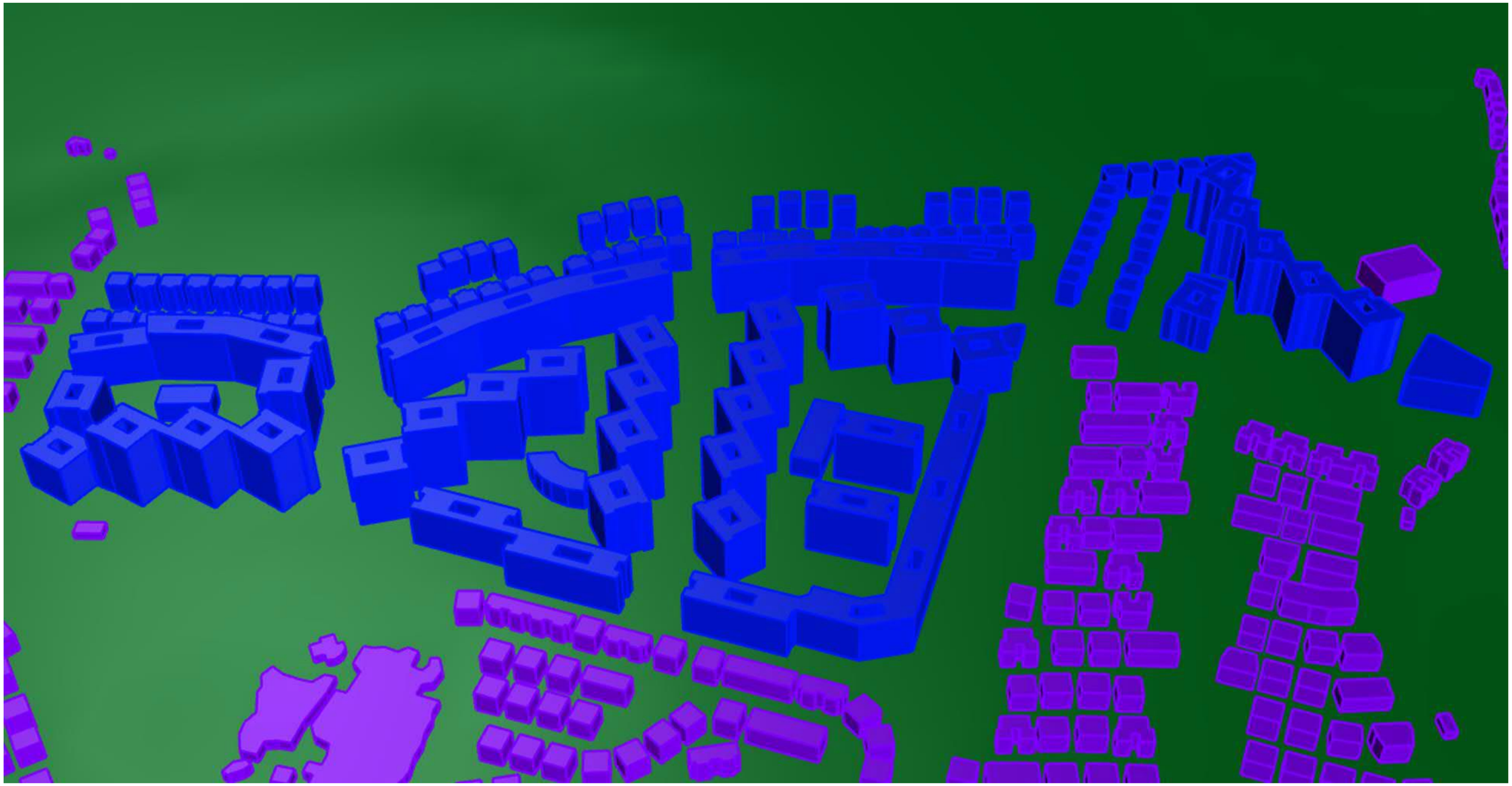


Figure 4.6: Simulation Model of the Proposed Scheme (Part 2 of 4)

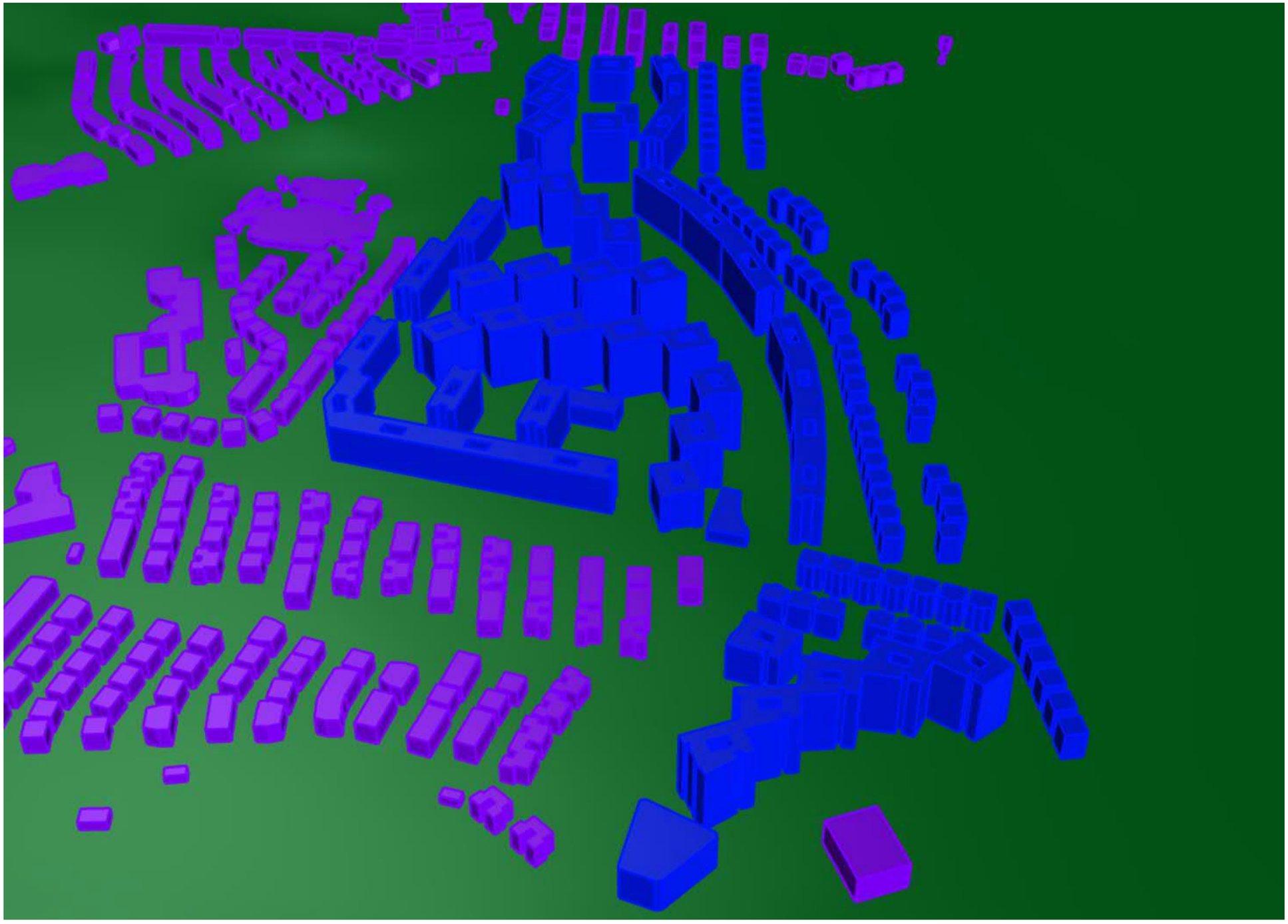


Figure 4.7: Simulation Model of the Proposed Scheme (Part 3 of 4)

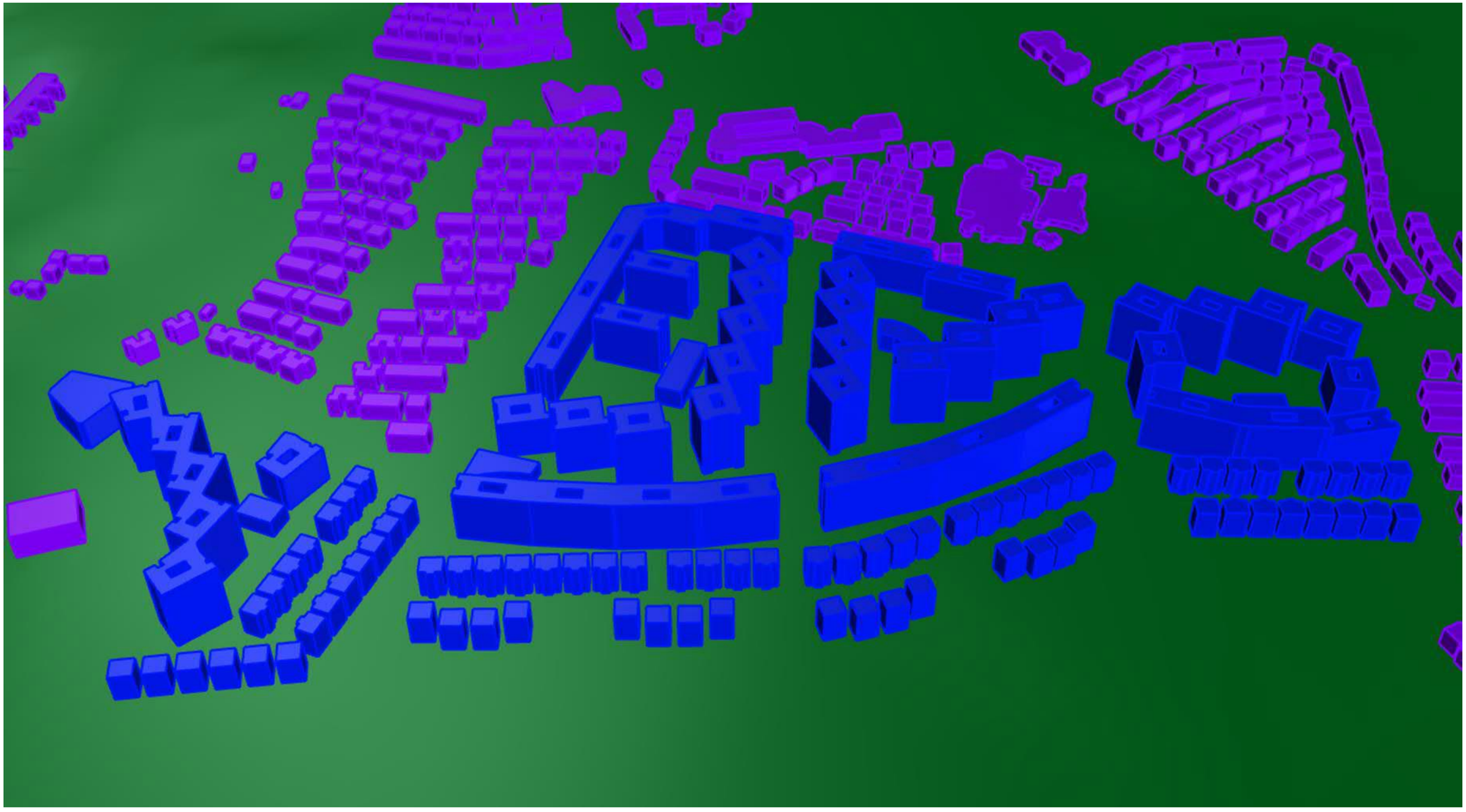
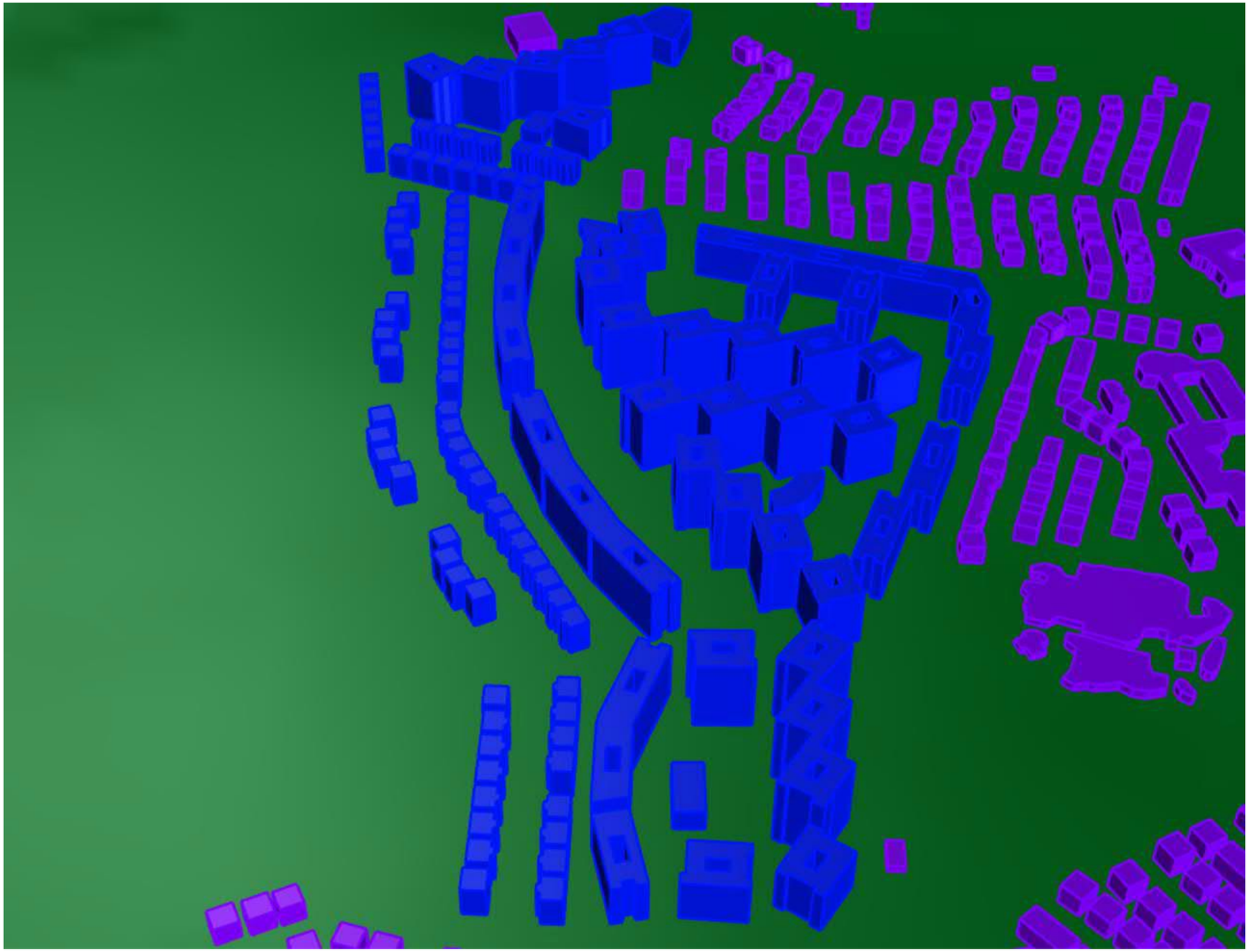


Figure 4.8: Simulation Model of the Proposed Scheme (Part 4 of 4)



5 Methodology

Computational Fluid Dynamics (CFD) was utilized for the AVA. With the use of three-dimensional CFD method, the local airflow distribution can be visualized in detail. The velocity distribution within the flow domain, being affected by the site-specific design and the nearby topography, was simulated under the studied prevailing wind conditions.

5.1 Assessment and Surrounding Areas

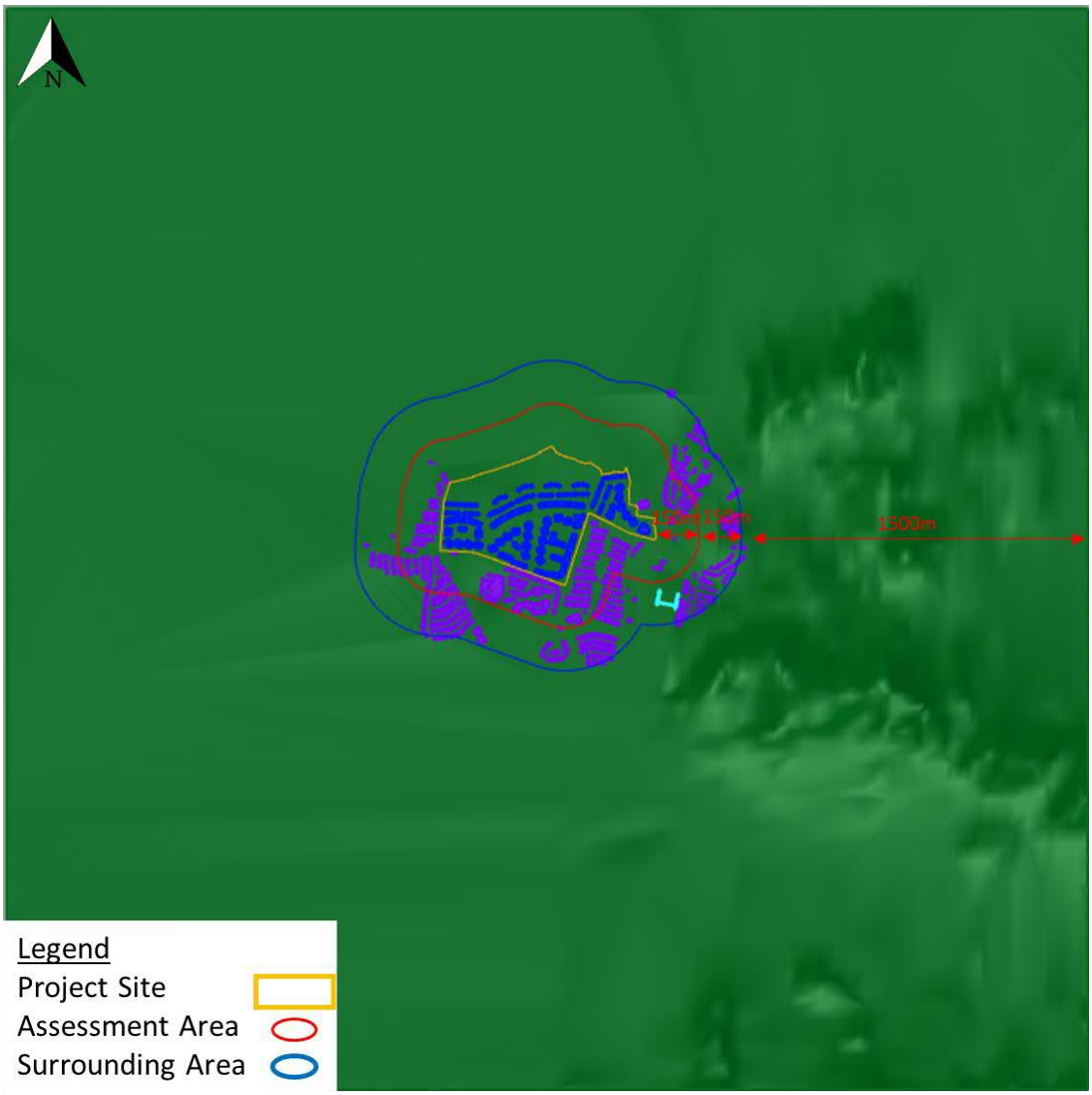
With reference to the Technical Guide, the Assessment Area should include the project’s surrounding up to a perpendicular distance 1H from the site boundary of the Project Site with H being the height of the tallest building on site, which is equivalent to approximately 42m hence the Assessment Area is deduced to be 1H=42m and the Surrounding Area will be 2H=84m.

However, in order to incorporate special surrounding features and open spaces beyond the Assessment Area, the H is extended to 150m hence the new Assessment Area for the current study will be 3.6H (i.e. 150m) and the Surrounding Area will be 7.2H (i.e. 300m).

The model takes information on the surrounding buildings and site topography via the Geographical Information System (GIS) platform. The computational domain of the CFD model for this AVA Initial Study is approximately 3800 m (L) x 3800 m (W) x 1000 m (H).

Figure 5.1 shows the size and location of the Project Site, Assessment Area, Surrounding Area and the computational domain. The whole computational domain in different directions are shown in **Appendix H**.

Figure 5.1: Project, Assessment and Surrounding Areas along Computational Domain



5.2 Technical Details for CFD Simulation

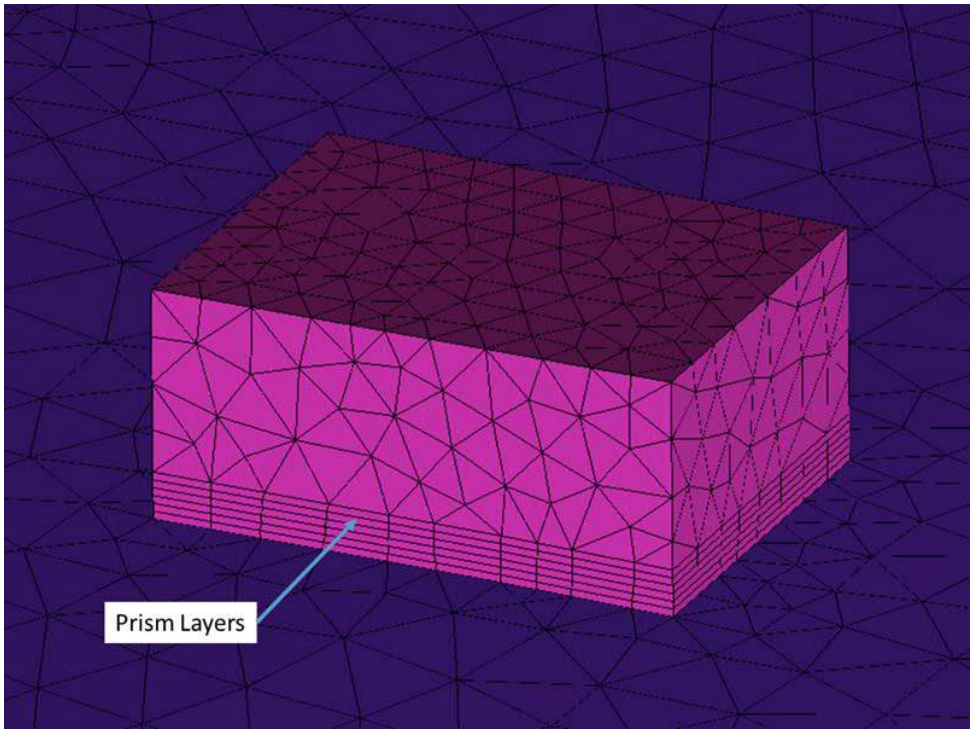
5.2.1 Modelling Tool

A commercial CFD package STAR-CCM+ was used which is widely adopted in the industry for AVA studies and other types of complex fluid flow related problems.

5.2.2 Mesh Setup

Body-fitted unstructured grid technique is used to fit the geometry to reflect the geometry details which is essential for proper modeling on turbulence flow. A prism layer of 3m above ground (totally 6 layers and each layer is 0.5m) is incorporated in the meshing so as to better capture the approaching wind near ground as shown in **Figure 5.2**. The expansion ratio is not greater than 1.1 while the maximum blockage ratio is 2%.

Figure 5.2: Prism Mesh Layers at Ground Level



5.2.3 Mesh Setup

According to COST Action C14 (2004)[2], realizable k – ε turbulence model is adopted as it is recommended for modeling pedestrian wind environment. This turbulence model provides more accurate representation of the levels of turbulence that can be expected in an urban environment.

5.2.4 Calculation Method and Boundary Condition

Pressure-Based segregated algorithm will be adopted to solve the governing equations. The pressure and velocity coupling will be handled by SIMPLE algorithm or its variation. A collocated variable arrangement with Rhie-and-Chow-type approach is also adopted to prevent checker board problem. A higher order differencing scheme is applied to discretize all governing

[2] J. Franke, C. Hirsch, A.G. Jensen, H.W. Krüs, M. Schatzmann, P.S. Westbury, S.D. Miles, J.A. Wisse and N.G. Wright, Recommendations on the use of CFD in Wind Engineering, In J.P.A.J. van Beek (Ed.), Proc. Int. Conf. on Urban Wind Engineering and Building Aerodynamics: COST C14 – Impact of Wind and Storm on City life and Built Environment, Rhode-Saint-Genèse, 2004.

equations. The convergence criterion is set to 0.0001 on mass, momentum and turbulence equations. The calculation will repeat until the solution satisfies this convergence criterion. The prevailing wind direction is set to inlet boundary of the model with respective wind profile as detailed in **Section 3**. The downwind boundary is set to pressure with value of atmospheric pressure. The top and side boundaries are set to symmetry. In addition, to eliminate the boundary effects, the model domain is built more than 5H from the Surrounding Area as recommended in the Technical Circular.

5.2.5 Summary

Based on previous sections, the detail parameters of the model are summarized in **Table 5.1**.

Table 5.1: Summary of CFD Model

	CFD Model
Computational Model Scale	1:1 scale to real environment
Model details	Topography, Buildings blocks, Streets/highways, all major elevated structures and noise barriers are included. No minor structures like signboard, street light, trees, shrubs, turfs, etc are included in the simulation model.
Domain	3800m(L) x 3800m(W) x 1000m(H)
Assessment Area	Within 3.6H (i.e. 150m) Area
Surrounding building Area	Within 7.2H (i.e. 300m) Area
Turbulence Model	Realizable k-ε model
Grid Expansion Ratio	Maximum expansion ratio = 1.1
Prismatic layer	6 layer of prismatic layers and 0.5m each (i.e. total 3m above ground)
Inflow boundary Condition	Respective wind profile obtained from RAMS
Outflow boundary	Pressure boundary condition with pressure equal to zero
Wall boundary condition	Logarithmic law boundary
Solving algorithms	SIMPLE with Rhie and Chow approach + Higher order differencing scheme
Blockage ratio	Maximum = 2%
Convergence criteria	Below $1.0E^{-4}$

5.3 AVA Indicator

5.3.1 Wind Velocity Ratio

The Wind Velocity Ratio (VR) as stipulated in the Technical Circular will be used to assess the ventilation performance of the proposed development and its surrounding environment. Higher VR implies better ventilation. The calculation of VR is given by the following formula:

$$VR = \frac{V_p}{V_\infty}$$

V_P= the wind velocity at the pedestrian level (2m above ground).

V_∞= the wind velocity at the top of the wind boundary layer (typically assumed to be around 500m above the center of the site of concern, or at a height where wind is unaffected by the urban roughness below).

The Average VR is defined as the frequency weighted average VR with respect to the percentage of occurrence of all considered wind directions. This gives a general idea of the ventilation performance at the considered location at both annual and summer wind conditions.

5.3.2 Spatial Average Velocity Ratio

CFD simulations will be conducted to study the wind environment under annual and summer wind conditions. As specified in the Technical Circular, indicator of ventilation performance should be the VR, defined as the ratio of the wind velocity at the pedestrian level to the wind velocity at the top of the wind boundary layer. Site spatial average velocity ratio (SVR) and a Local spatial average velocity ratio (LVR) should be determined.

The SVR gives an idea of how the lower portion of the proposed development may affect the immediate surroundings. When problems are detected, it is likely that design changes may be needed for the lower portion of the development (e.g. the coverage of the podium).

The LVR gives an idea of how the upper portion of the proposed development may affect the local surroundings. When problems are detected, it is likely that design changes may be needed for the upper portion of the development (e.g. re-orientation of blocks and building height adjustment on the towers).

Table 5.2: Terminology of the AVA Initial Study

Terminology	Description
Site spatial average velocity ratio (SVR)	The SVR represent the average VR of all perimeter test points along the site boundary as identified in the report.
Local spatial average velocity ratio (LVR)	The LVR represents the average VR of all points, i.e. perimeter and overall test points within the Assessment Area, as identified in the report.

5.4 Locations of Test Points

Test points are evenly placed along the site boundary as well as open spaces, along streets and places within the Assessment Area which are frequently accessed by pedestrians. Test points have been placed at 2m above ground or podium level to determine the pedestrian ventilation performance. Three types of test points have been adopted in this study.

5.4.1 Perimeter Test Points

Perimeter test points are the points positioned at the site boundary of the Project Site. In accordance with the Technical Guide, 50 perimeter test points are positioned along the site boundary as shown in **Figure 5.3** to **Figure 5.4**.

Figure 5.3: Demarcation of the Perimeter (P) Test Points in Baseline Scheme

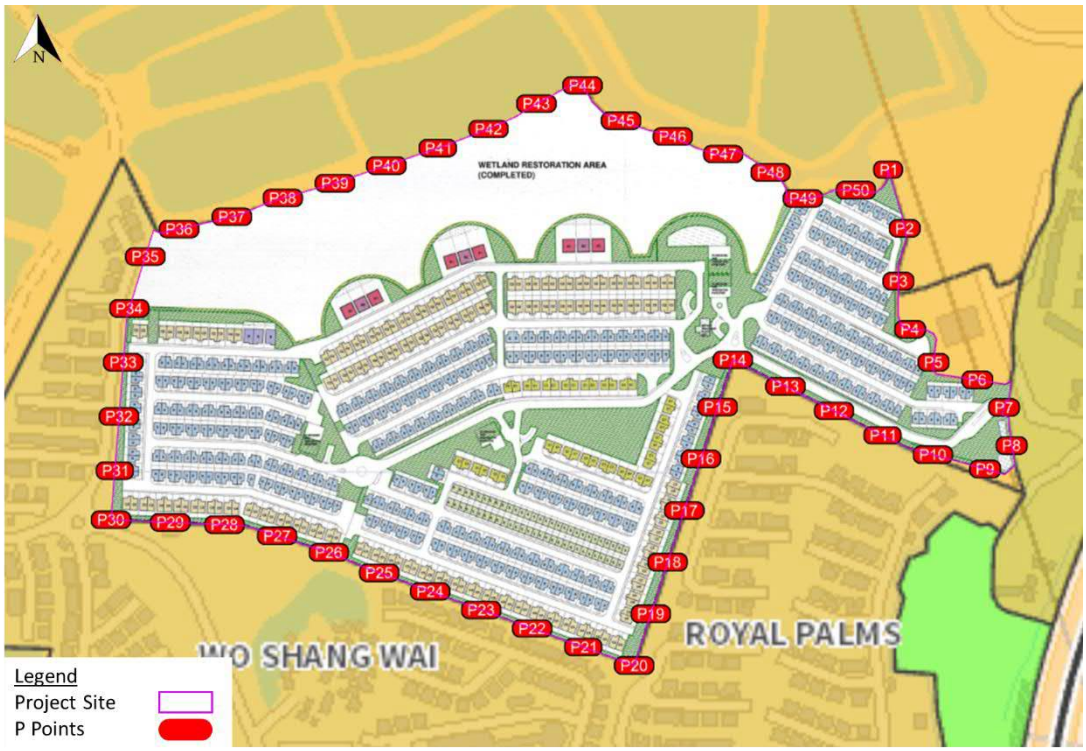
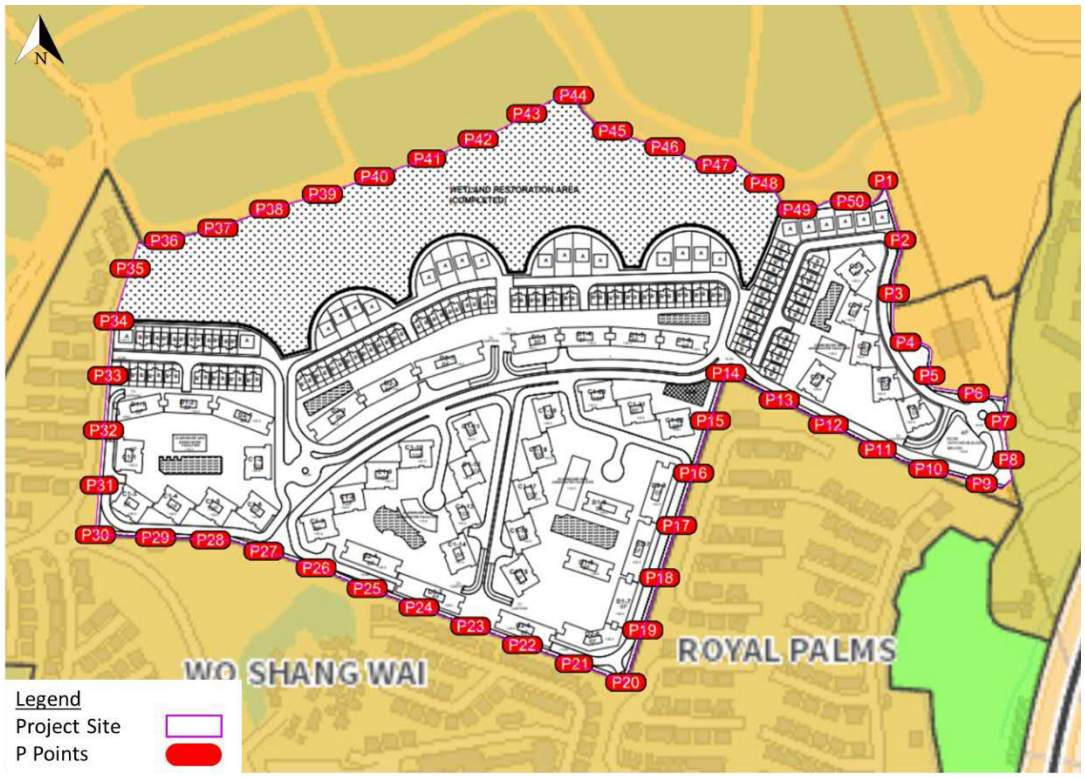


Figure 5.4: Demarcation of the Perimeter (P) Test Points in Proposed Scheme



5.4.2 Overall Test Points

177 overall test points are evenly distributed at open spaces, streets and places that are frequently accessed by pedestrians within the Assessment Area. The locations of the overall test points are shown in **Figure 5.5** to **Figure 5.6**.

Figure 5.5: Demarcation of the Overall (O) Test Points in Baseline Scheme

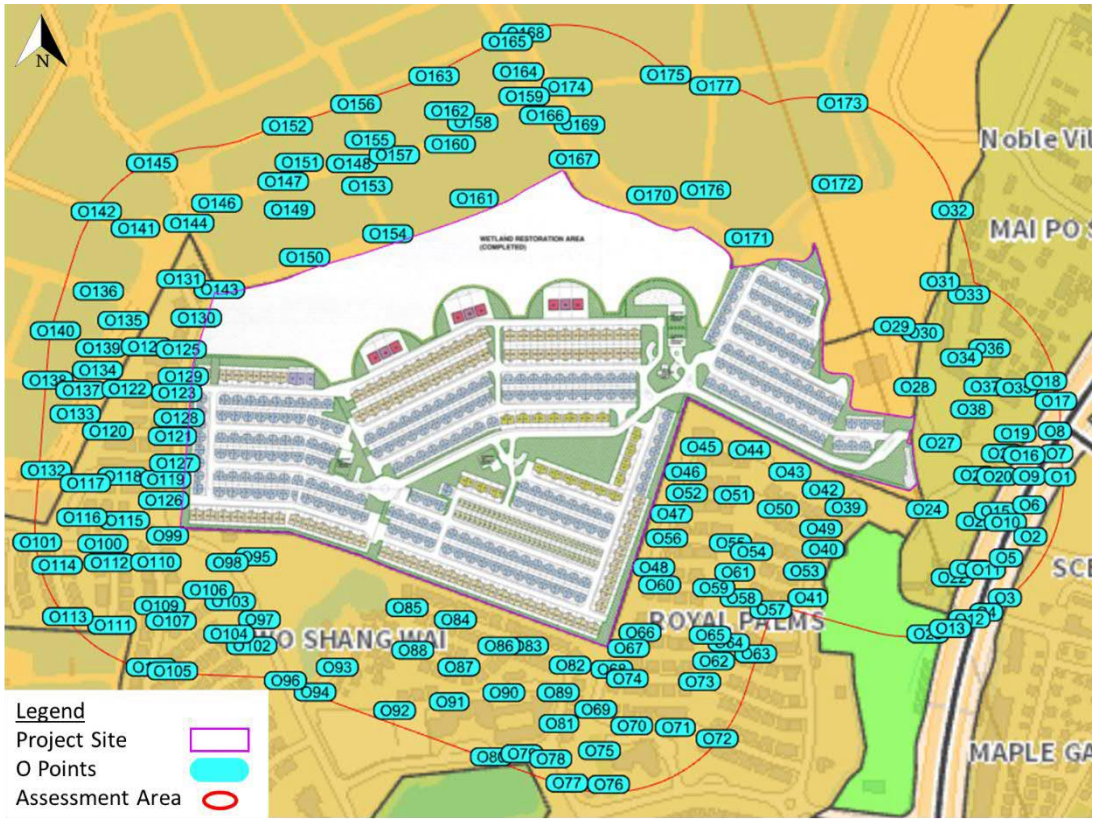
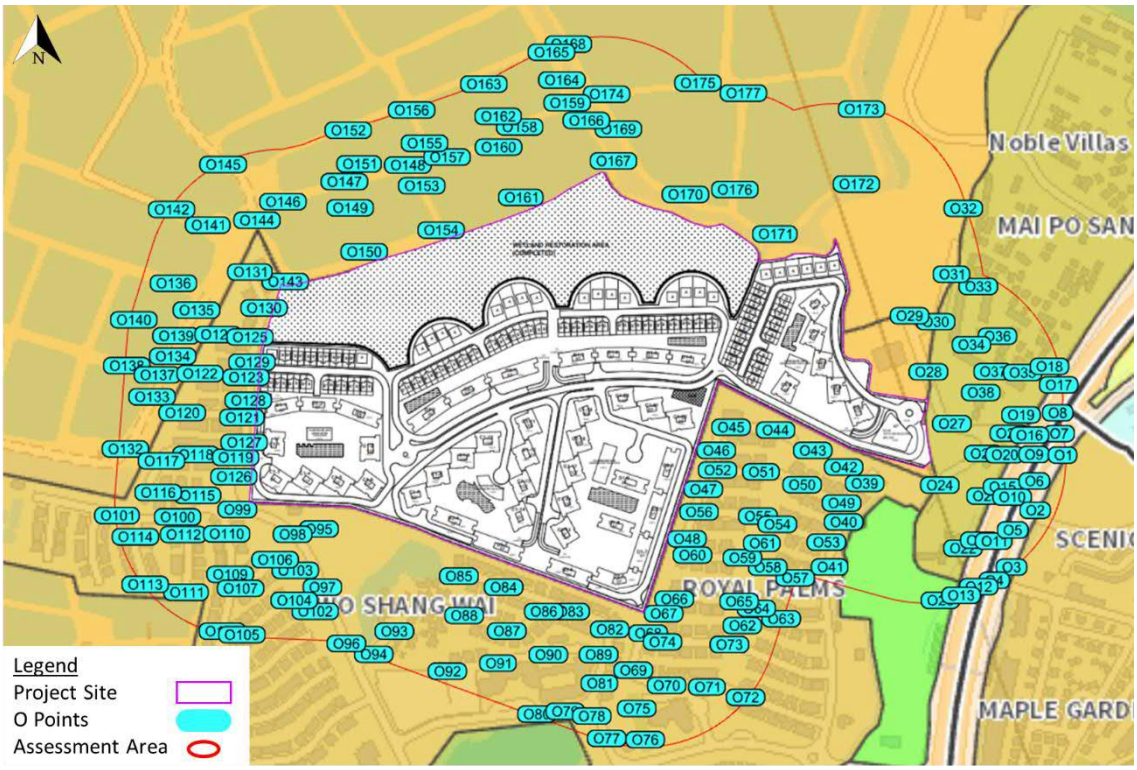


Figure 5.6: Demarcation of the Overall (O) Test Points in Proposed Scheme



5.4.3 SPECIAL TEST POINTS

In addition to the overall test points, special test points are selected within the Project Site. 32 special test points are selected as shown in **Figure 5.7** to **Figure 5.8.**

Figure 5.7: Demarcation of the Special (S) Test Points in Baseline Scheme

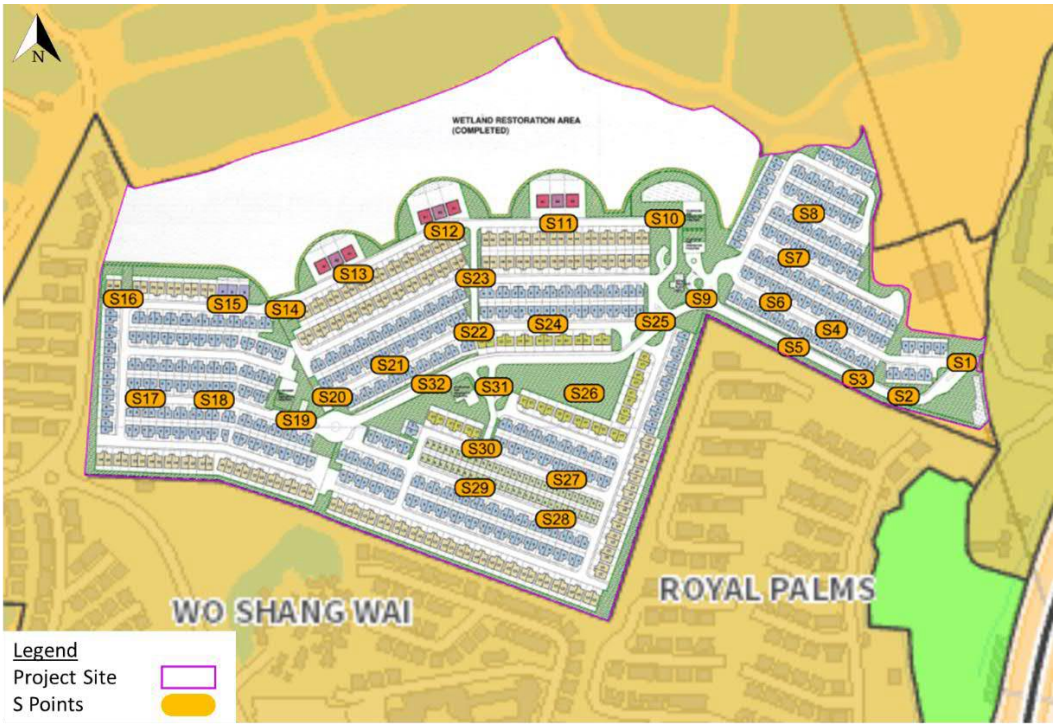
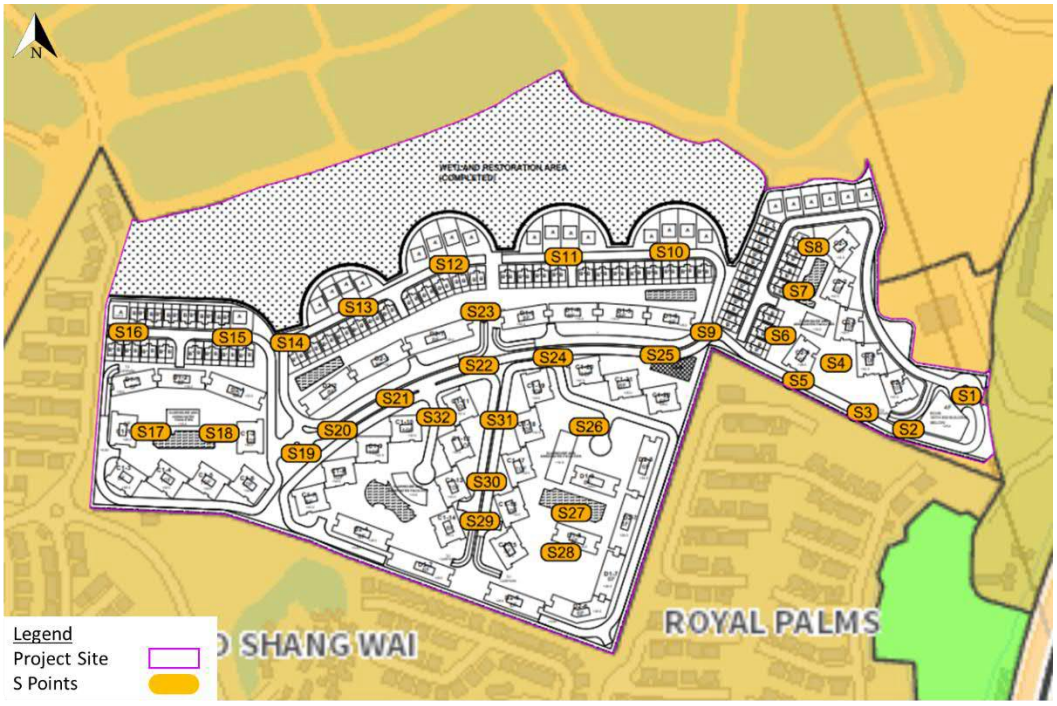


Figure 5.8: Demarcation of the Special (S) Test Points in Proposed Scheme



5.5 Demarcation of Focus Areas

In addition to the SVR for the Project Site (i.e. P1-P50) and LVR (i.e. P1-50 and O1-O177), the spatial average wind velocity ratio (SAVR) of various focus areas will be presented for the in-depth quantitative analysis.

Table 5.3 shows the various focus areas and their representative test points and **Figure 5.9** to **Figure 5.15** show the location of the focus areas within the Assessment Area

Table 5.3: Demarcation of Focus Areas

	Focus Areas	Test Points
A	San Tam Road	O1-O3
B	San Tin Highway	O4-O12
C	Castle Peak Road - Mai Po	O13-O17
D	Road 1	O18-O19
E	Road 2	O20-O23
F	Road 3	O24-O25
G	Mai Po South Road	O26-O29
H	Road 4	O30-O32
I	Mai Po San Tsuen	O33-O38
J	Royal Palms	O39-O76
K	Palm Springs - Arcadia	O77-O92
L	Wo Shang Wai Village	O93-O94
M	Palm Springs - Westwood	O95-O131
N	Fishponds 1	O132-O142
O	Fishponds 2	O143-O177

Figure 5.9: Location of the Focus Areas within the Assessment Area (Overview)

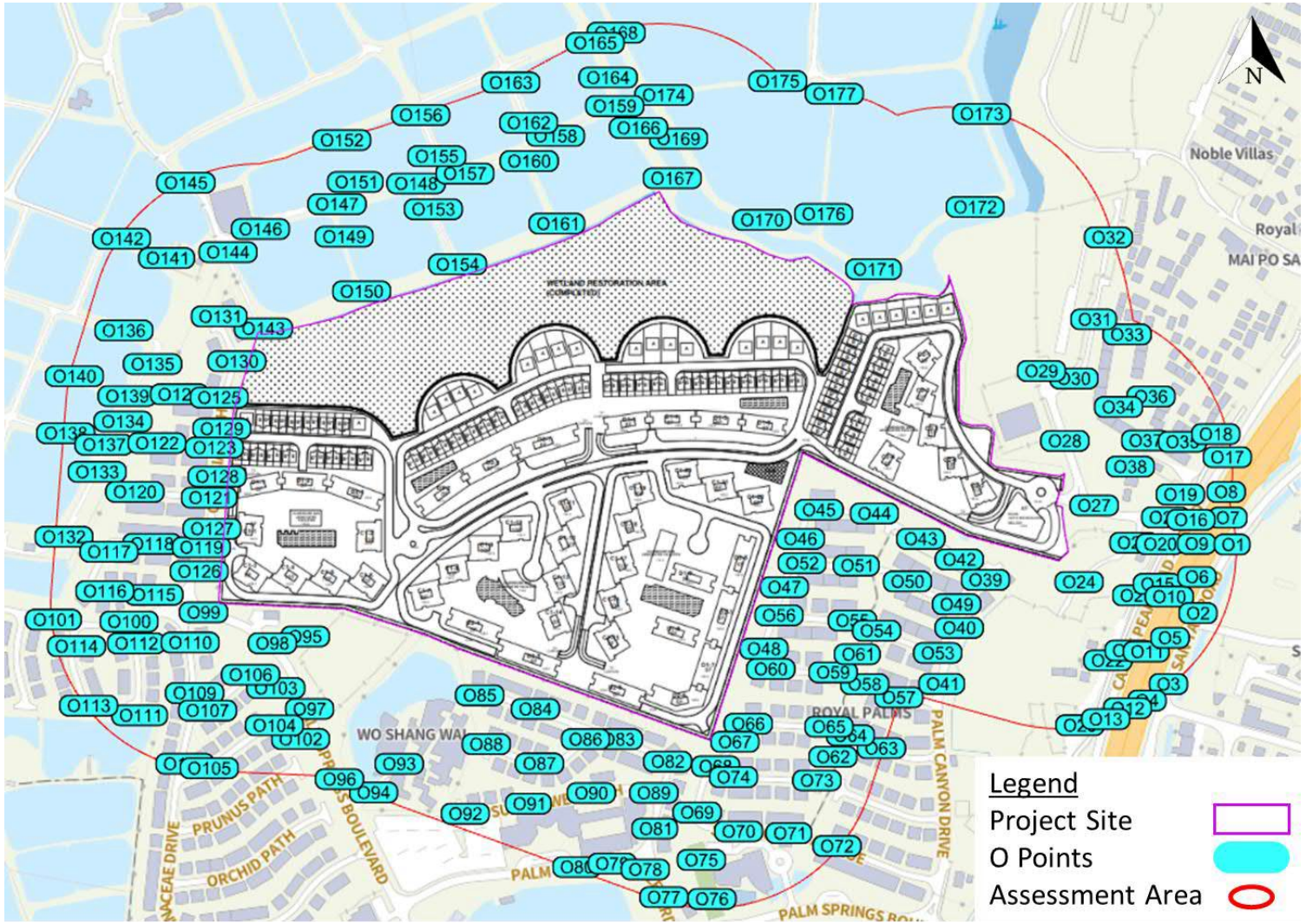


Figure 5.10: Location of the Focus Areas within the Assessment Area (East)

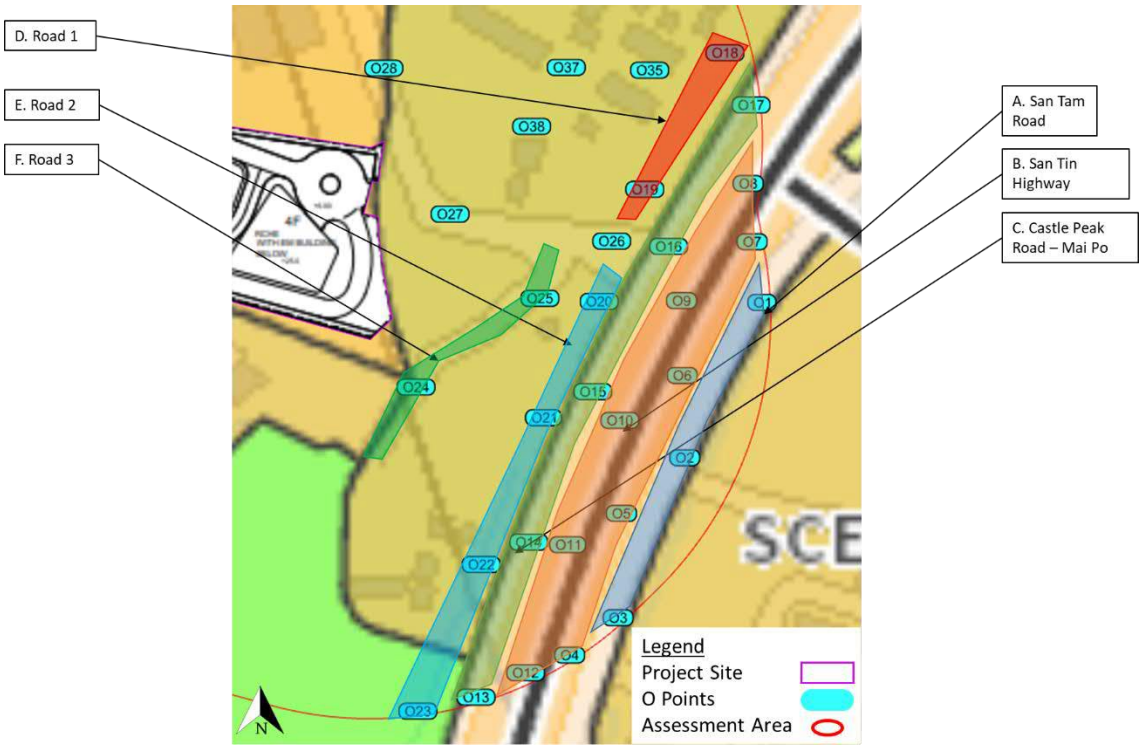


Figure 5.11: Location of the Focus Areas within the Assessment Area (Northeast)

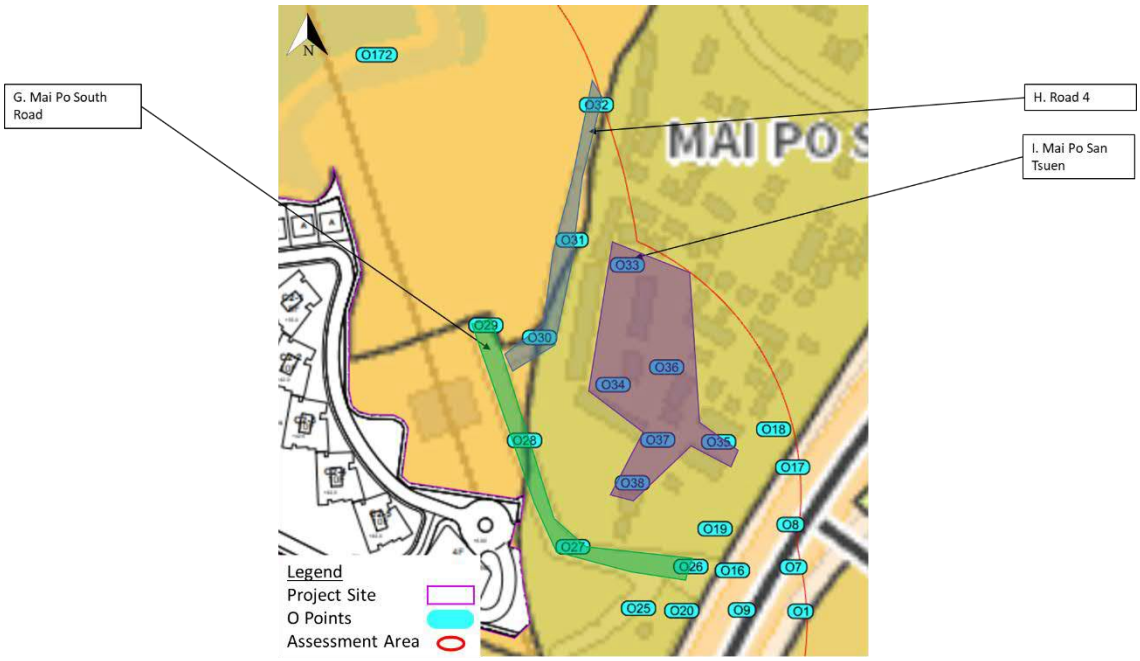


Figure 5.12: Location of the Focus Areas within the Assessment Area (South)

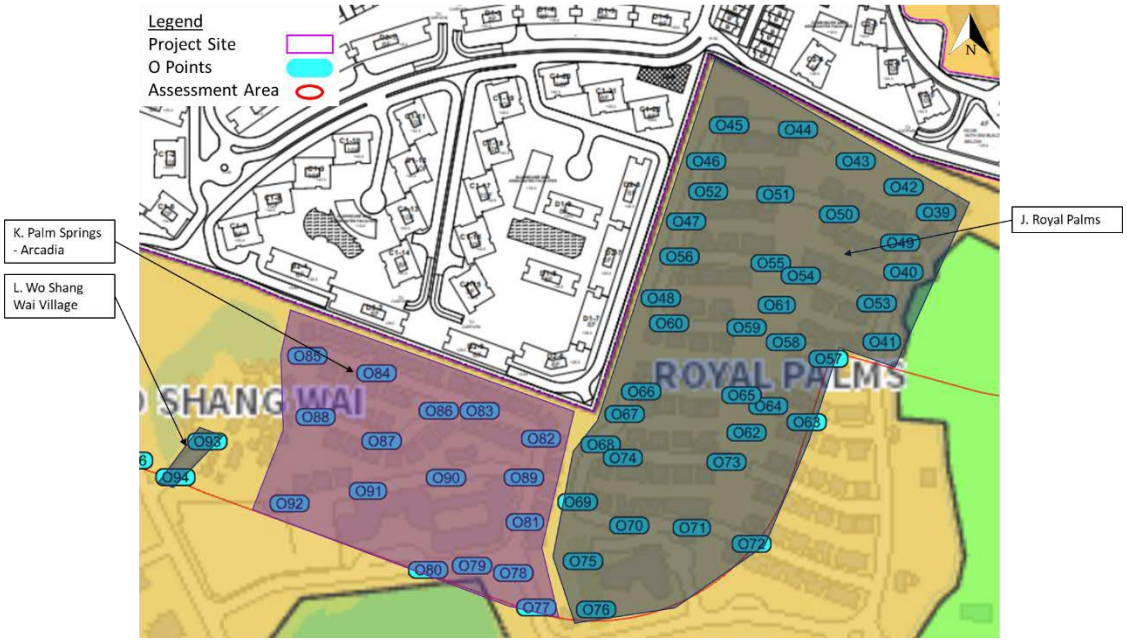


Figure 5.13: Location of the Focus Areas within the Assessment Area (West Part 1)

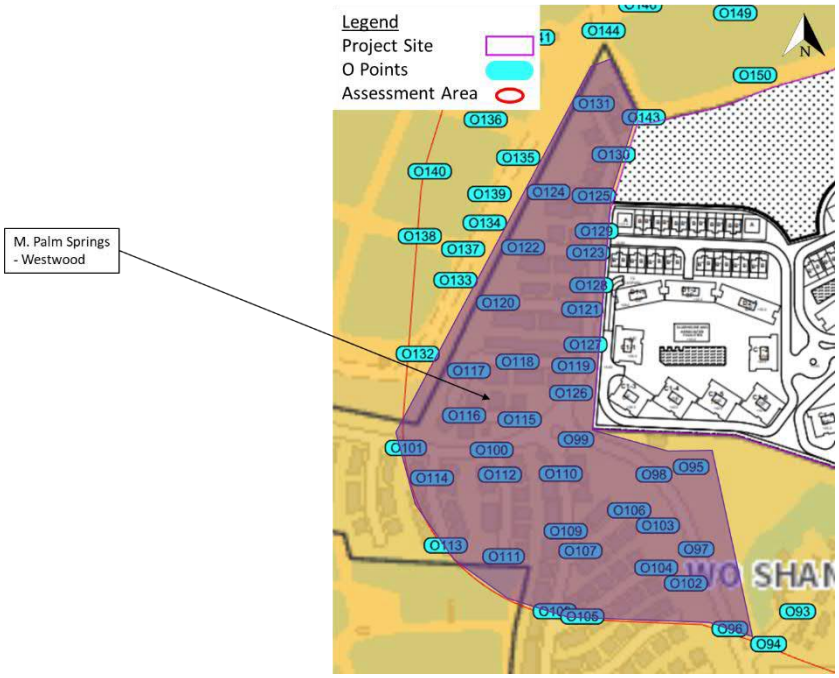


Figure 5.14: Location of the Focus Areas within the Assessment Area (West Part 2)

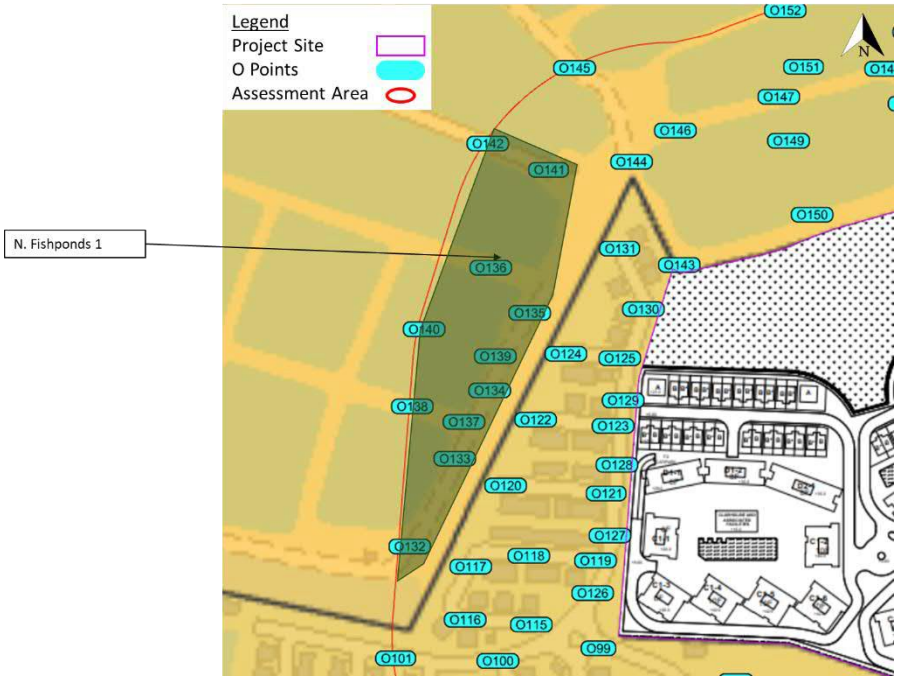
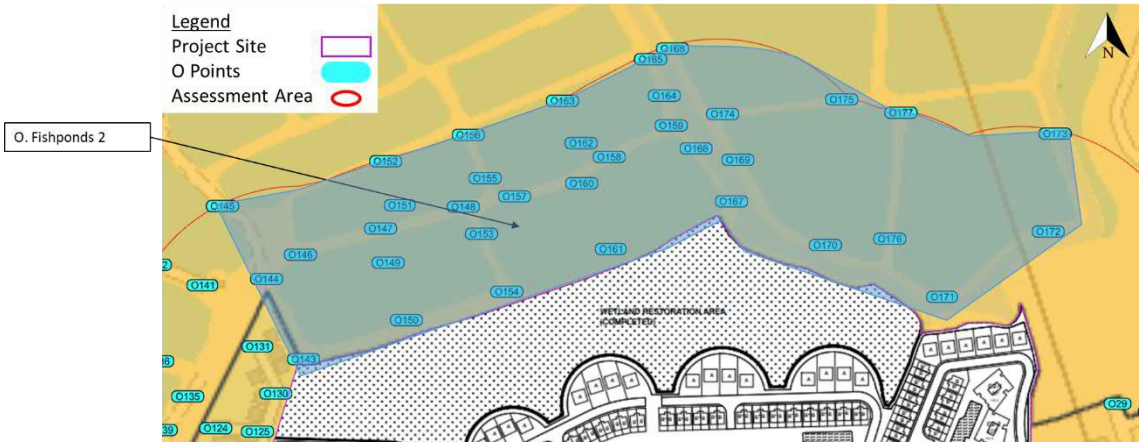


Figure 5.15: Location of the Focus Areas within the Assessment Area (North)



6 Results and Discussion

6.1 Directional Analysis

6.1.1 NNE Wind - Wind Frequency: 7.2% (Annual)

The incoming NNE wind mainly comes from Shenzhen River. For the Project Site, the incoming NNE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NNE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates wake zones at immediate downwind regions including Palm Springs – Arcadia, Wo Shang Wai Village and Palm Springs – Westwood. Nonetheless, two streams of NNE wind are able to penetrate through the Project Site to ventilate the aforementioned downwind regions. One stream of NNE wind flows along the open spaces within the Project Site to reach the downwind regions of Wo Shang Wai Village whereas the other stream of NNE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, NNE wind is shielded by the proposed low-rise residential houses and mid-rise residential towers within the Project Site resulting in a relatively larger wake zone in the downwind region of Palm Springs - Monterey when compared with the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of NNE wind to penetrate through the Project Site via the building separations at the eastern and western side of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.1 and **Figure 6.3** shows the VR contour plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.2** and **Figure 6.4** shows the VR vector plots of NNE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.1: VR Contour Plot at Pedestrian Level under NNE Wind for Baseline Scheme

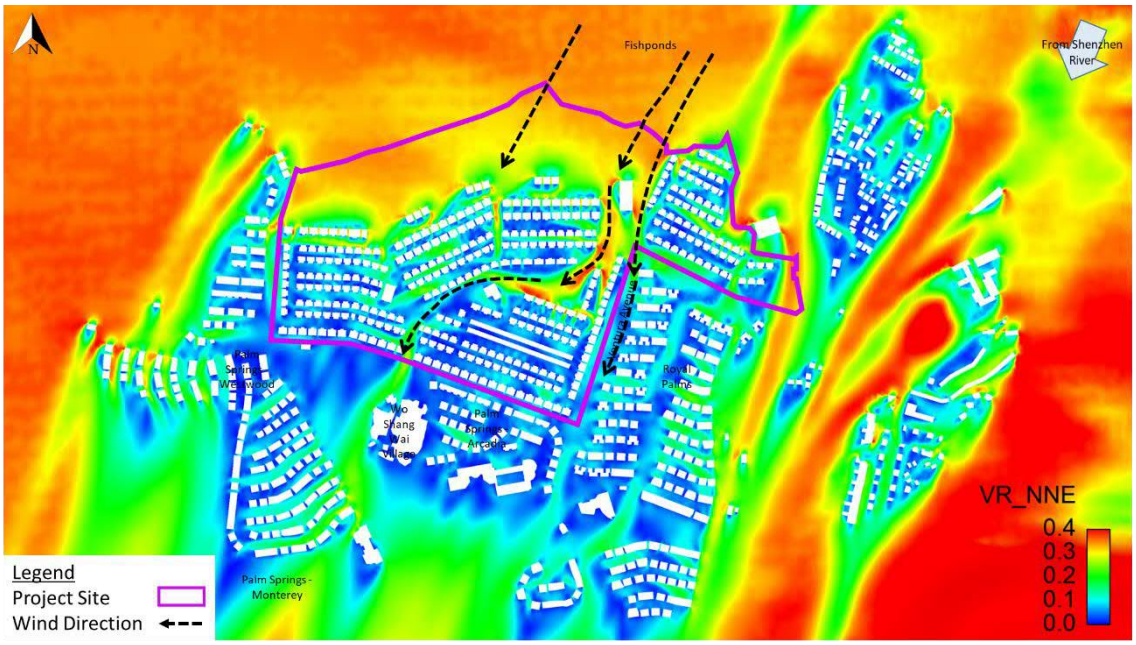


Figure 6.2: VR Vector Plot at Pedestrian Level under NNE Wind for Baseline Scheme

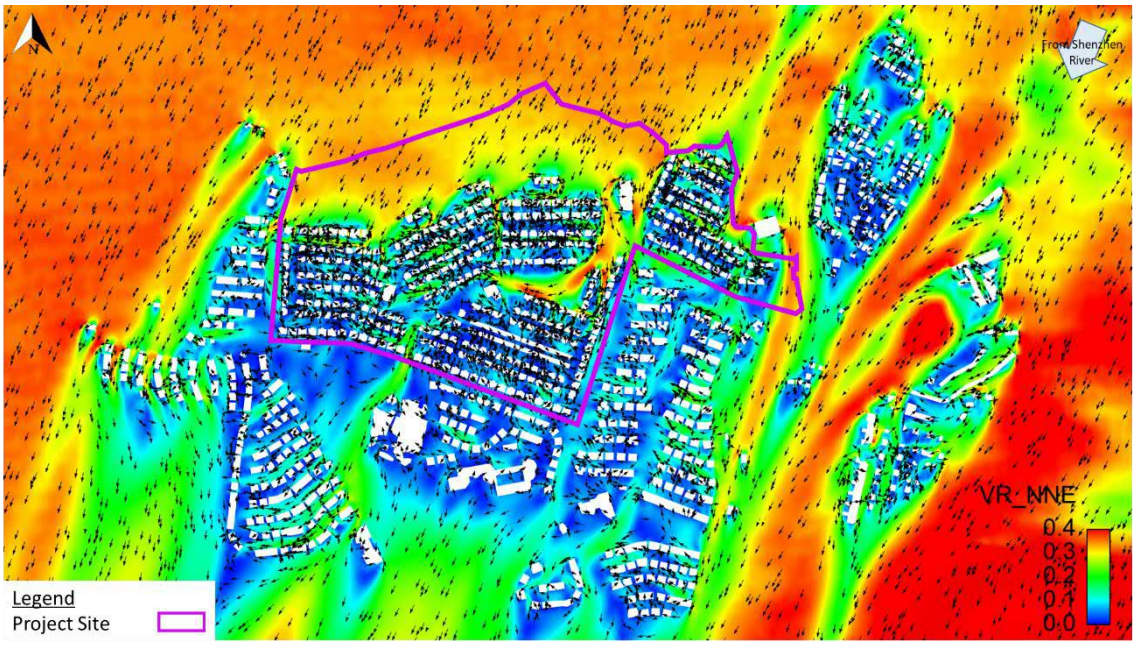


Figure 6.3: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme

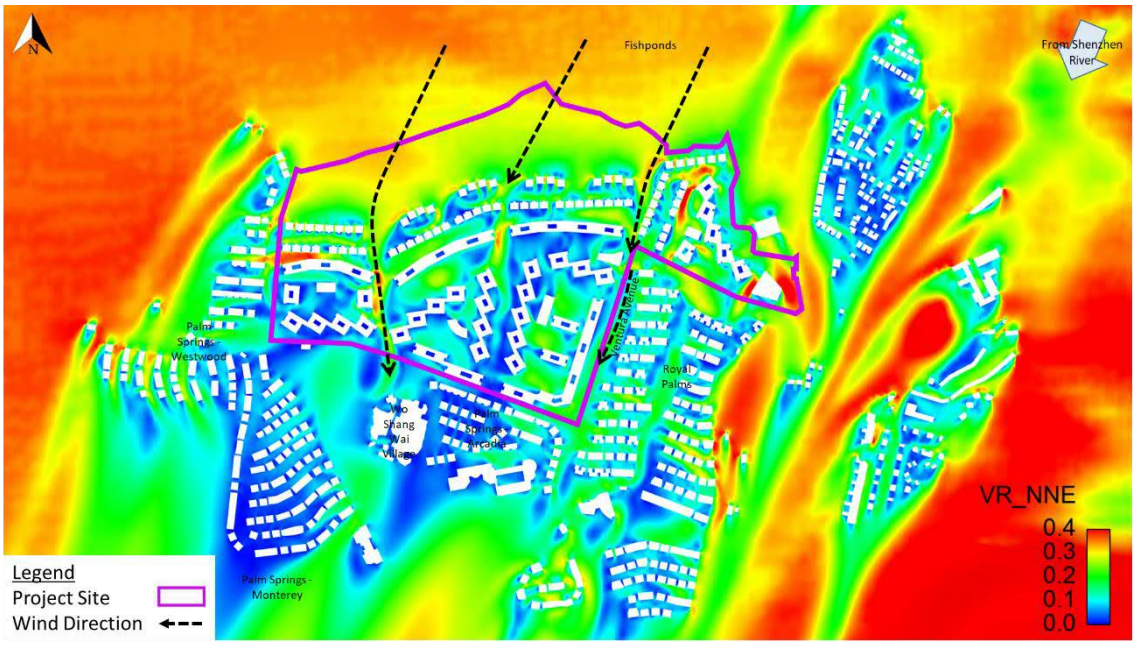
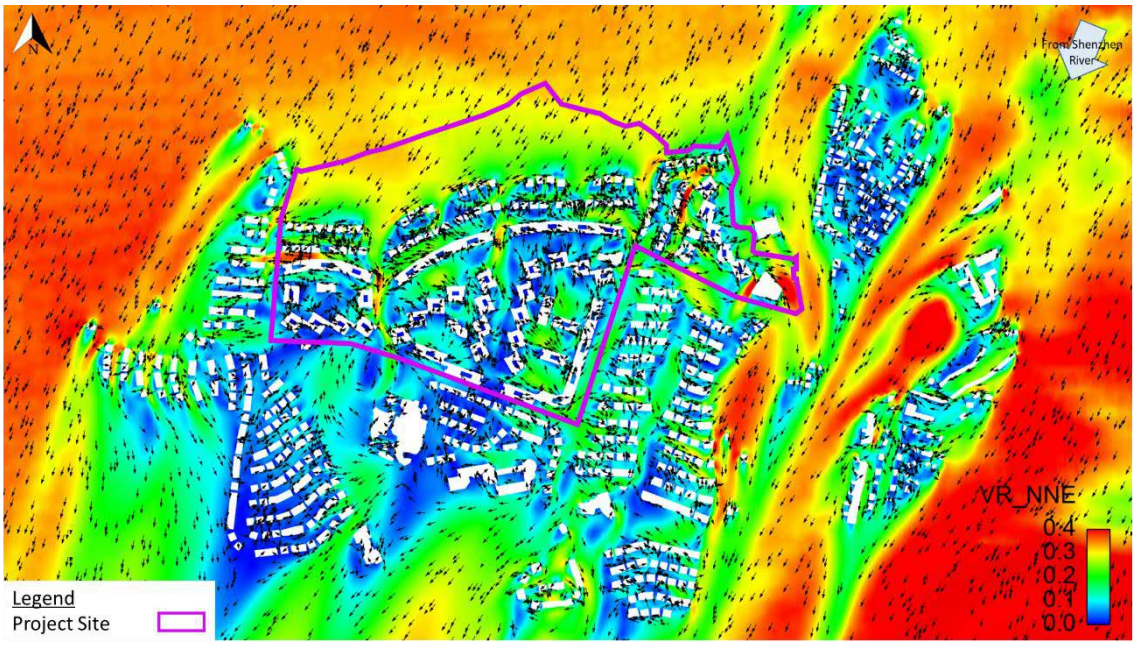


Figure 6.4: VR Contour Plot at Pedestrian Level under NNE Wind for Proposed Scheme



6.1.2 NE Wind - Wind Frequency: 9.8% (Annual)

The incoming NE wind mainly comes from San Tin. For the Project Site, the incoming NE wind reaches the Project Site via the low-lying fishponds to the north with minimal obstruction.

In the Baseline Scheme, majority of incoming NE wind is obstructed by the proposed low-rise houses within the Project Site hence the shielding effect creates wake zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, a portion of incoming NE wind is deflected towards Camelia Path by the proposed houses at the north western portion of the Project Site to ventilate Palm Springs – Westwood. Another portion of NE wind travels along Ventura Avenue to ventilate the downwind regions of Royal Palms.

In the Proposed Scheme, a portion of incoming NE wind is also blocked by the proposed low-rise residential houses and mid-rise residential towers within the Project Site. In particular, the residential developments at the western portion of the Project Site deflected the incoming NE wind towards Camelia Path hence a relatively larger wake zone is observed at Palm Springs – Westwood when compared with the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of NE wind to penetrate through the Project Site via the building separations at the eastern and western of the Project Site. As a result, the adverse air ventilation impact to the downwind regions including Wo Shang Wai Village, Ventura Avenue, Palm Springs - Arcadia and Royal Palms are reduced when compared with the Baseline Scheme.

Figure 6.5 and **Figure 6.7** shows the VR contour plots of NE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.6** and **Figure 6.8** shows the VR vector plots of NE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.5: VR Contour Plot at Pedestrian Level under NE Wind for Baseline Scheme

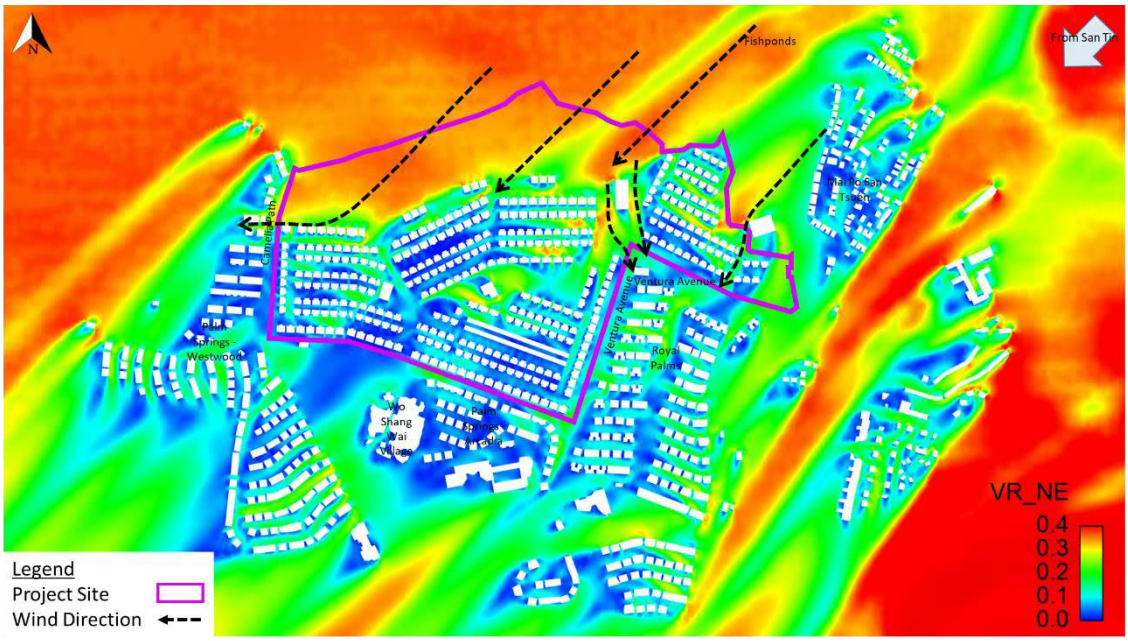


Figure 6.6: VR Vector Plot at Pedestrian Level under NE Wind for Baseline Scheme

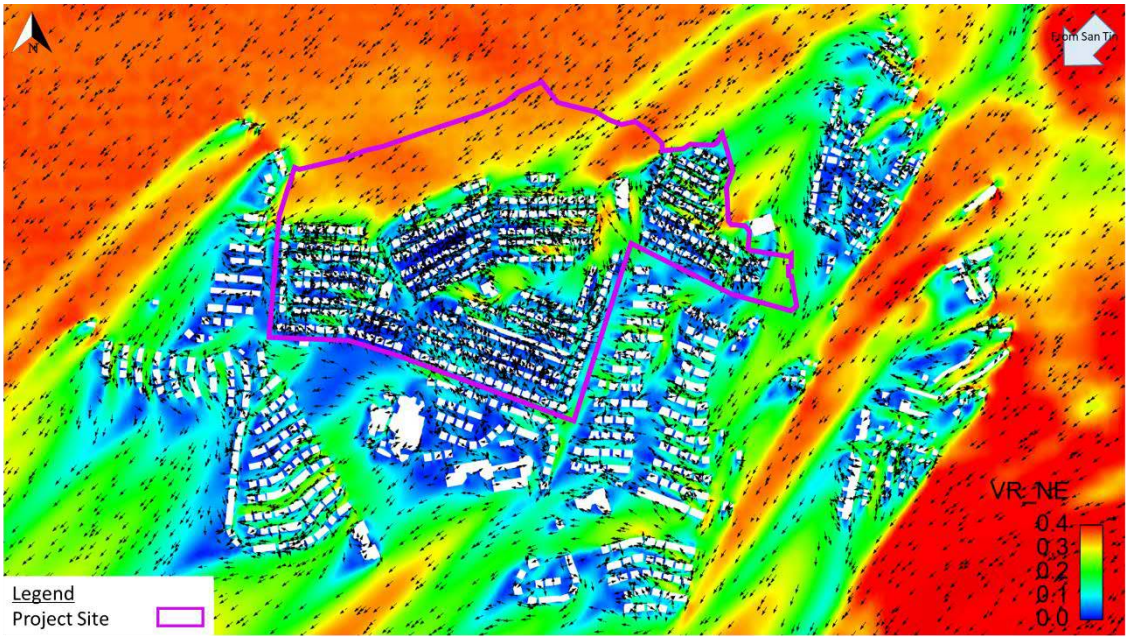


Figure 6.7: VR Contour Plot at Pedestrian Level under NE Wind for Proposed Scheme

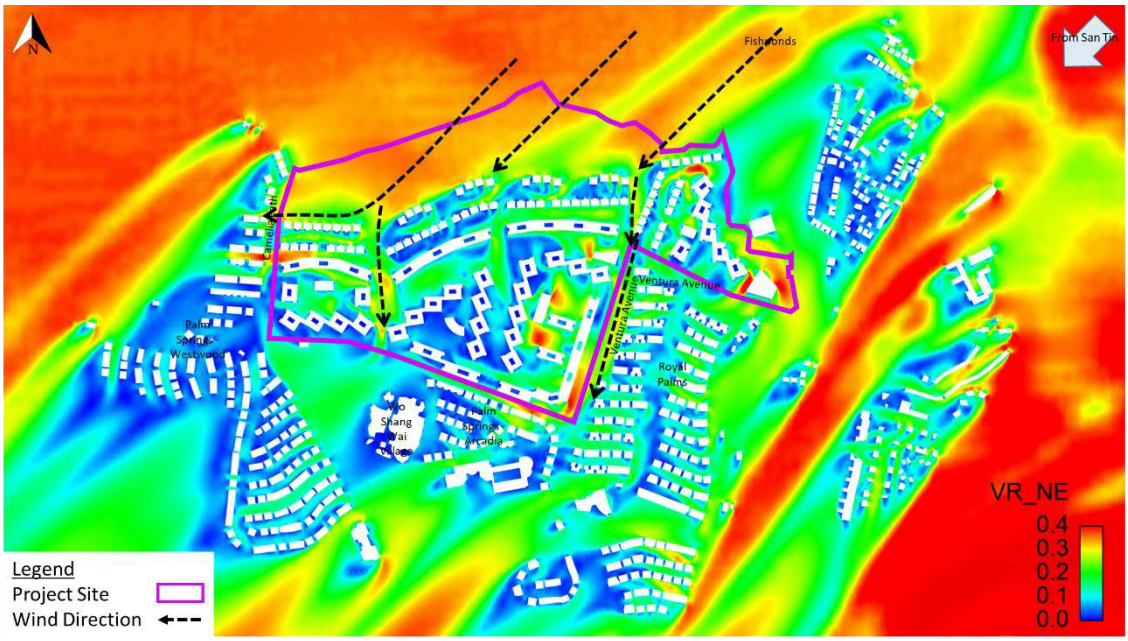
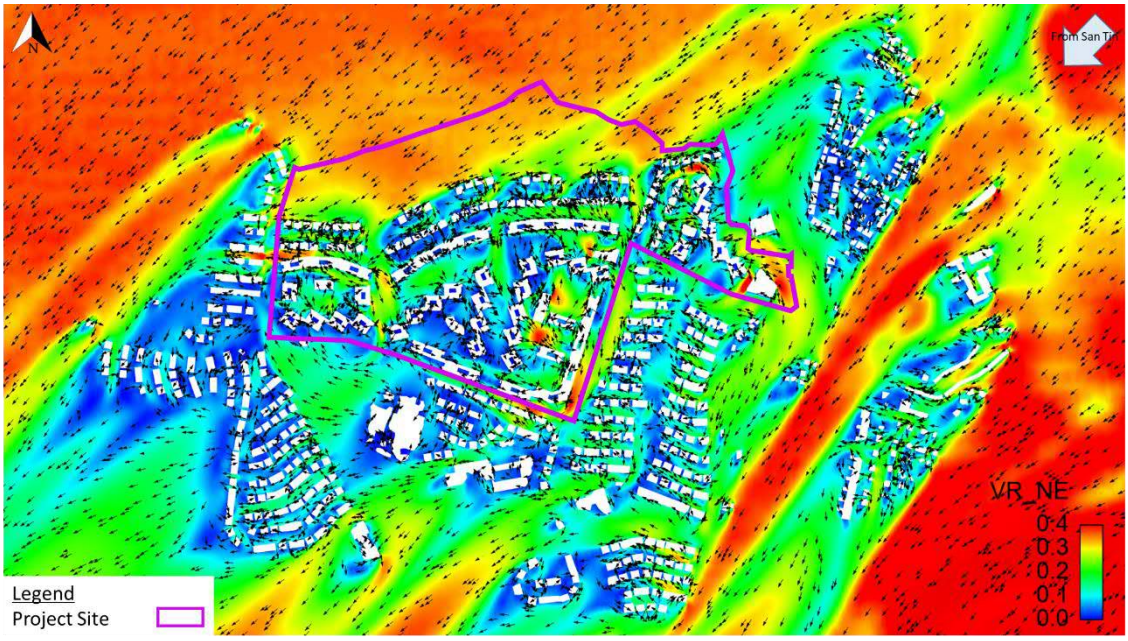


Figure 6.8: VR Vector Plot at Pedestrian Level under NE Wind for Proposed Scheme



6.1.3 ENE Wind - Wind Frequency: 10.2% (Annual)

The incoming ENE wind mainly comes from San Tin Highway. However, incoming ENE wind to the Project Site will be obstructed by the low-rise residential developments of Mai Po San Tsuen at the upwind regions.

In the Baseline Scheme, incoming ENE wind is obstructed by Mai Po San Tsuen and the proposed low-rise houses within the Project Site hence the combined shielding effect creates wake zones at immediate downwind regions including Palm Springs – Westwood, Wo Shang Wai Village and Palm Springs – Arcadia. Nonetheless, two streams of ENE wind are able to penetrate through the Project Site freely. One stream of ENE wind will penetrate through the Project Site to reach Camelia Path via the Wetland Restoration Area whereas a second stream of ENE wind will reach Royal Palms and Ventura Avenue via the open space resulting from the building setback from the eastern site boundary.

In the Proposed Scheme, the presence of the mid-rise residential towers at the eastern portion of the Project Site disrupted the local wind flow pattern around this region thus a relatively larger wake zone is observed between Mai Po San Tsuen and the eastern part of the Project Site when compared with the Baseline Scheme. In addition, the mid-rise residential towers within the Project Site obstructed the ENE wind to the downwind regions thus a relatively larger wake zone is also observed at Palm Springs – Westwood when compared to the Baseline Scheme. Nonetheless, a portion of ENE wind is observed to pass through the opening at the eastern portion of the Project Site to mitigate the air ventilation impact towards the downwind regions of Ventura Avenue and Royal Palms.

Figure 6.9 and **Figure 6.11** shows the VR contour plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively**. Figure 6.10** and **Figure 6.12** shows the VR vector plots of ENE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.9: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

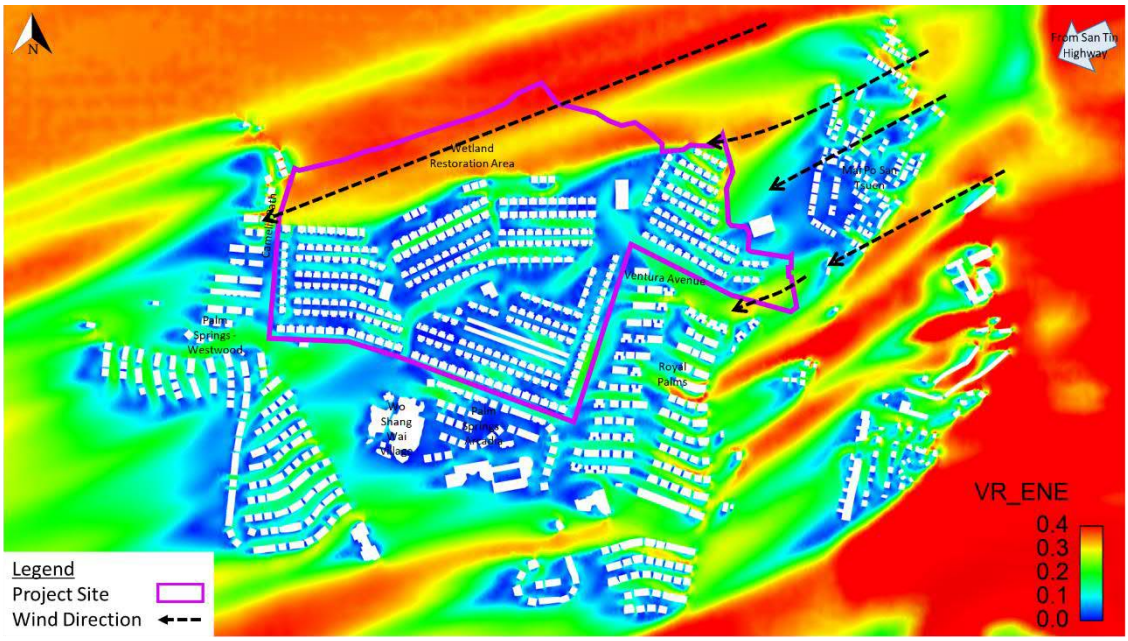


Figure 6.10: VR Contour Plot at Pedestrian Level under ENE Wind for Baseline Scheme

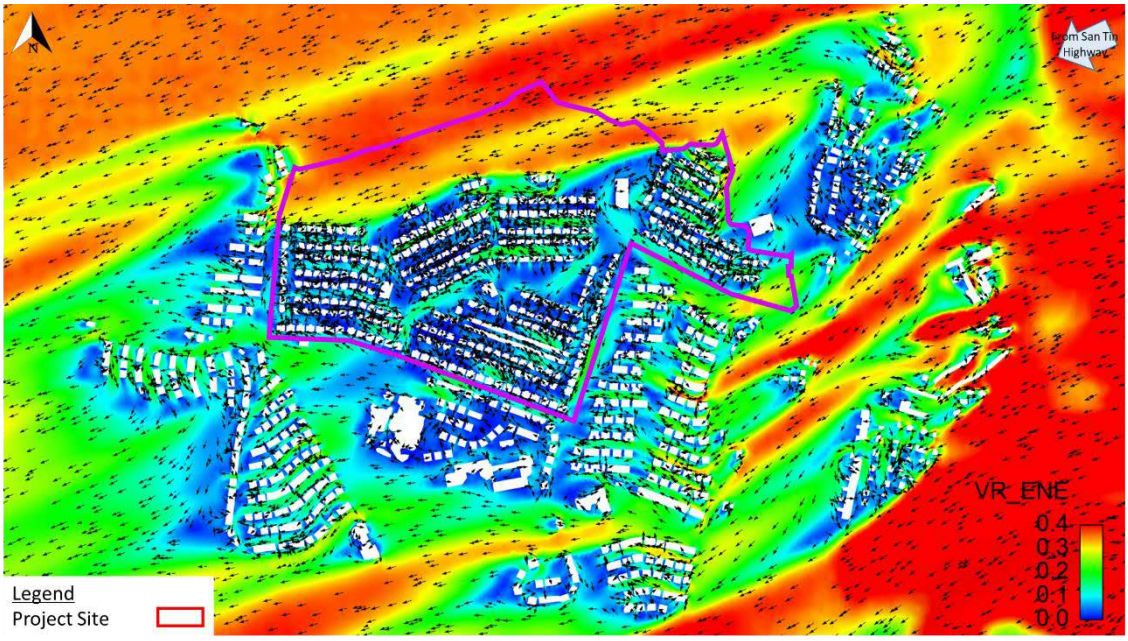


Figure 6.11: VR Contour Plot at Pedestrian Level under ENE Wind for Proposed Scheme

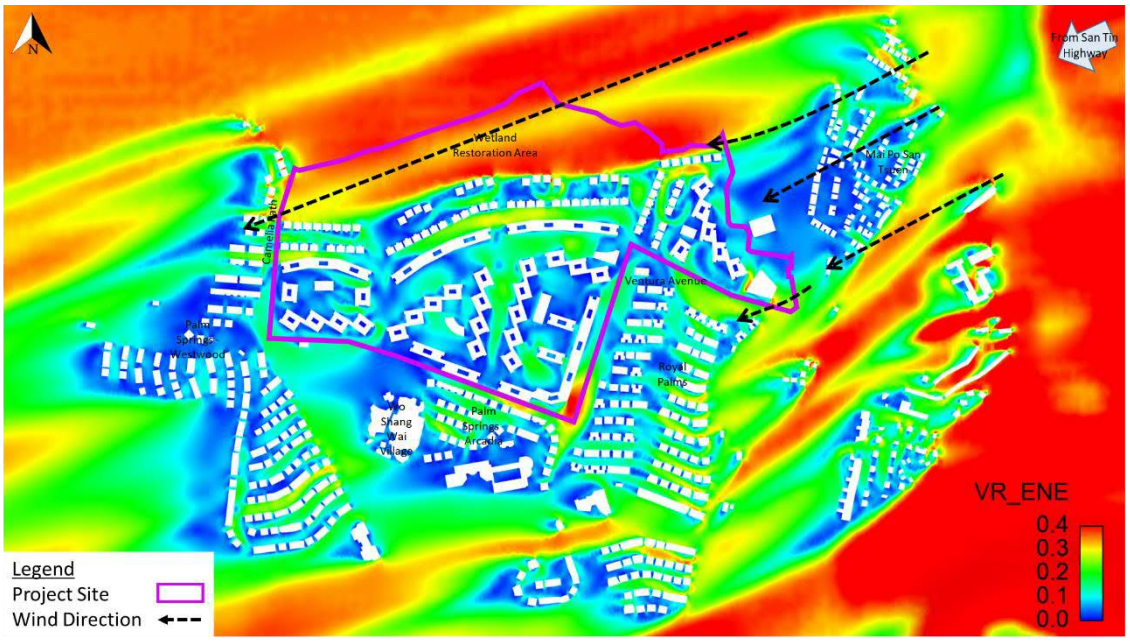
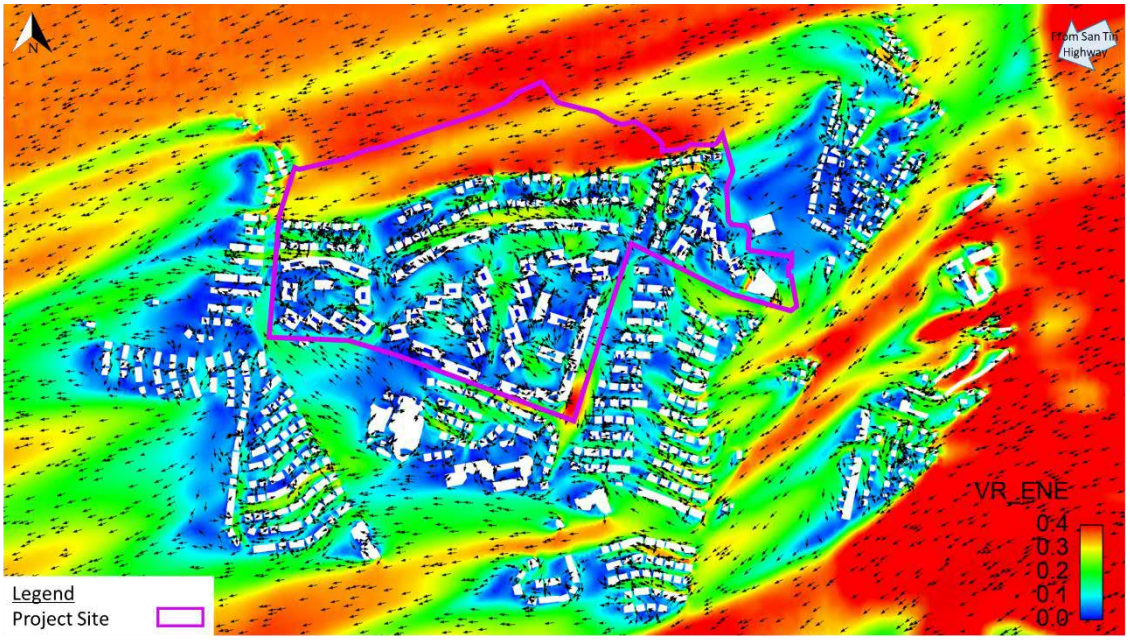


Figure 6.12: VR Vector Plot at Pedestrian Level under ENE Wind for Proposed Scheme



6.1.4 E Wind - Wind Frequency: 18.1% (Annual); 8.1% (Summer)

E wind mainly comes from the mountains to the east, namely Kam Kwai Leng.

In the Baseline Scheme, a portion of incoming E wind will be obstructed by Mai Po San Tsuen and the proposed low-rise houses at the eastern portion of the Project Site. Nonetheless, a portion of E wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site. This stream of E wind will ventilate the Wetland Restoration Area and then continue to flow towards Palm Springs – Westwood via Camelia Path.

In the Proposed Scheme, the mid-rise residential towers at the southeast side of the Project Site. disrupted the local wind flow pattern around this region thus a relatively larger wake zone is observed along the south eastern portion of the Project Site and west of Royal Palms when compared with the Baseline Scheme. On the other hand, the mid-rise residential towers at the eastern portion of the Project Site deflected a portion of incoming E wind towards the north hence higher VRs are observed at the Wetland Restoration Area when compared with the Baseline Scheme. Besides, the mid-rise residential towers at the eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern site boundary when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations allowed a larger portion of E wind to penetrate through the open spaces within the Project Site to ventilate the downwind regions of Palm Springs - Westwood.

Figure 6.13 and **Figure 6.15** shows the VR contour plots of E wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.14** and **Figure 6.16** shows the VR vector plots of E wind for Baseline Scheme and Proposed Scheme respectively.

Figure 6.13: VR Contour Plot at Pedestrian Level under E Wind for Baseline Scheme

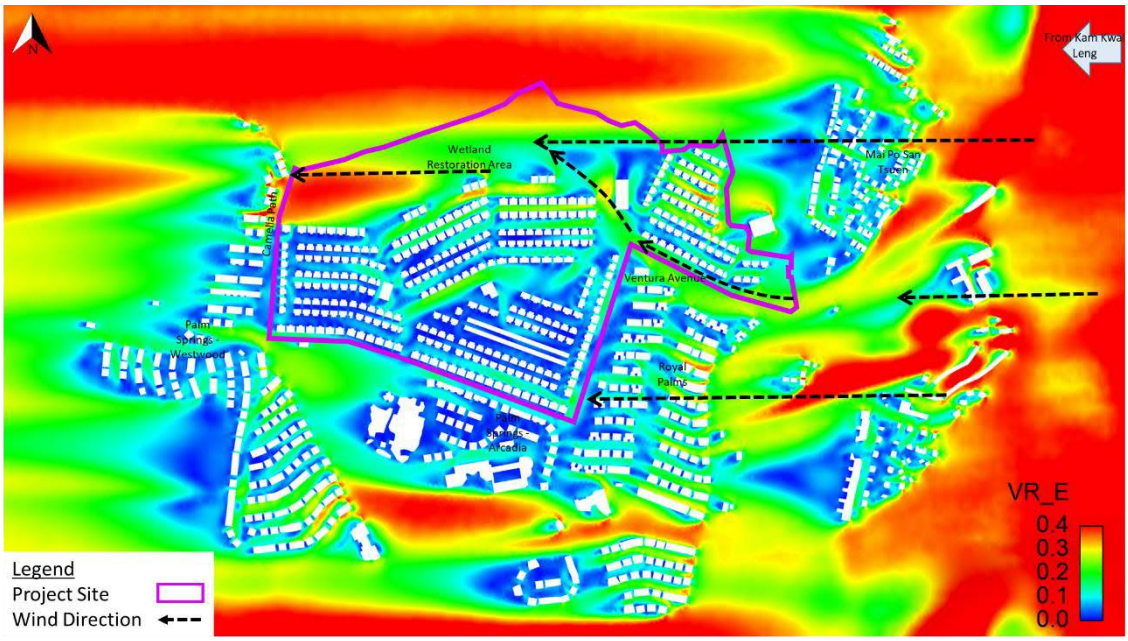


Figure 6.14: VR Vector Plot at Pedestrian Level under E Wind for Baseline Scheme

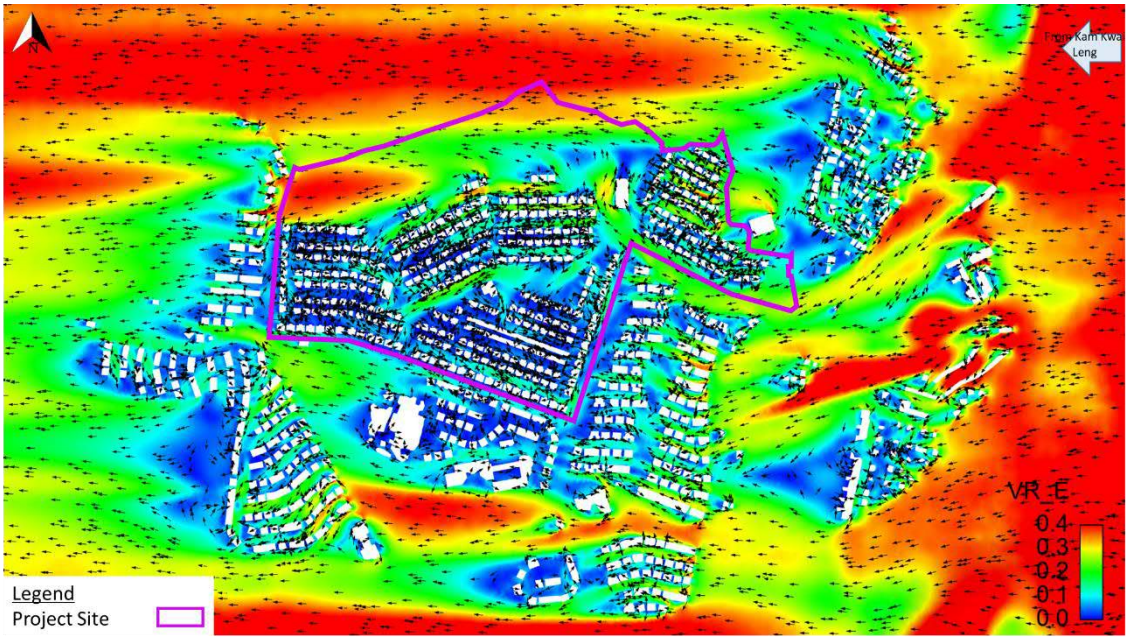


Figure 6.15: VR Contour Plot at Pedestrian Level under E Wind for Proposed Scheme

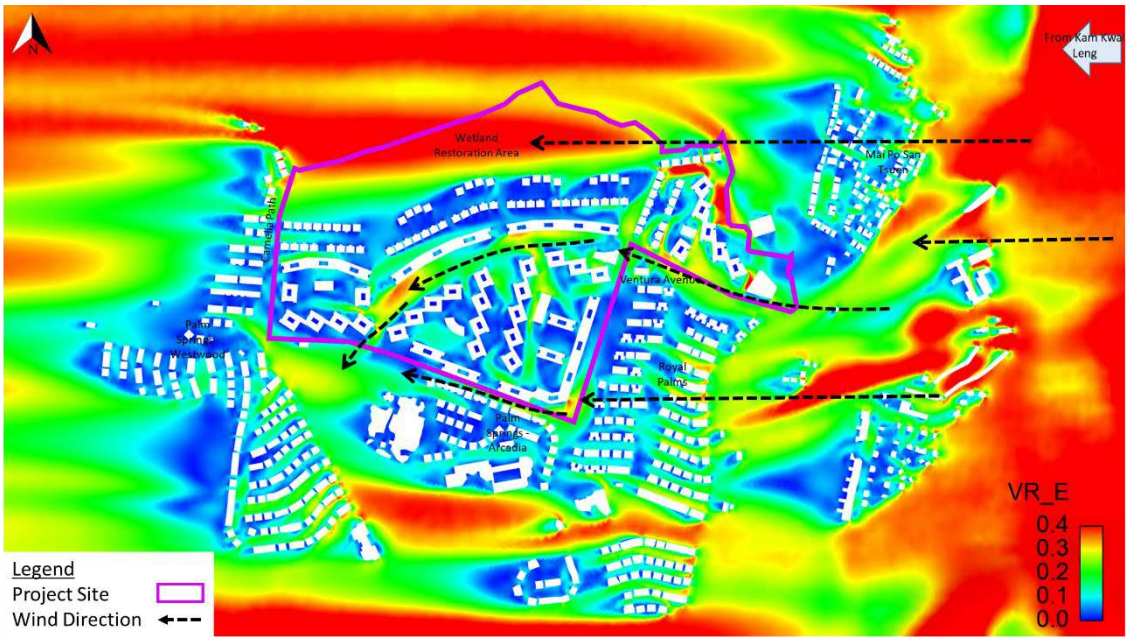
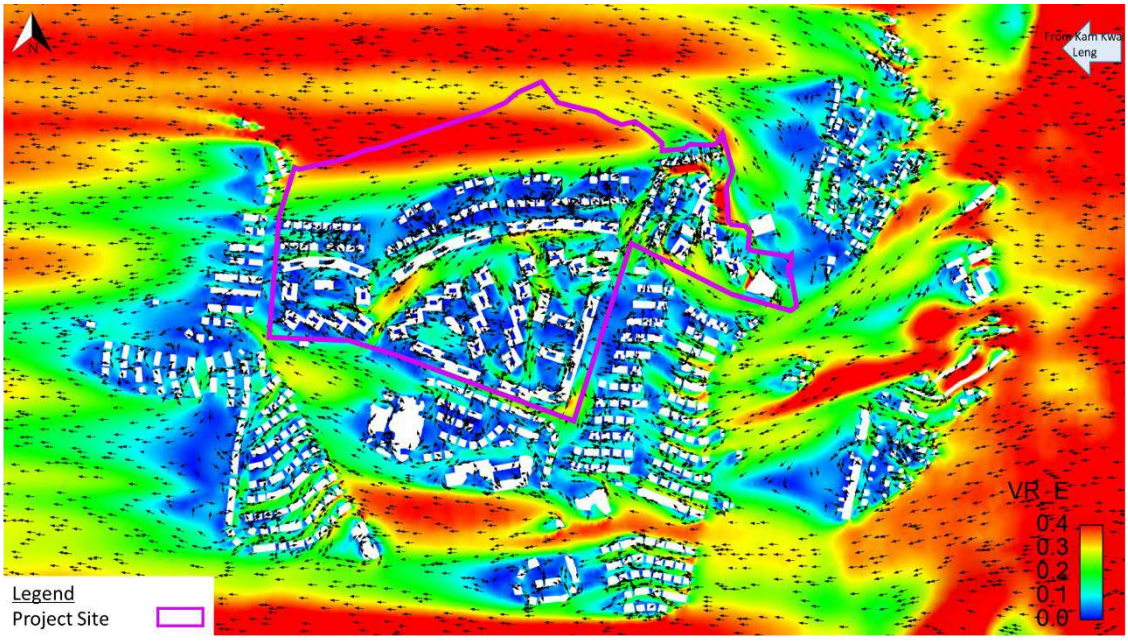


Figure 6.16: VR Vector Plot at Pedestrian Level under E Wind for Proposed Scheme



6.1.5 ESE Wind - Wind Frequency: 9.8% (Annual); 7.8% (Summer)
SE Wind - Wind Frequency: 6.7% (Annual); 6.6% (Summer)

ESE / SE wind to the Project Site comes from Tam Mei Hill. A portion of the ESE / SE wind to the Project Site will be obstructed by the upwind developments of Scenic Heights and Royal Palms.

In the Baseline Scheme, a significant portion of the ESE / SE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the eastern portion of the Project Site thus wake zones are observed within the Project Site and at Palm Springs – Westwood. Nonetheless, a portion of ESE / SE wind is able to penetrate through the Project Site via Ventura Avenue and the open spaces within the Project Site to reach the northern portion of the Project Site.

In the Proposed Scheme, the mid-rise residential towers at the south eastern portion of the Project Site obstructs incoming ESE / SE wind from reaching the downwind regions hence a relatively larger wake zone is observed around Palm Springs – Westwood when compared to the Baseline Scheme. In contrast, the mid-rise residential towers at the eastern portion of the Project Site deflected the incoming ESE / SE wind towards the north hence higher VRs are observed at the Mai Po Ventilation Building and fishponds to the north of the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the south-eastern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at the eastern & southern site boundary as well as open spaces within the Project Site when compared to the Baseline Scheme.

Figure 6.17 and **Figure 6.19** shows the VR contour plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.18** and **Figure 6.20** shows the VR vector plots of ESE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.21 and **Figure 6.23** shows the VR contour plots of SE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.22** and **Figure 6.24** shows the VR vector plots of SE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.17: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

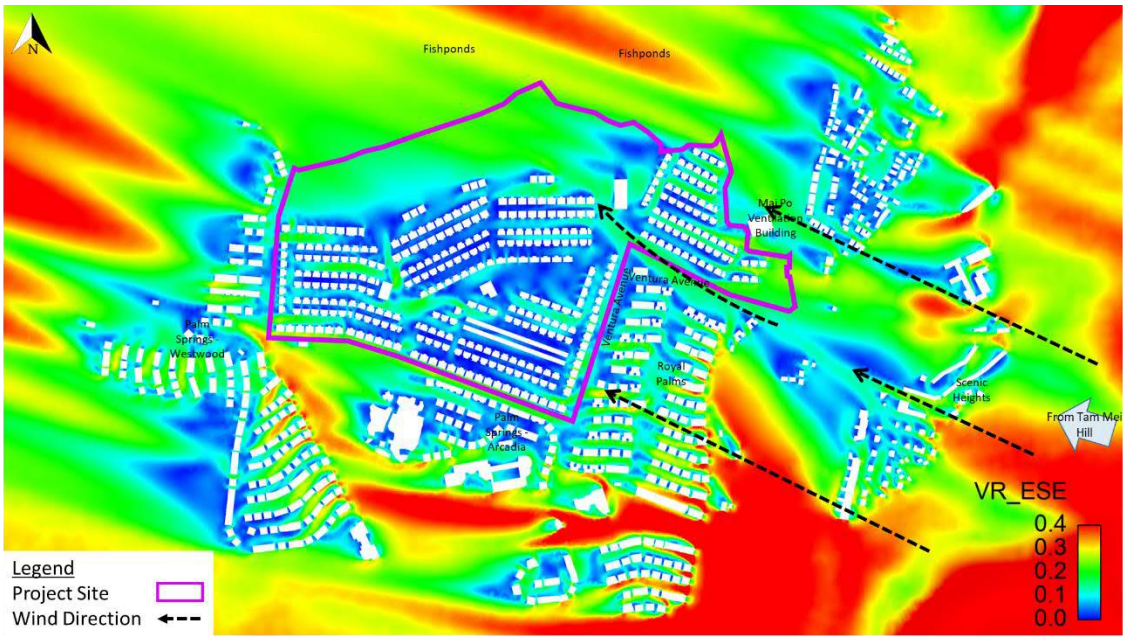


Figure 6.18: VR Contour Plot at Pedestrian Level under ESE Wind for Baseline Scheme

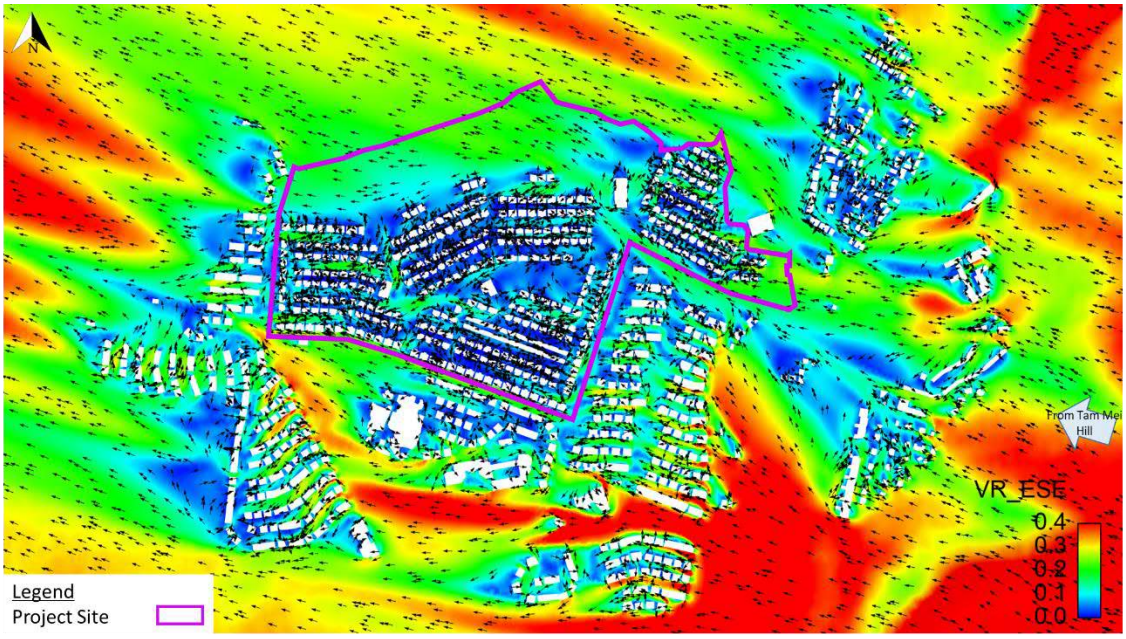


Figure 6.19: VR Contour Plot at Pedestrian Level under ESE Wind for Proposed Scheme

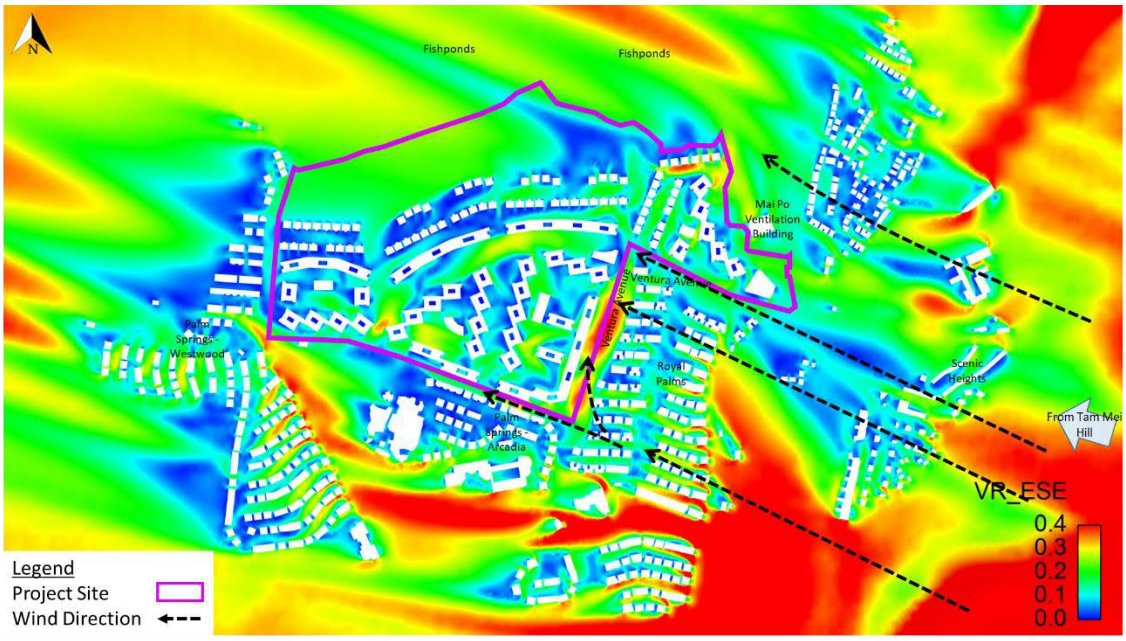


Figure 6.20: VR Vector Plot at Pedestrian Level under ESE Wind for Proposed Scheme

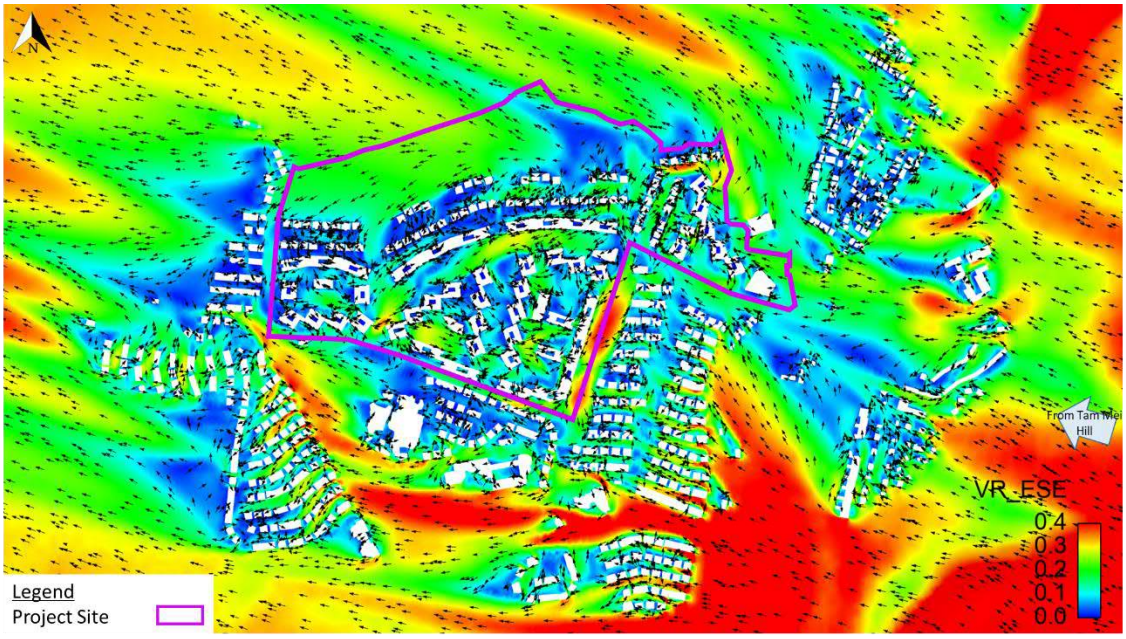


Figure 6.21: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

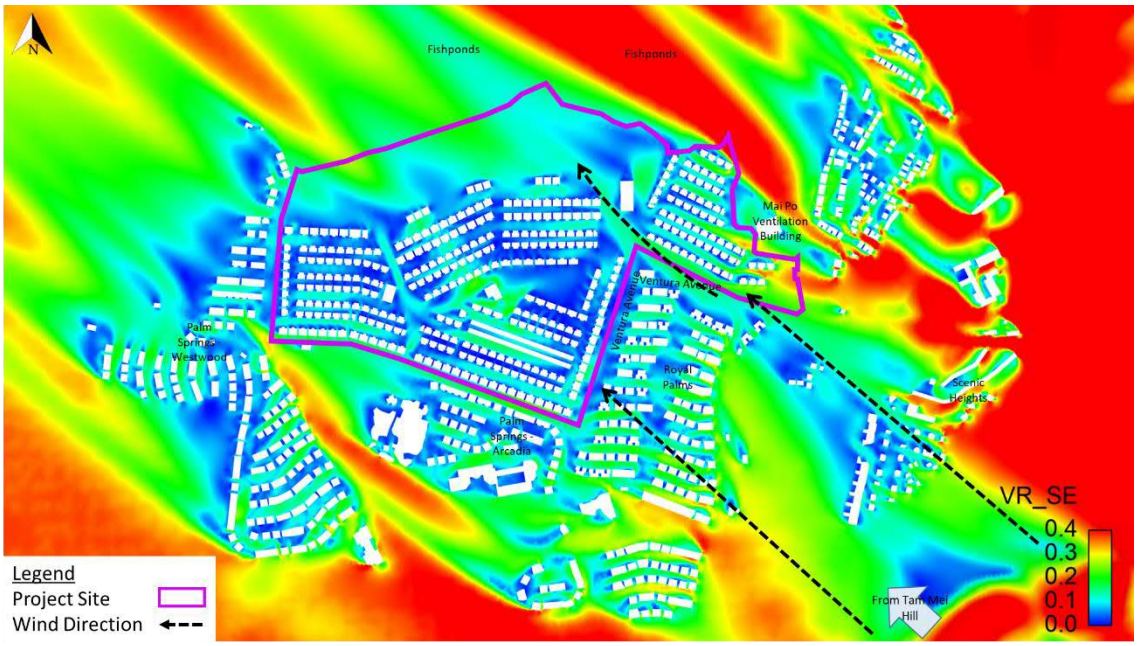


Figure 6.22: VR Contour Plot at Pedestrian Level under SE Wind for Baseline Scheme

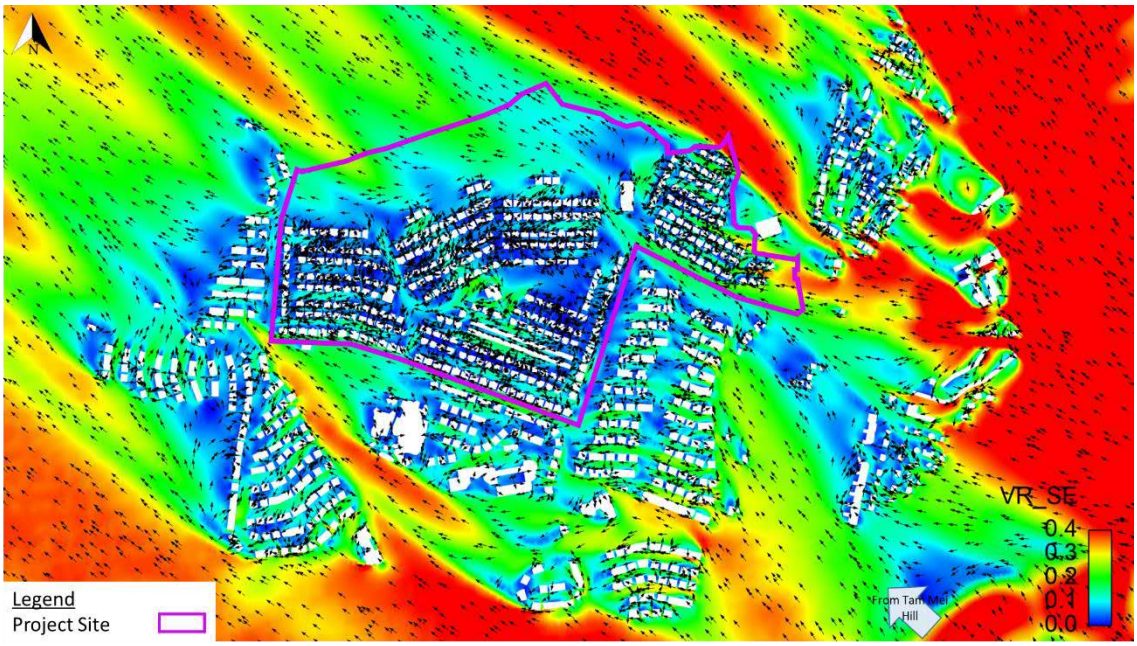


Figure 6.23: VR Contour Plot at Pedestrian Level under SE Wind for Proposed Scheme

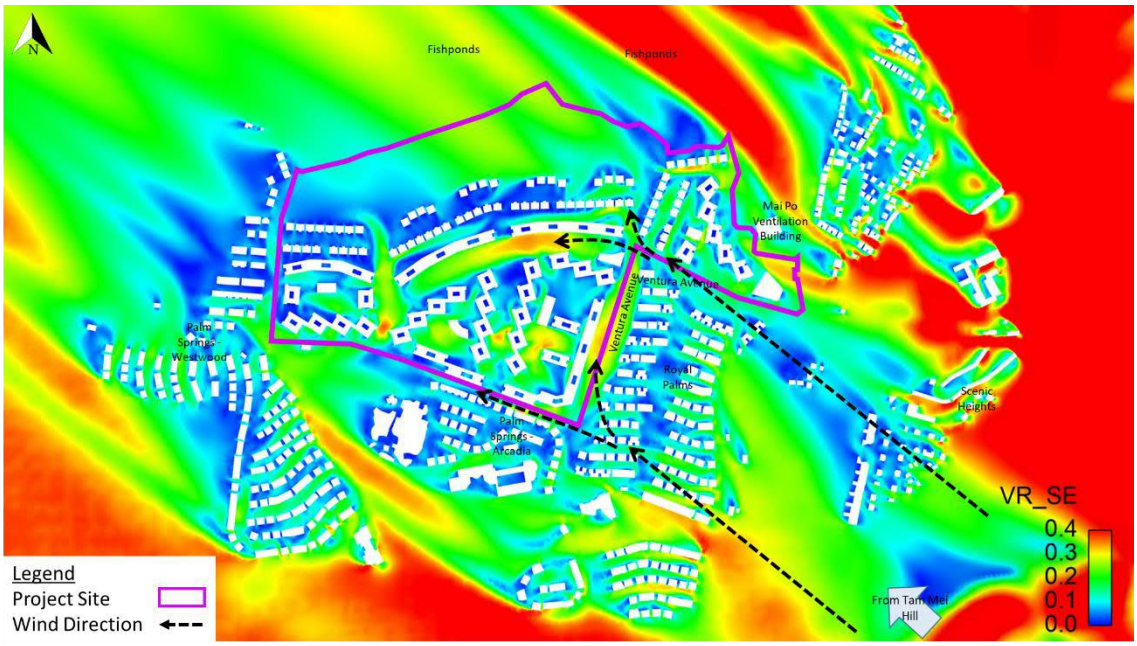
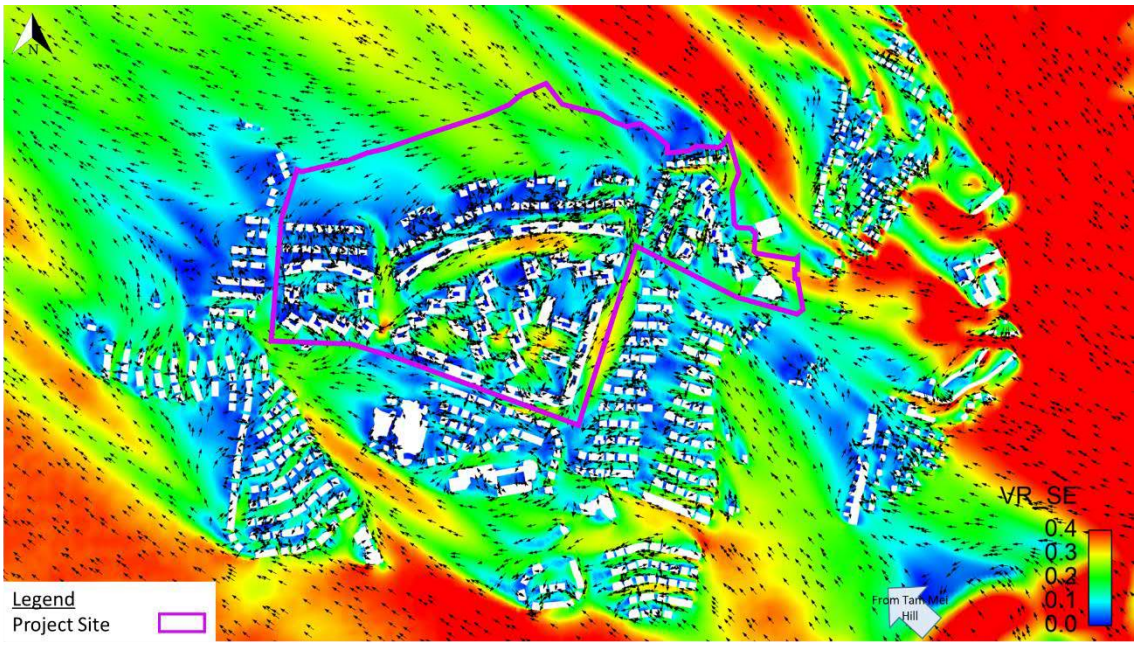


Figure 6.24: VR Vector Plot at Pedestrian Level under SE Wind for Proposed Scheme



6.1.6 SSE Wind – Wind Frequency: 8.2% (Summer)

SSE wind to the Project Site comes from Kai Kung Shan. Incoming SSE wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSE wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus wake zones are observed at the northern portion of the Project Site. Nonetheless, a portion of SSE wind travels along Palm Springs Boulevard to ventilate Palm Springs – Westwood via Camelia Path. In addition, another portion of SSE wind is able to penetrate though the Project Site via the open spaces within the Project Site and Ventura Avenue to ventilate the downwind regions of the fishponds to the north of the Project Site.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of SSE wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.25 and **Figure 6.27** shows the VR contour plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.26** and **Figure 6.28** shows the VR vector plots of SSE wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.25: VR Contour Plot at Pedestrian Level under SSE Wind for Baseline Scheme

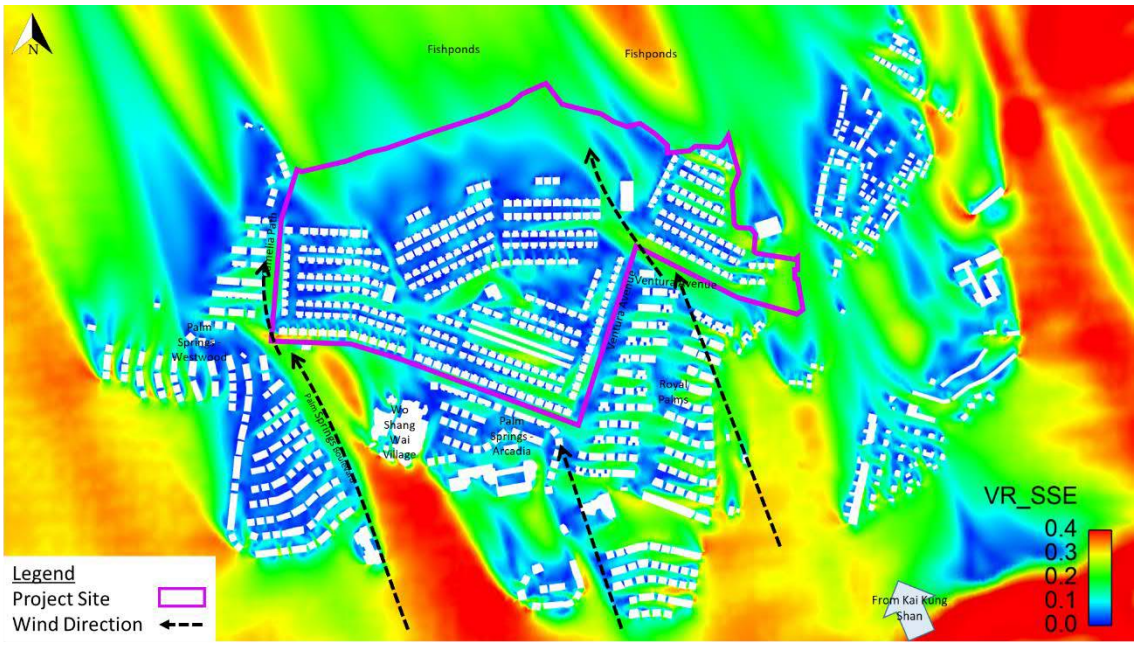


Figure 6.26: VR Vector Plot at Pedestrian Level under SSE Wind for Baseline Scheme

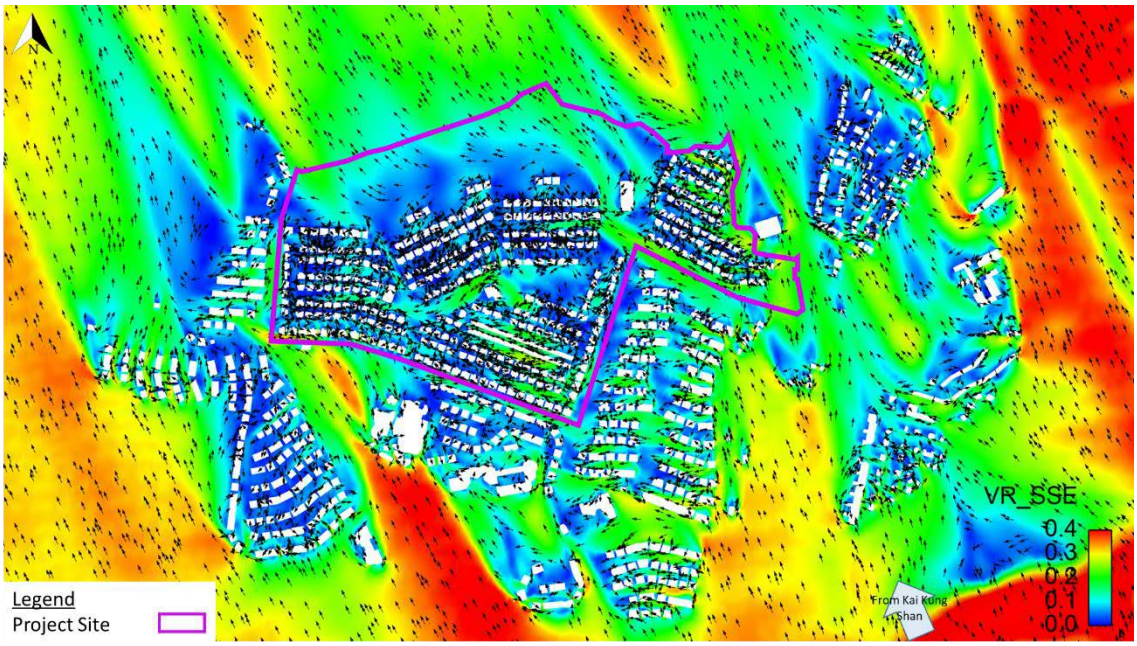


Figure 6.27: VR Contour Plot at Pedestrian Level under SSE Wind for Proposed Scheme

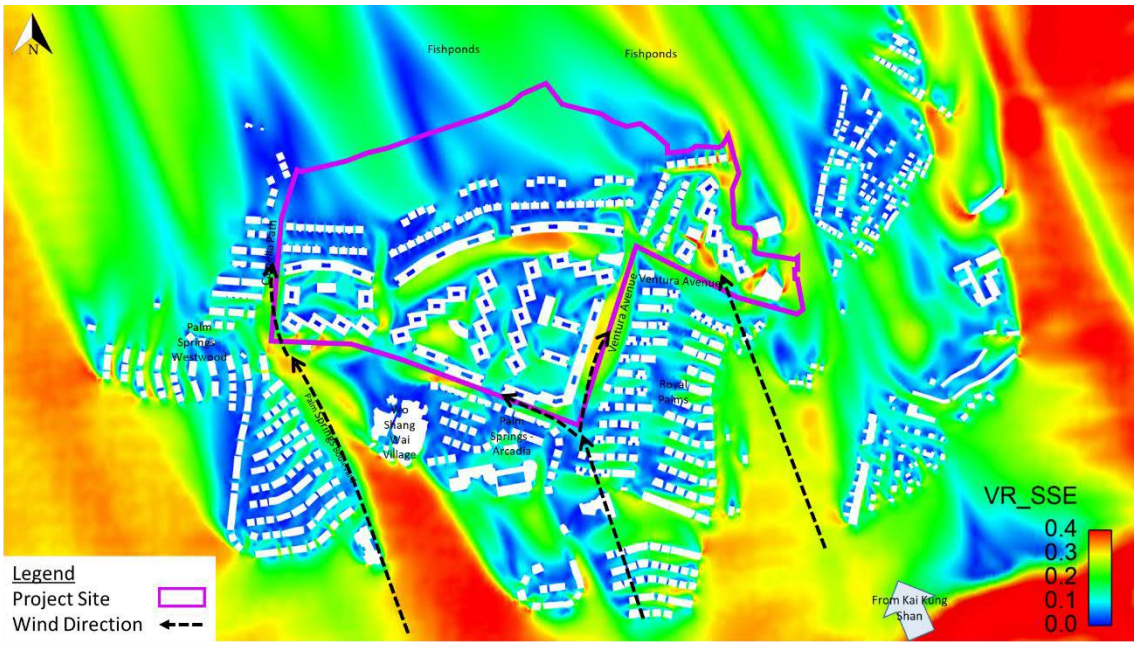
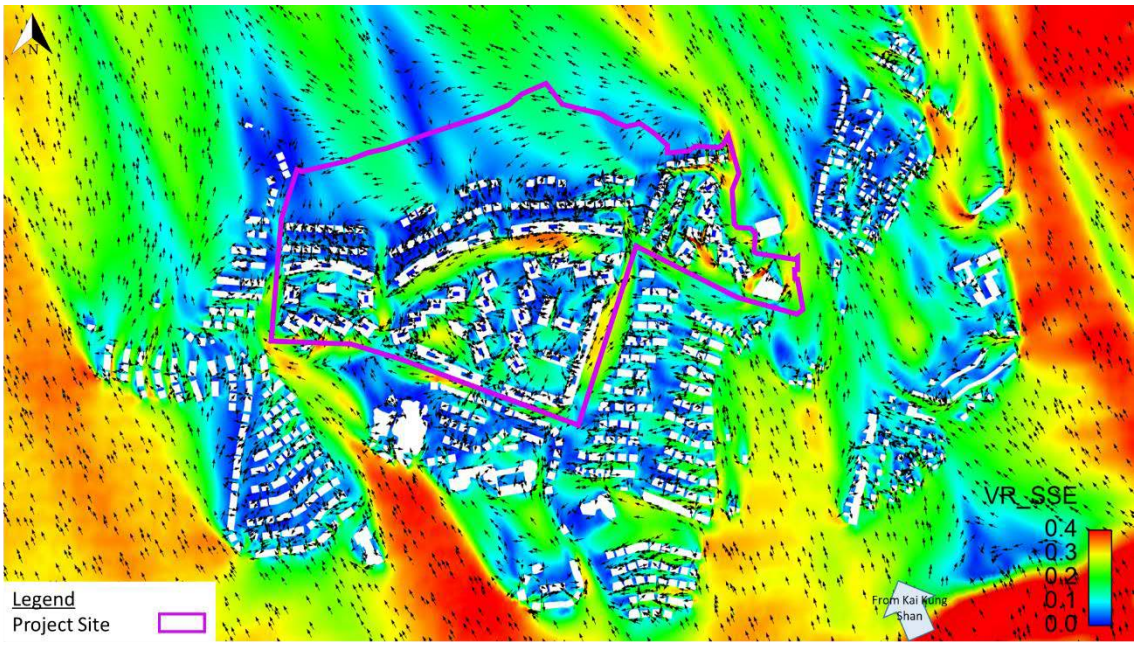


Figure 6.28: VR Vector Plot at Pedestrian Level under SSE Wind for Proposed Scheme



6.1.7 S Wind - Wind Frequency: 7.0% (Annual); 12.9% (Summer)

S wind to the Project Site comes from Kam Tin River. Incoming S wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the S wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the southern portion of the Project Site thus massive wake zones are observed at the northern portion of the Project Site. Nonetheless, a portion of S wind is able to skim over the low-rise houses in Wo Shang Wai Village to flow along the open spaces within the Project Site via the opening at the south. Besides, another portion of incoming S wind travels along Ventura Avenue to reach the fishponds to the north of the Project Site.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of S wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.29 and **Figure 6.31** shows the VR contour plots of S wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.30** and **Figure 6.32** shows the VR vector plots of S wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.29: VR Contour Plot at Pedestrian Level under S Wind for Baseline Scheme

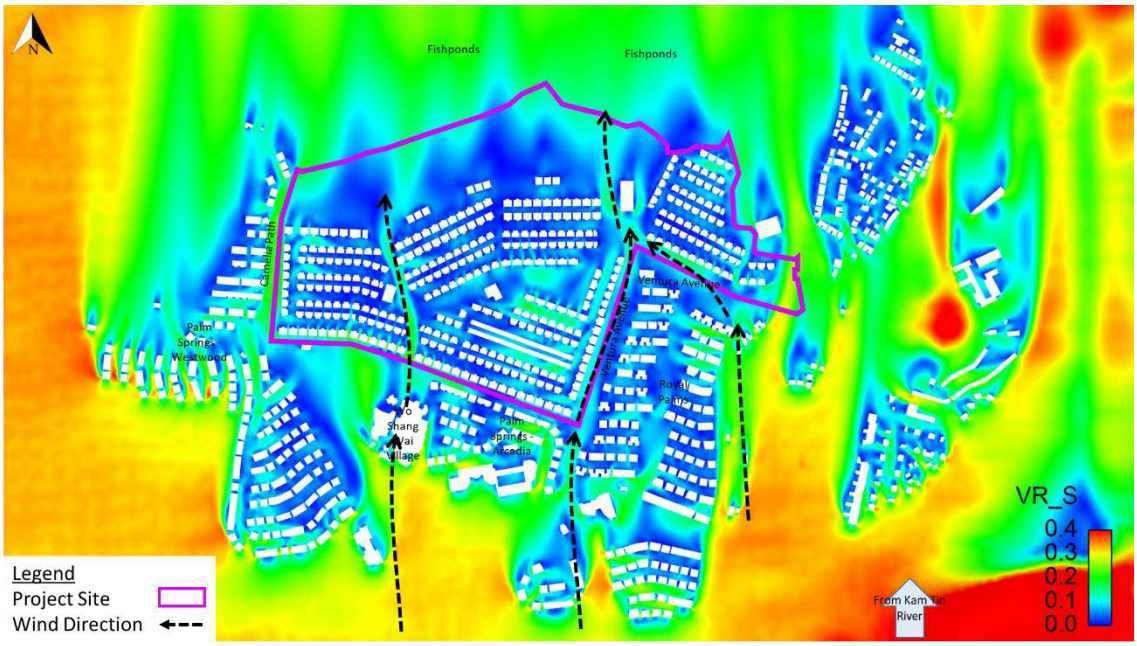


Figure 6.30: VR Vector Plot at Pedestrian Level under S Wind for Baseline Scheme

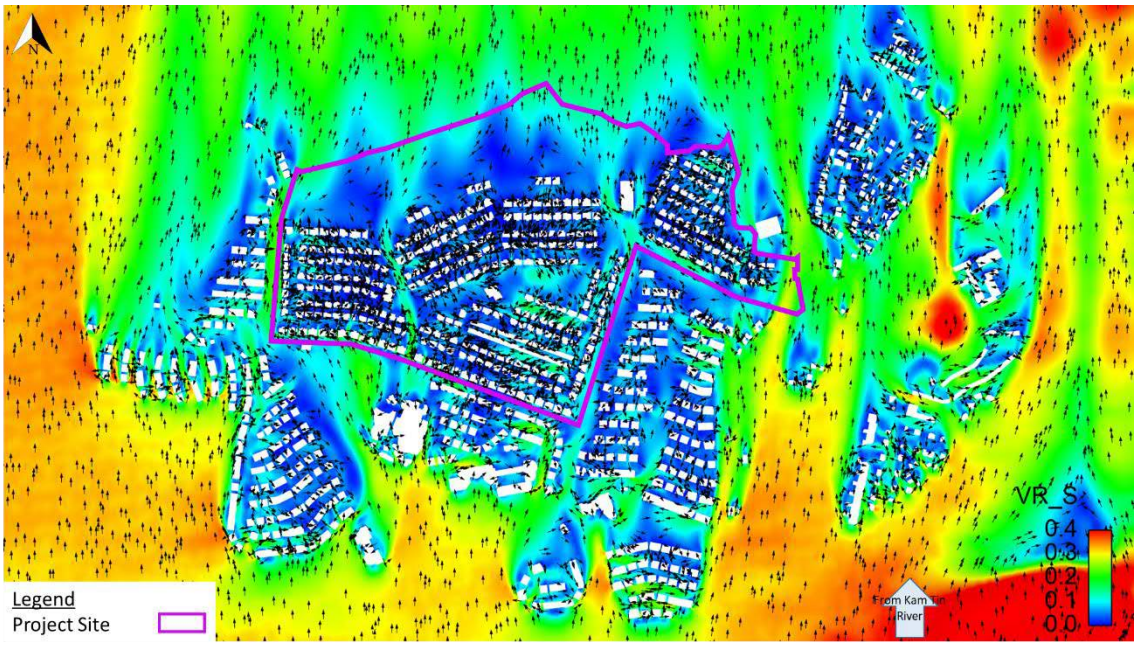


Figure 6.31: VR Contour Plot at Pedestrian Level under S Wind for Proposed Scheme

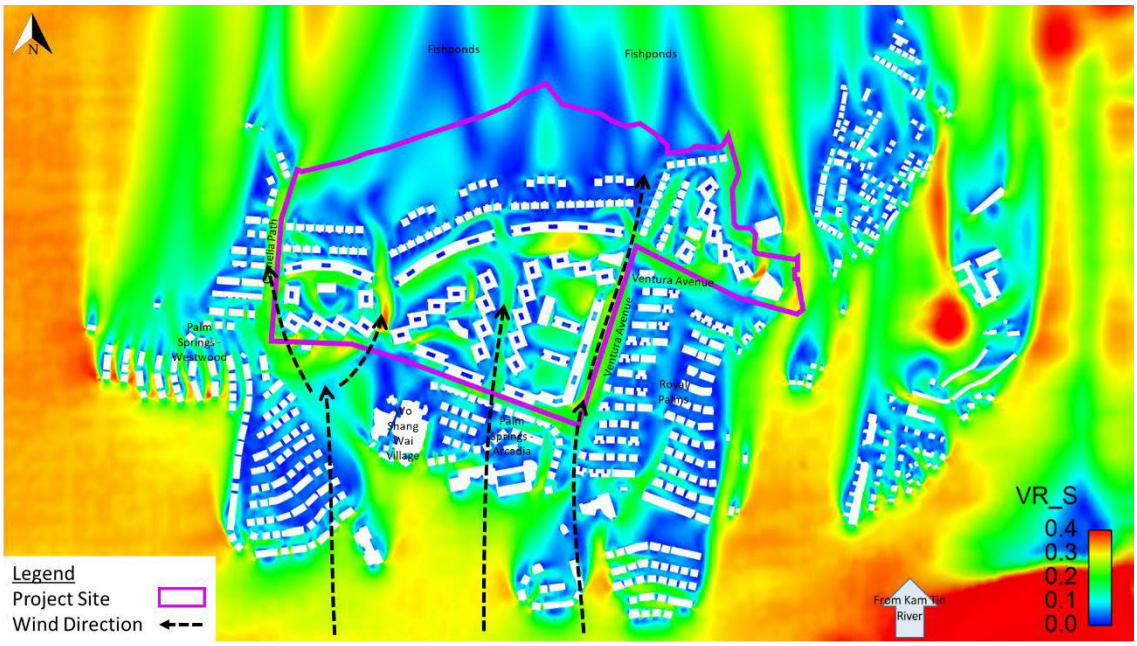
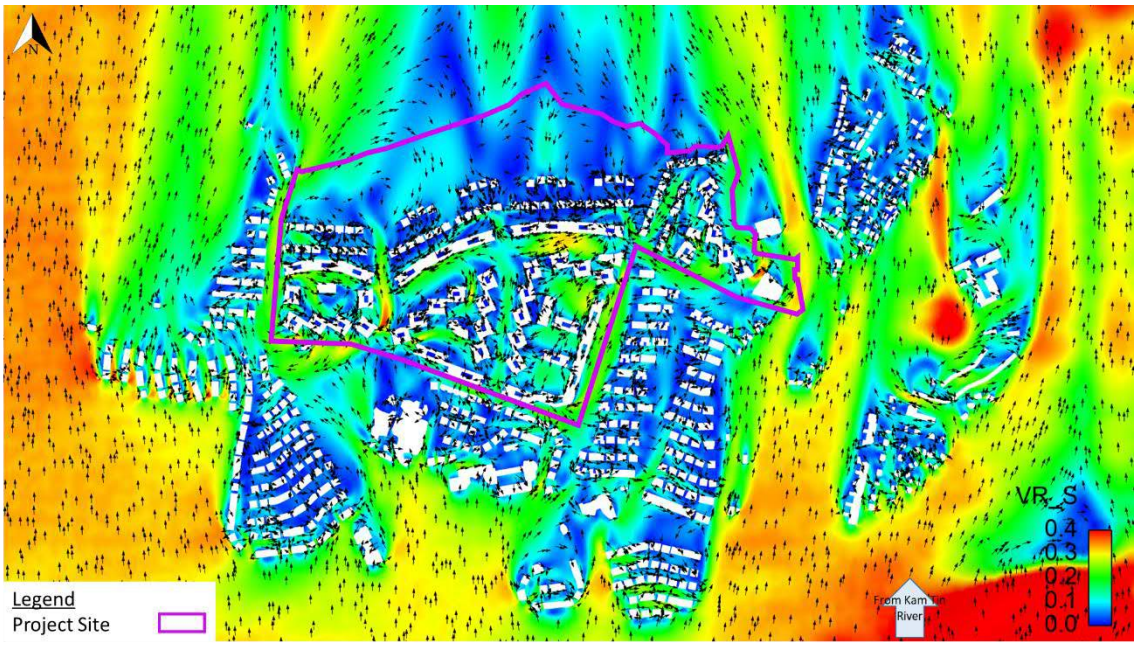


Figure 6.32: VR Vector Plot at Pedestrian Level under S Wind for Proposed Scheme



6.1.8 SSW Wind - Wind Frequency: 7.7% (Annual); 16.5% (Summer)

SSW wind to the Project Site comes from Fairview Park. Incoming SSW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SSW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus wake zones are observed at the northern portion of the Project Site. A portion of SSW wind is directed by the proposed low-rise houses along the western site boundary to flow along Camelia Path to reach the downwind regions of the fishponds to the north. Another portion of SSW travels freely along Ventura Avenue then penetrates through the Project Site to reach the downwind regions of the fishponds to the north.

In the Proposed Scheme, the mid-rise residential towers within the Project Site obstructs a portion of SSW wind from reaching the downwind regions hence a relatively larger wake zone is observed at the fish ponds located to the north of the Project Site when compared to the Baseline Scheme. Nonetheless, the introduction of more open spaces and building separations enhanced site permeability thus higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the southern portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Palm Springs – Westwood, Camelia Path, Ventura Avenue, Royal Palms and along the southern site boundary when compared to the Baseline Scheme.

Figure 6.33 and **Figure 6.35** shows the VR contour plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.34** and **Figure 6.36** shows the VR vector plots of SSW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.33: VR Contour Plot at Pedestrian Level under SSW Wind for Baseline Scheme

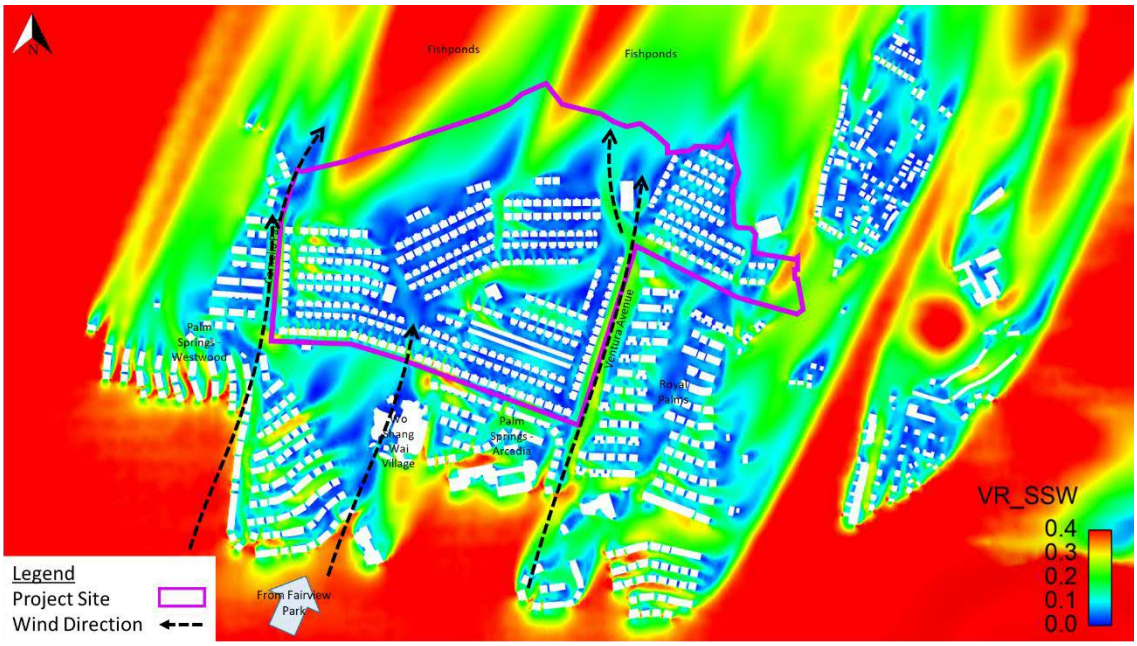


Figure 6.34: VR Vector Plot at Pedestrian Level under SSW Wind for Baseline Scheme

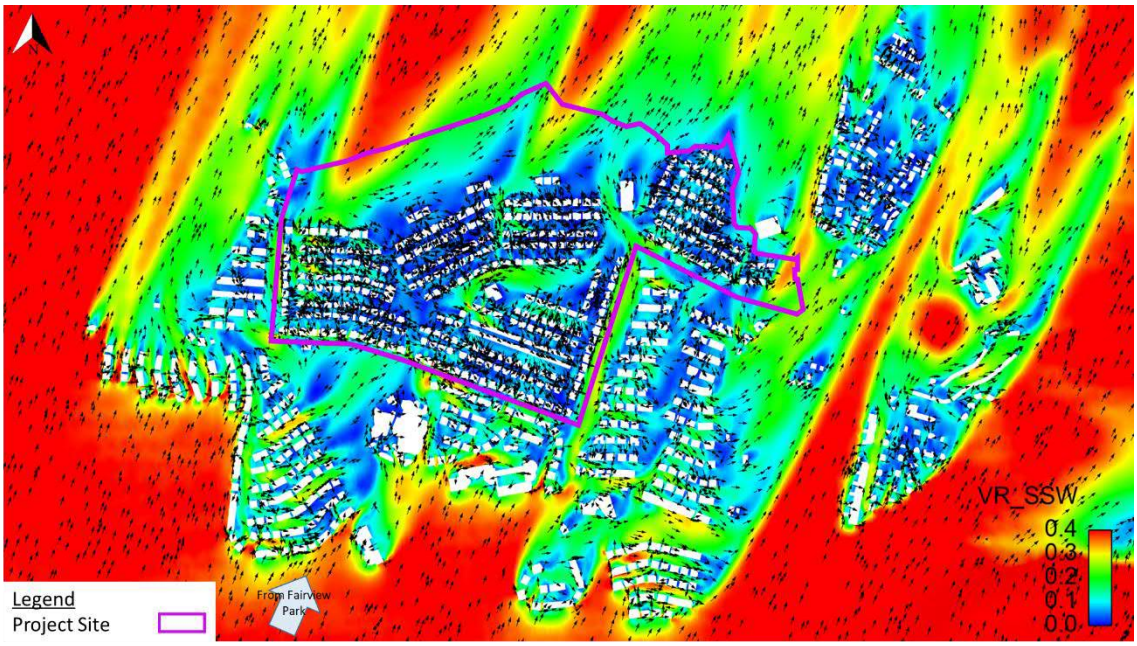


Figure 6.35: VR Vector Plot at Pedestrian Level under SSW Wind for Proposed Scheme

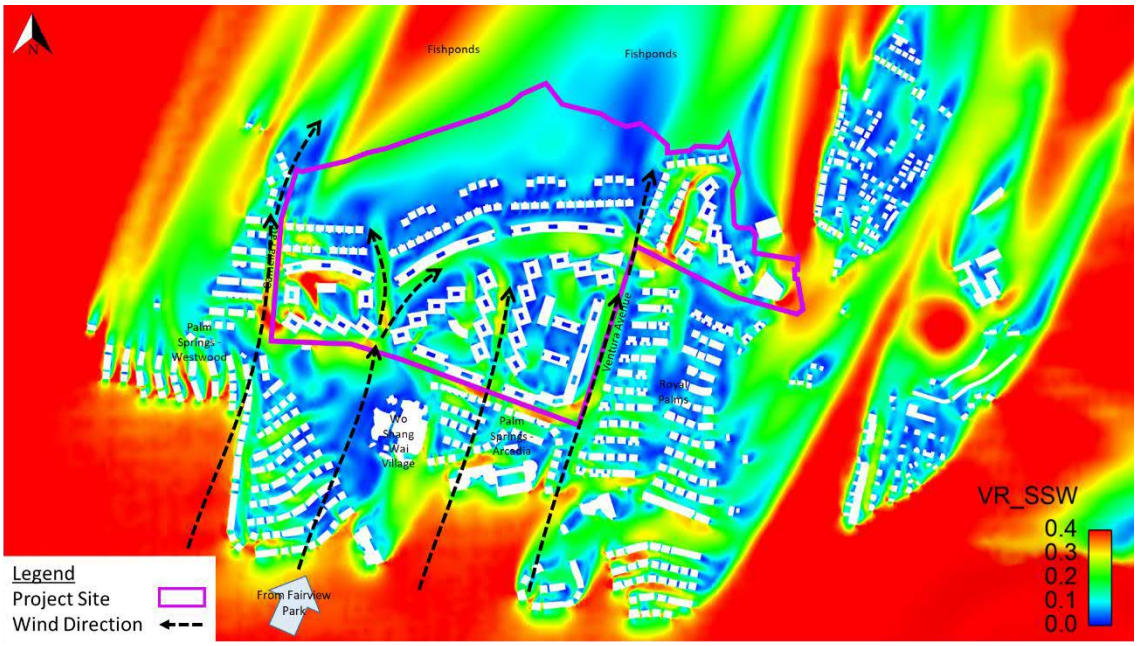
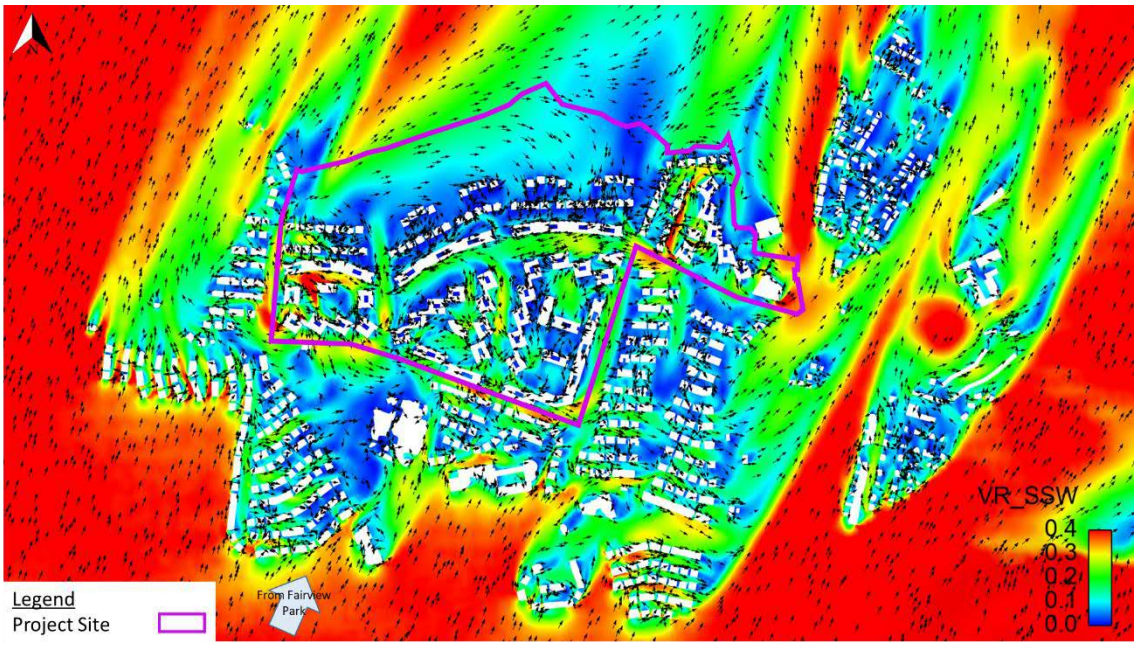


Figure 6.36: VR Contour Plot at Pedestrian Level under SSW Wind for Proposed Scheme



6.1.9 SW Wind - Wind Frequency: 6.7% (Annual); 16.3% (Summer)

SW wind to the Project Site comes from Fairview Park. Incoming SW wind is obstructed by the residential developments in the upwind region including Wo Shang Wai Village, Royal Palms, Palm Springs – Arcadia and southern portion of Palm Springs – Westwood.

In the Baseline Scheme, a significant portion of the SW wind will be obstructed by the aforementioned upwind regions and the proposed low-rise houses at the south western portion of the Project Site thus wake zones are observed within the Project Site.

A portion of SW wind skims over Palm Springs – Westwood and is then diverted towards Camelia Path by the proposed low-rise houses at the western portion of the Project Site. The SW wind would travel along Camelia Path to ventilate the downwind regions of the fishponds to the north of the Project Site. Another portion of SW wind would enter the Project Site via the opening at the southern portion of the Project Site and ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the eastern portion of the Project Site.

In the Proposed Scheme, more open spaces and building separations are introduced at the west and center thus significantly higher VRs are observed within the Project Site when compared with the Baseline Scheme. Besides, the proposed mid-rise residential towers at the western portion of the Project Site creates strong downwash effect to enhance the ventilation at pedestrian level hence higher VRs are observed at Camelia Path and Palm Springs - Westwood when compared to the Baseline Scheme. Another portion of SW wind would penetrate through the Project Site via building separations at the center and western portion of the Project Site to ventilate the open spaces within the Project Site. Lastly, a portion of SW wind would travel along Ventura Avenue to reach the central portion of the Project Site. However, the conversion from low-rise houses in the Baseline Scheme to mid-rise residential towers in the Proposed Scheme blocks SW wind from reaching Mai Po San Tsuen.

Figure 6.37 and **Figure 6.39** shows the VR contour plots of SW wind for the Baseline Scheme and Proposed Scheme respectively. **Figure 6.38** and **Figure 6.40** shows the VR vector plots of SW wind for the Baseline Scheme and Proposed Scheme respectively.

Figure 6.37: VR Contour Plot at Pedestrian Level under SW Wind for Baseline Scheme

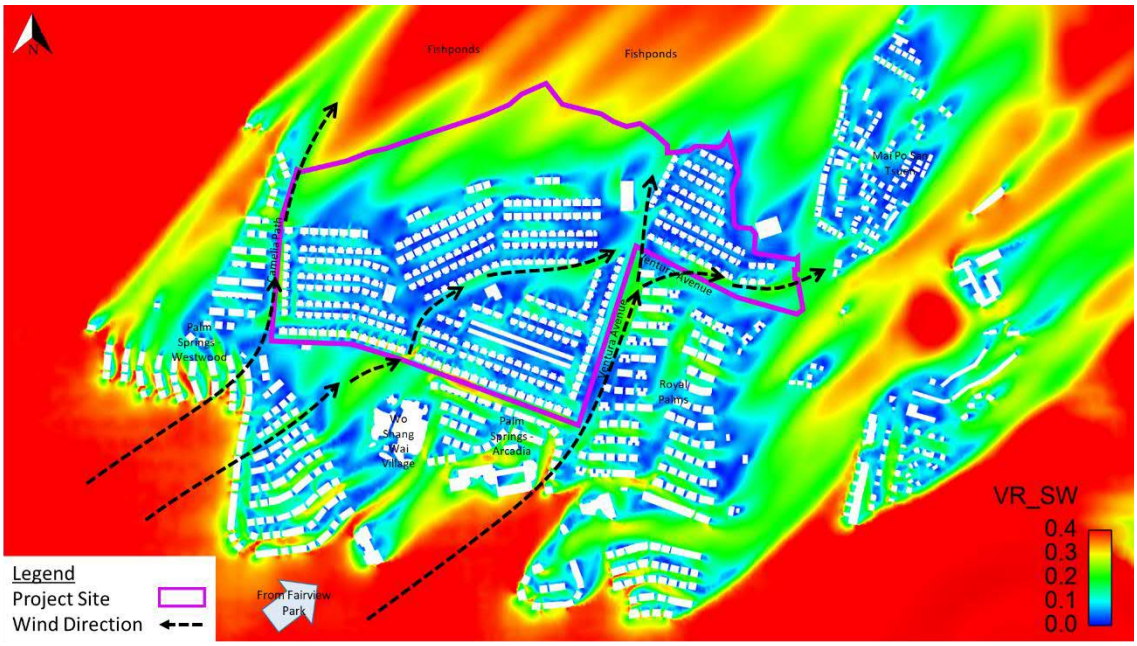


Figure 6.38: VR Vector Plot at Pedestrian Level under SW Wind for Baseline Scheme

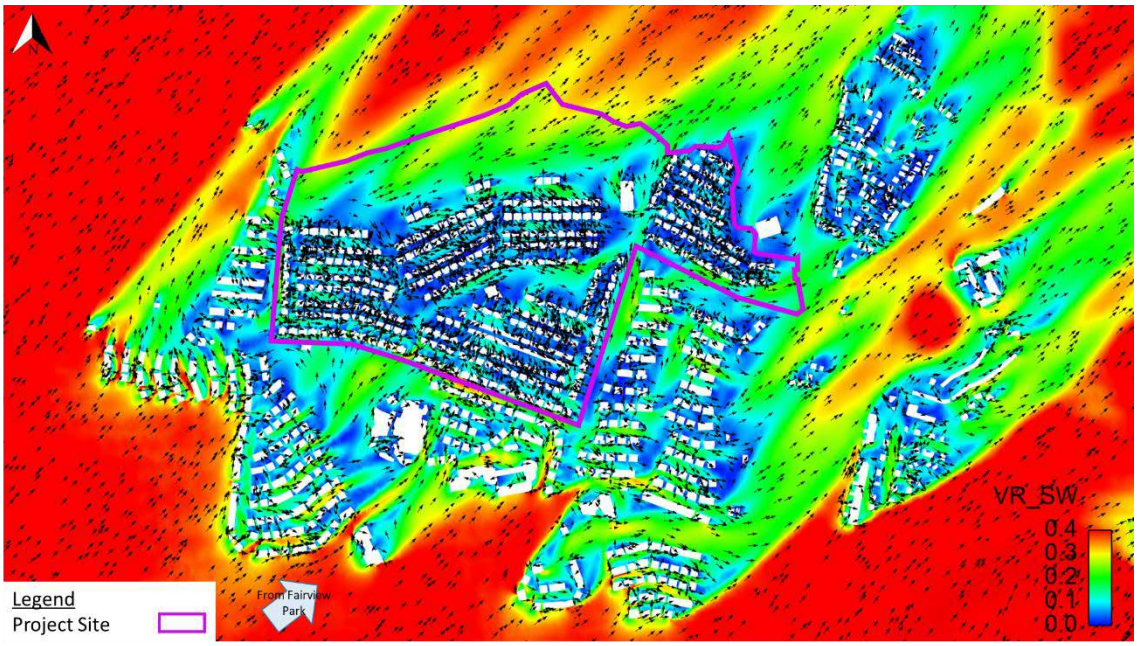


Figure 6.39: VR Contour Plot at Pedestrian Level under SW Wind for Proposed Scheme

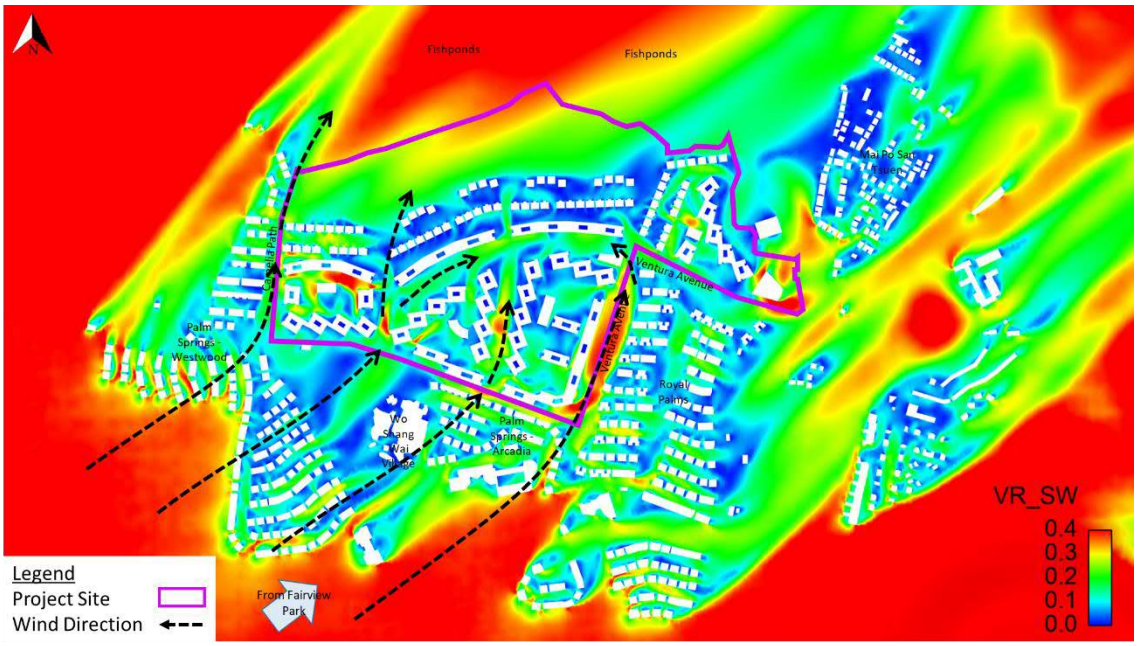
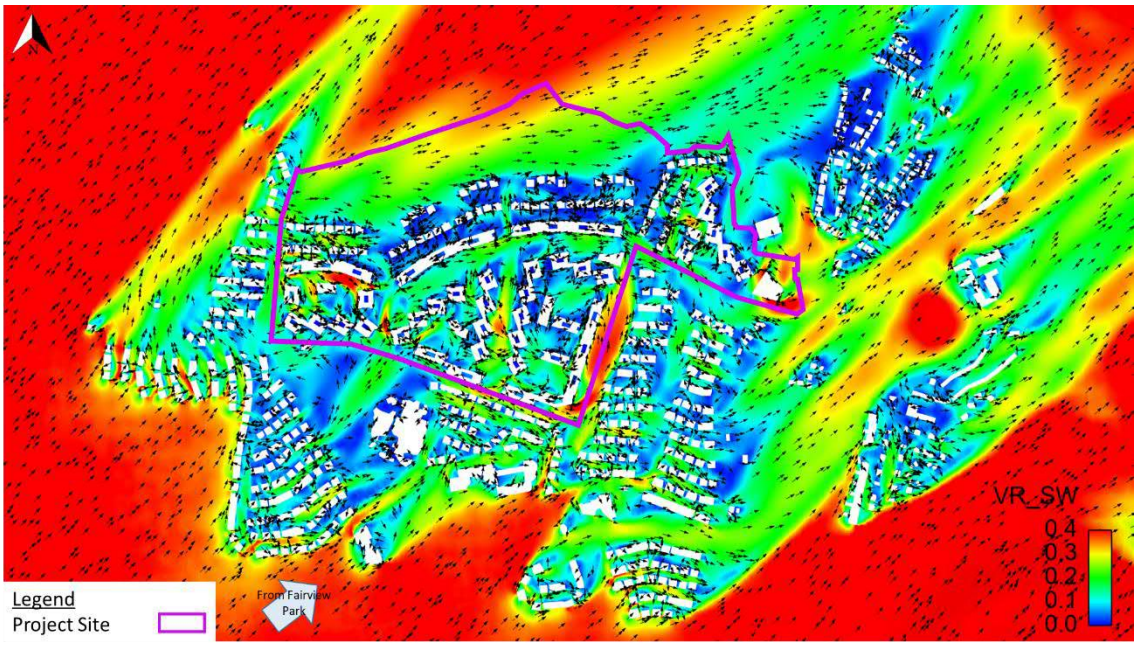


Figure 6.40: VR Vector Plot at Pedestrian Level under SW Wind for Proposed Scheme



6.2 Summary Of Velocity Ratio (VR) Results Under Annual Wind Condition

According to the average Velocity Ratio (VR) simulation results under annual wind condition in **Table 6.1**, the SVR of the Baseline Scheme is lower (i.e. 0.18) than the Proposed Scheme (i.e. 0.20). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.19.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17.0mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.23), Road 4 (Baseline 0.14 vs Proposed 0.16), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Arcadia (Baseline 0.13 vs Proposed 0.14), Wo Shang Wai Village (Baseline 0.10 vs Proposed 0.11) and Palm Springs - Westwood (Baseline 0.13 vs Proposed 0.14). On the other hand, the VR is higher when compared with the Proposed Scheme in following areas Castle Peak Road - Mai Po (Baseline 0.28 vs Proposed 0.27), Road 1 (Baseline 0.27 vs Proposed 0.26), Road 2 (Baseline 0.26 vs Proposed 0.24), Fishponds 1 (Baseline 0.20 vs Proposed 0.19) and Fishponds 2 (Baseline 0.31 vs Proposed 0.30).

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such as San Tam Road, (Baseline 0.27 vs Proposed 0.28), Road 3 (Baseline 0.22 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.23), Road 4 (Baseline 0.14 vs Proposed 0.16), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Arcadia (Baseline 0.13 vs Proposed 0.14), Wo Shang Wai Village (Baseline 0.10 vs Proposed 0.11) and Palm Springs - Westwood (Baseline 0.13 vs Proposed 0.14). On the other hand, the VR is lower when compared with the Baseline Scheme in following areas Castle Peak Road - Mai Po (Baseline 0.28 vs Proposed 0.27), Road 1 (Baseline 0.27 vs Proposed 0.26), Road 2 (Baseline 0.26 vs Proposed 0.24), Fishponds 1 (Baseline 0.20 vs Proposed 0.19) and Fishponds 2 (Baseline 0.31 vs Proposed 0.30).

For the remaining focus areas (i.e. San Tin Highway and Mai Po San Tsuen), the wind performance is comparable for both Baseline Scheme and Proposed Scheme.

The annual weighted average VR contour plots for the Baseline Scheme and Proposed Scheme are shown in **Figure 6.41** to **Figure 6.42** respectively.

Table 6.1: Summary of SVR, LVR and SAVR Results under Annual Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.18	0.20
LVR		P1-P50, O1-O177	0.19	0.19
A	San Tam Road	O1-O3	0.27	0.28
B	San Tin Highway	O4-O12	0.28	0.28
C	Castle Peak Road - Mai Po	O13-O17	0.28	0.27
D	Road 1	O18-O19	0.27	0.26
E	Road 2	O20-O23	0.26	0.24
F	Road 3	O24-O25	0.22	0.23
G	Mai Po South Road	O26-O29	0.21	0.23
H	Road 4	O30-O32	0.14	0.16
I	Mai Po San Tsuen	O33-O38	0.10	0.10
J	Royal Palms	O39-O76	0.13	0.14
K	Palm Springs - Arcadia	O77-O92	0.13	0.14
L	Wo Shang Wai Village	O93-O94	0.10	0.11
M	Palm Springs - Westwood	O95-O131	0.13	0.14
N	Fishponds 1	O132-O142	0.20	0.19
O	Fishponds 2	O143-O177	0.31	0.30
			Special Test Points	
	VR within Project Site	S1-S32	0.11	0.14

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.41: Annual Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

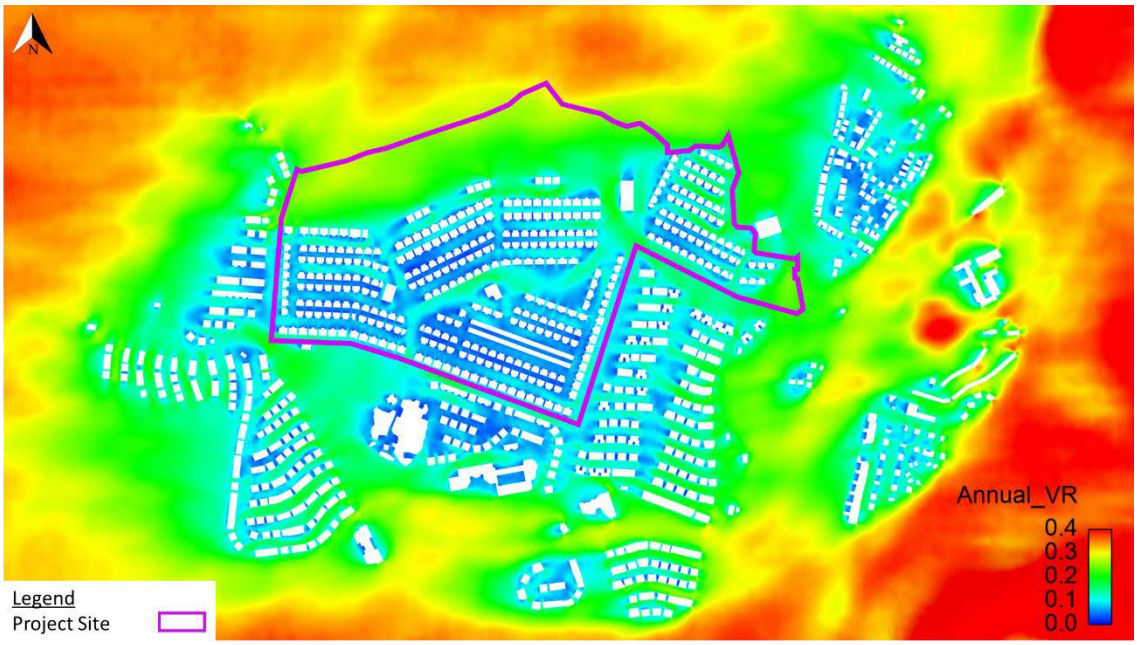
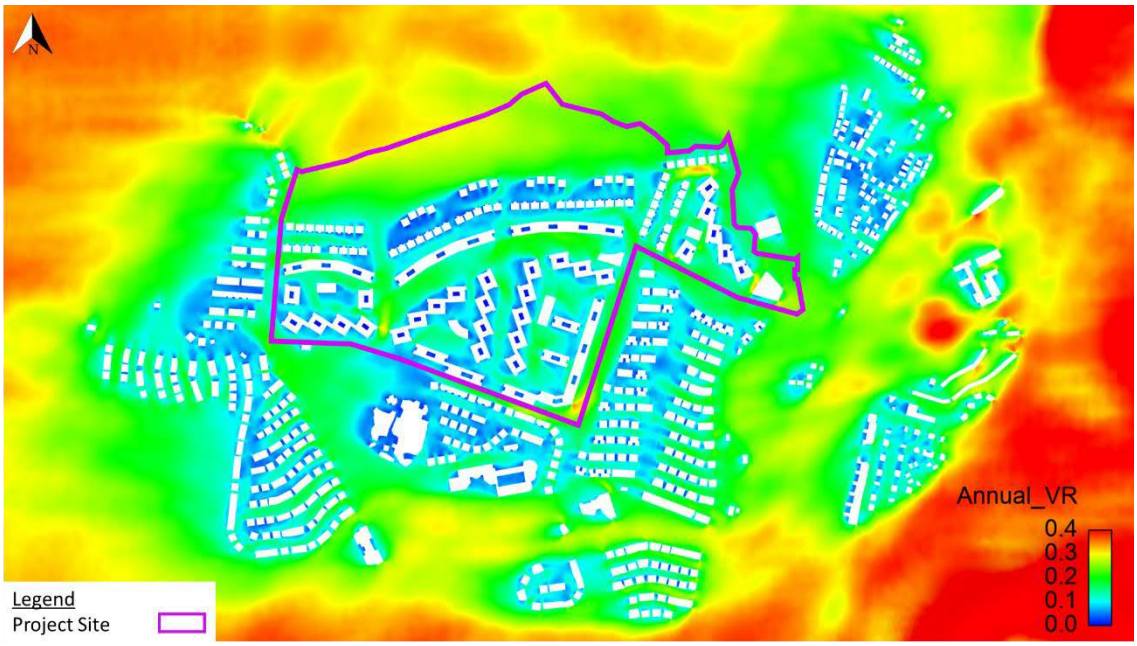


Figure 6.42: Annual Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



6.3 Summary of Velocity Ratio (VR) Results under summer wind condition

According to the average Velocity Ratio (VR) simulation results under summer wind condition in **Table 6.2**, the SVR of the Baseline Scheme is lower (i.e. 0.15) than the Proposed Scheme (i.e. 0.19). The LVR of the Baseline Scheme and the Proposed Scheme are both 0.18.

The Baseline Scheme is comprised 749 2-storey houses and 40 3-storey houses above ground with a maximum building height of 16.8mPD and 21.3mPD respectively. It also comprises of 4 clubhouses with a maximum building height of 17.0mPD. Numerous numbers of houses affect the amount of annual prevailing wind passing through the Project Site as well as the surrounding area. When compared with the Proposed Scheme, the VR is lower in areas such as San Tam Road (Baseline 0.25 vs Proposed 0.26), Road 1 (Baseline 0.21 vs Proposed 0.22), Road 3 (Baseline 0.21 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.25), Road 4 (Baseline 0.15 vs Proposed 0.19), Mai Po San Tsuen (Baseline 0.11 vs Proposed 0.12), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Westwood (Baseline 0.14 vs Proposed 0.15) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21). On the other hand, the VR is higher when compared with the Proposed Scheme in following areas San Tin Highway (Baseline 0.26 vs Proposed 0.25), Castle Peak Road - Mai Po (Baseline 0.24 vs Proposed 0.22), Road 2 (Baseline 0.21 vs Proposed 0.20), Palm Springs - Arcadia (Baseline 0.18 vs Proposed 0.17), Wo Shang Wai Village (Baseline 0.13 vs Proposed 0.12) and Fishponds 2 (Baseline 0.27 vs Proposed 0.25).

The Proposed Scheme is comprised of 24 3-storey detached houses above ground with a maximum building height of 21.0mPD. There are also 104 3-storey semi-detached houses above ground with a maximum building height of 21.0mPD. It also comprises of 47 residential towers ranging from 6-storey to 10-storey with a maximum building height ranging from 28.0mPD to 42.0mPD. In addition, there is a 4-storey RCHE above ground with a maximum building height of 25.0mPD. The Proposed Schemes also included 4 individual clubhouses with a maximum building height of 16.0mPD. The number of buildings is reduced, more open spaces and building separations is introduced when compared with Baseline Scheme. Reduction of building number and introduction of building separation enhances the wind permeability through the Project Site to ventilate the downwind regions such San Tam Road (Baseline 0.25 vs Proposed 0.26), Road 1 (Baseline 0.21 vs Proposed 0.22), Road 3 (Baseline 0.21 vs Proposed 0.23), Mai Po South Road (Baseline 0.21 vs Proposed 0.25), Road 4 (Baseline 0.15 vs Proposed 0.19), Mai Po San Tsuen (Baseline 0.11 vs Proposed 0.12), Royal Palms (Baseline 0.13 vs Proposed 0.14), Palm Springs - Westwood (Baseline 0.14 vs Proposed 0.15) and Fishponds 1 (Baseline 0.20 vs Proposed 0.21). On the other hand, the VR is lower when compared with the Baseline Scheme in following areas San Tin Highway (Baseline 0.26 vs Proposed 0.25), Castle Peak Road - Mai Po (Baseline 0.24 vs Proposed 0.22), Road 2 (Baseline 0.21 vs Proposed 0.20), Palm Springs - Arcadia (Baseline 0.18 vs Proposed 0.17), Wo Shang Wai Village (Baseline 0.13 vs Proposed 0.12) and Fishponds 2 (Baseline 0.27 vs Proposed 0.25).

The summer weighted average VR contour plots for the Baseline Scheme and the Proposed Scheme are shown in **Figure 6.43** to **Figure 6.44** respectively.

Table 6.2: Summary of SVR, LVR and SAVR Results under Summer Wind Condition

Focus Areas		Test Points	Baseline Scheme	Proposed Scheme
SVR		P1-P50	0.15	0.19
LVR		P1-P50, O1-O177	0.18	0.18
A	San Tam Road	O1-O3	0.25	0.26
B	San Tin Highway	O4-O12	0.26	0.25
C	Castle Peak Road - Mai Po	O13-O17	0.24	0.22
D	Road 1	O18-O19	0.21	0.22
E	Road 2	O20-O23	0.21	0.20
F	Road 3	O24-O25	0.21	0.23
G	Mai Po South Road	O26-O29	0.21	0.25
H	Road 4	O30-O32	0.15	0.19
I	Mai Po San Tsuen	O33-O38	0.11	0.12
J	Royal Palms	O39-O76	0.13	0.14
K	Palm Springs - Arcadia	O77-O92	0.18	0.17
L	Wo Shang Wai Village	O93-O94	0.13	0.12
M	Palm Springs - Westwood	O95-O131	0.14	0.15
N	Fishponds 1	O132-O142	0.20	0.21
O	Fishponds 2	O143-O177	0.27	0.25
		Special Test Points		
	VR within Project Site	S1-S32	0.10	0.14

Note:
Red denotes VR is higher in the Proposed Scheme
Blue denotes VR is higher in the Baseline Scheme

Figure 6.43: Summer Weighted Average VR Contour Plot at Pedestrian Level for Baseline Scheme

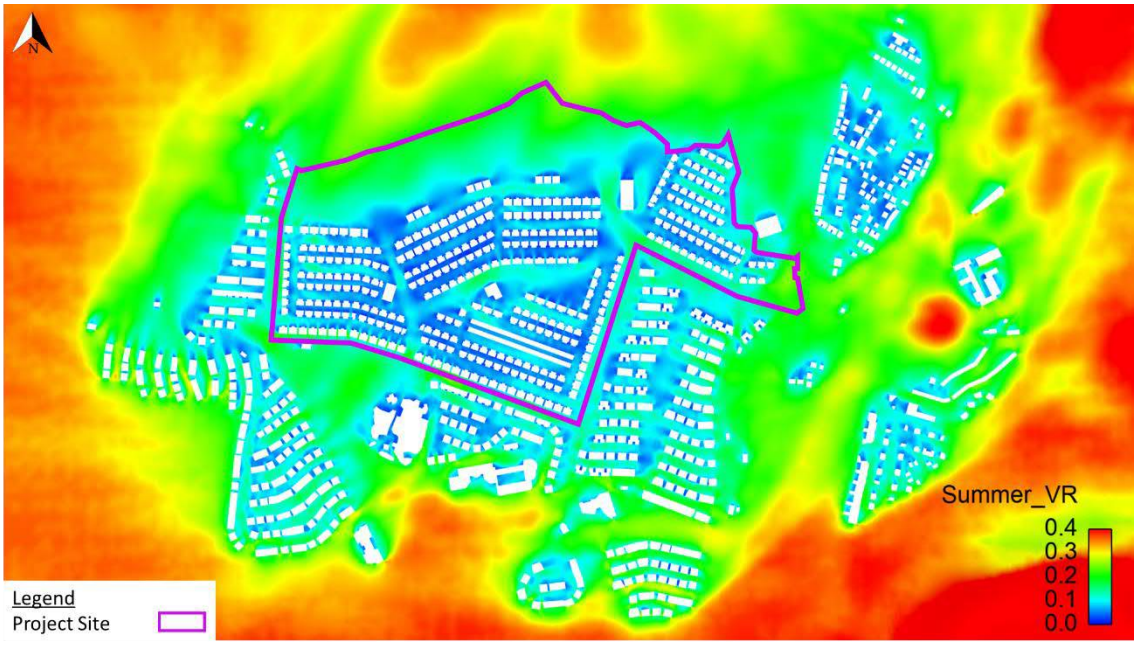
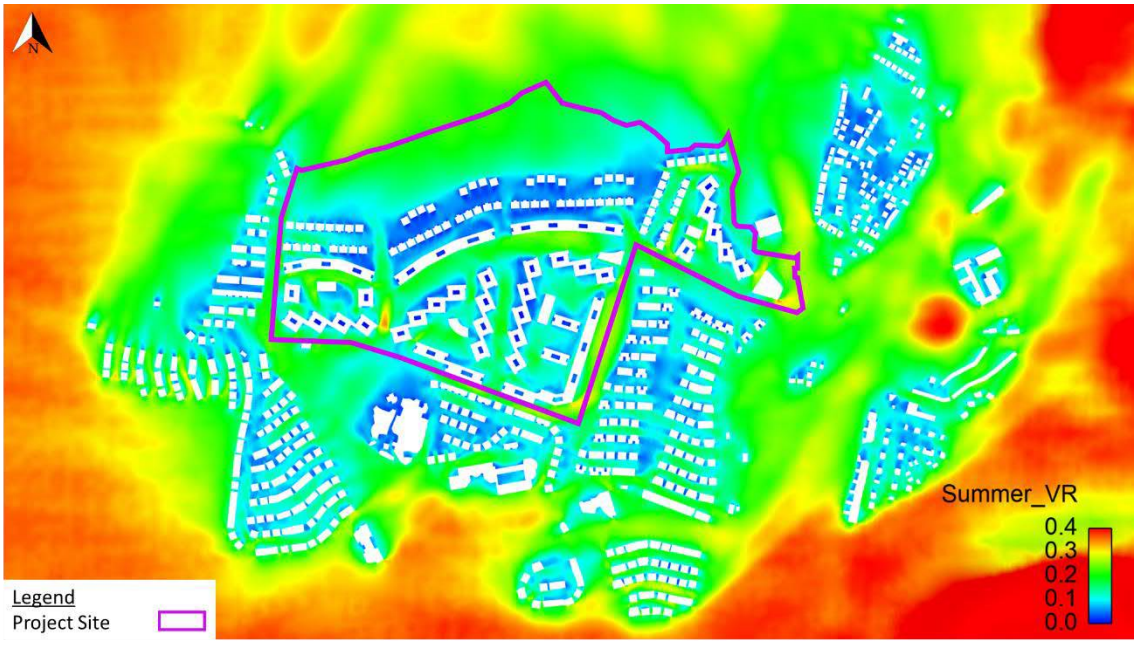


Figure 6.44: Summer Weighted Average VR Contour Plot at Pedestrian Level for Proposed Scheme



7 Conclusion

An Air Ventilation Assessment - Initial Study (AVA-IS) was conducted to assess the ventilation performance of the area within the Project Site and the local environment.

The major findings of this study could be summarized as follows:

AVA Study

A series of CFD simulations using realizable k- ε turbulence model was performed based on the Air Ventilation Assessment (AVA) methodology for the Initial Study as stipulated in the Technical Circular No. 1/06 on Air Ventilation Assessment (2006). Eleven (11) wind directions covering about 83.2% occurrence of annual wind and about 76.4% occurrence of summer wind were studied. The ventilation performance for the proposed development at the Project Site and all focus areas within the assessment area were assessed.

According to the Technical Circular No. 1/06 on Air Ventilation Assessment (2006), the Velocity Ratio of each test point was assessed in terms of SVR, LVR and SAVR of various focus areas within the Assessment Area. A total of 50 perimeter test points, 177 overall test points and 32 special test points were selected to assess the ventilation performance.

Changes in building design are introduced to enhance the wind permeability through the Project Site to ventilate the downwind regions as shown below:

- The annual weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are 0.18 and 0.20 respectively. The summer weighted Site Spatial Average Velocity Ratio (SVR) for the Baseline Scheme and Proposed Scheme are both 0.19.
- The annual weighted Local Spatial Average Velocity Ratio (LVR) for the Baseline Scheme and Proposed Scheme are 0.15 and 0.19 respectively. The summer weighted LVR for the Baseline Scheme and Proposed Scheme are both 0.18.

From the directional analysis in Section 6, the mid-rise residential towers in the Proposed Scheme will indeed obstruct a portion of the annual and summer prevailing winds thus larger wakes at some downwind regions are observed when compared with the Baseline. However, as shown in the summary above, the annual weighted SVR and LVR show that the Proposed Scheme on average has a similar performance when compared with the Baseline Scheme. Hence, it is concluded that with the mitigation measures implemented, the Proposed Scheme would not result in a significant adverse air ventilation impact on the pedestrian wind environment in the area surrounding the Project Site when compared with the Baseline Scheme.

All improvements and mitigation measures should consider the following design principles at the detailed design stage:

- Adopt building permeability equivalent to 20% to 25% with reference to PNAP APP-152;
- Adopt building setback with reference to PNAP APP-152;
- Avoid long continuous façades; and
- Make reference to the recommendations of design measures in the Hong Kong Planning Standards and Guidelines.

Appendices

Appendix A - Architectural Layout of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

- APPLICATION SITE BOUNDARY
- WETLAND RESTORATION AREA
- CLUBHOUSE AMENITY AREA / WATER BODY
- POOL AREA
- E & M BUILDINGS
- PROPOSED NOISE BARRIER

- A1 A2 — 2 STOREY DETACHED HOUSE
- B — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- C1 — 3 STOREY DETACHED HOUSE
- C2 — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- D — 2 STOREY DETACHED / SEMI-DETACHED HOUSE
- E — 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

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DWG. No. : 3809-003

申請編號 Application No. : A / YL-MP / 344
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architects

Good Design Feature of Baseline Scheme

FISH PONDS

WETLAND RESTORATION AREA (COMPLETED)

WETLAND RESTORATION AREA (BY OTHERS)

TO BE DEVELOPED BY OTHERS

MTRC VENT BUILDING

>7.5m setback

22.77 m

PALM SPRINGS (WEST)

ROYAL PALMS

PALM SPRINGS (EAST)

WO SHANG WAI

N 0 20 40 60 80 100m

SCALE : 1:2000@A3

LEGEND:

APPLICATION SITE BOUNDARY	A1 A2 2 STOREY DETACHED HOUSE
WETLAND RESTORATION AREA	B 2 STOREY DETACHED / SEMI-DETACHED HOUSE
CLUBHOUSE AMENITY AREA / WATER BODY	C1 3 STOREY DETACHED HOUSE
POOL AREA	C2 2 STOREY DETACHED / SEMI-DETACHED HOUSE
E & M BUILDINGS	D 2 STOREY DETACHED / SEMI-DETACHED HOUSE
PROPOSED NOISE BARRIER	E 2 STOREY TERRACED HOUSE

*Notes - all houses are provided with basement carpark

Figure 3: Revised Master Layout Plan in this Amendment Application

申請編號 Application No. : A / YL-MP / 344

此頁摘自申請人提交的文件。

This page is extracted from applicant's submitted documents.

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Appendix B – Architectural Layout of Proposed Scheme

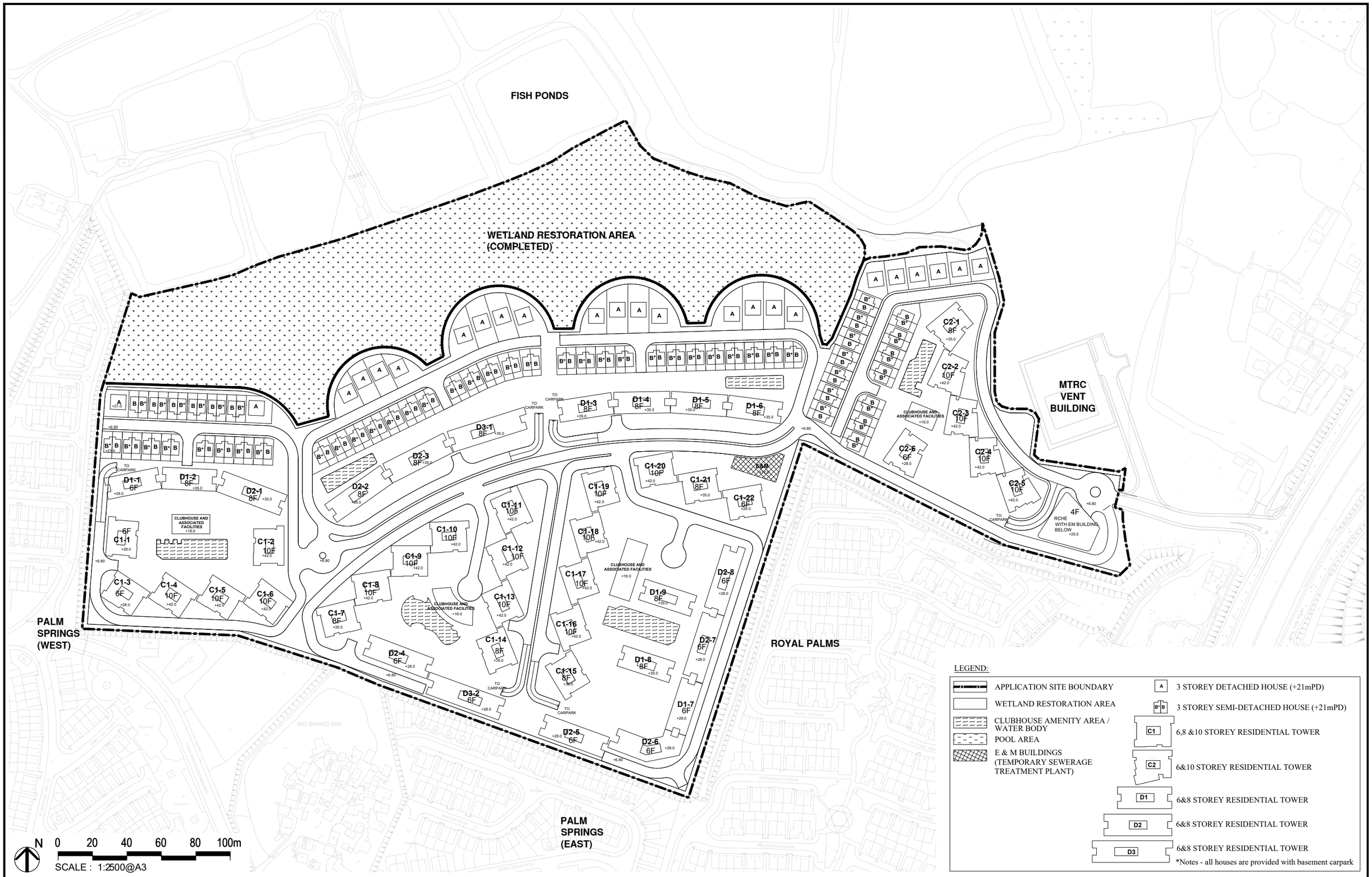

Figure 3: Revised Master Layout Plan in this Amendment Application

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Good Design Feature of Proposed Scheme

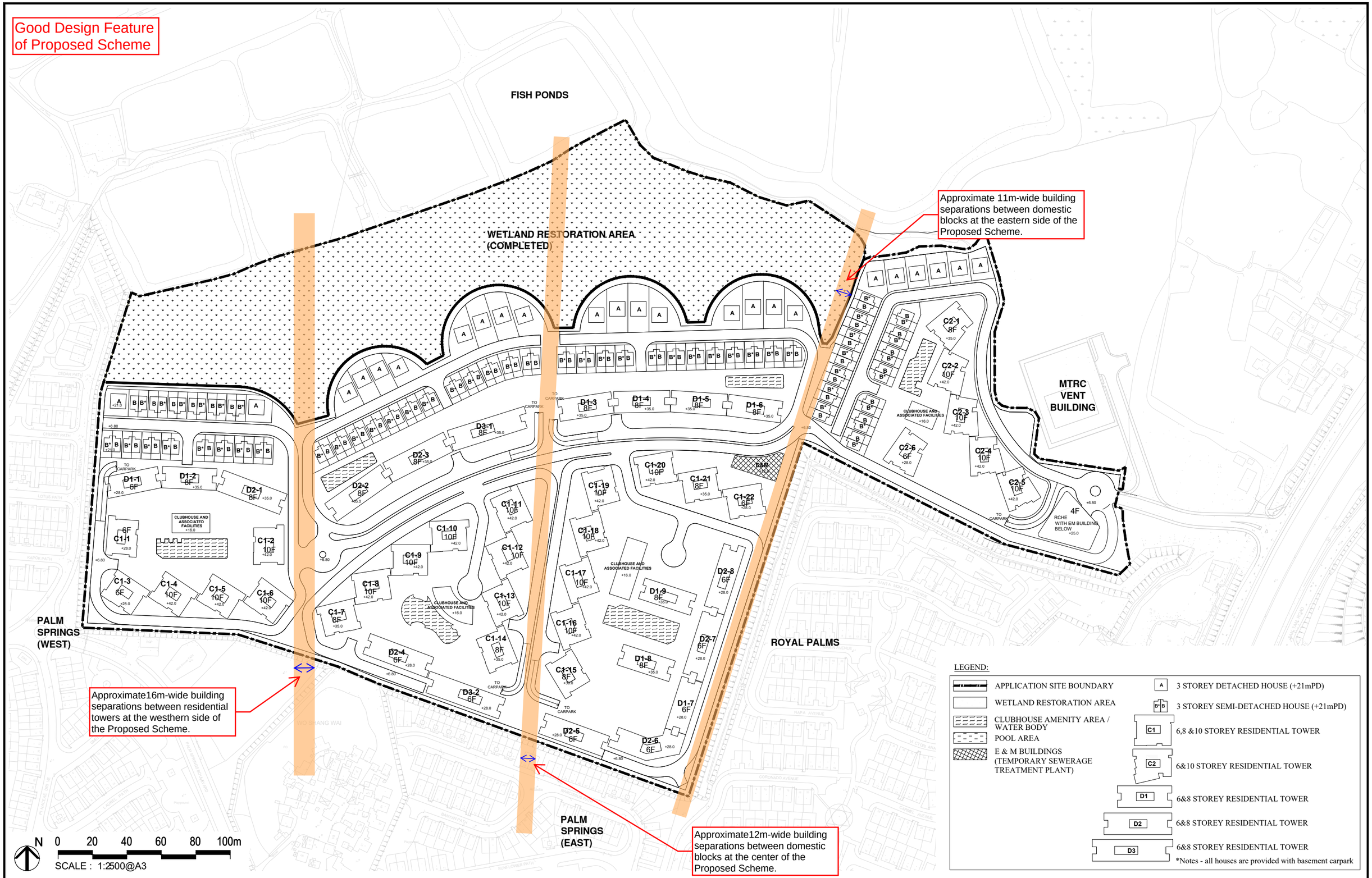

Figure 3: Revised Master Layout Plan in this Amendment Application

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Appendix C – Detailed Velocity Ratio for Each Test Point for Baseline Scheme

Baseline Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.34	0.40	0.37	0.21	0.24	0.30	0.22	0.22	0.34	0.29	0.29	0.27
O2	0.24	0.26	0.26	0.20	0.10	0.14	0.13	0.18	0.34	0.31	0.22	0.23
O3	0.35	0.30	0.32	0.44	0.13	0.16	0.09	0.14	0.37	0.31	0.30	0.25
O4	0.36	0.33	0.33	0.24	0.08	0.08	0.14	0.25	0.40	0.30	0.26	0.25
O5	0.25	0.30	0.26	0.32	0.02	0.12	0.15	0.17	0.39	0.32	0.25	0.24
O6	0.30	0.36	0.36	0.14	0.18	0.27	0.20	0.18	0.38	0.25	0.26	0.24
O7	0.37	0.39	0.36	0.30	0.18	0.36	0.17	0.20	0.36	0.29	0.31	0.27
O8	0.37	0.35	0.29	0.28	0.10	0.41	0.18	0.20	0.35	0.31	0.29	0.27
O9	0.37	0.37	0.38	0.23	0.22	0.29	0.25	0.17	0.37	0.26	0.29	0.26
O10	0.35	0.37	0.40	0.24	0.15	0.20	0.14	0.23	0.33	0.19	0.27	0.22
O11	0.28	0.33	0.27	0.41	0.12	0.16	0.16	0.27	0.37	0.31	0.29	0.28
O12	0.32	0.35	0.37	0.25	0.08	0.10	0.17	0.30	0.41	0.31	0.28	0.27
O13	0.32	0.37	0.38	0.24	0.07	0.08	0.26	0.31	0.37	0.31	0.27	0.27
O14	0.33	0.35	0.33	0.37	0.11	0.12	0.18	0.29	0.23	0.15	0.27	0.21
O15	0.35	0.34	0.41	0.20	0.17	0.22	0.15	0.27	0.22	0.20	0.26	0.21
O16	0.36	0.36	0.30	0.29	0.27	0.36	0.26	0.15	0.25	0.29	0.29	0.26
O17	0.34	0.39	0.37	0.30	0.21	0.38	0.12	0.21	0.28	0.34	0.31	0.27
O18	0.15	0.28	0.33	0.38	0.26	0.17	0.11	0.17	0.10	0.10	0.25	0.16
O19	0.22	0.34	0.36	0.31	0.22	0.41	0.26	0.17	0.19	0.31	0.29	0.25
O20	0.32	0.35	0.32	0.25	0.21	0.32	0.15	0.27	0.17	0.26	0.27	0.23
O21	0.31	0.34	0.42	0.24	0.14	0.18	0.15	0.30	0.13	0.21	0.26	0.20
O22	0.30	0.34	0.35	0.37	0.09	0.10	0.23	0.27	0.11	0.05	0.25	0.16
O23	0.28	0.35	0.35	0.32	0.15	0.11	0.32	0.30	0.14	0.27	0.27	0.23
O24	0.24	0.20	0.29	0.18	0.12	0.16	0.15	0.12	0.26	0.26	0.20	0.19
O25	0.13	0.22	0.30	0.28	0.21	0.31	0.03	0.20	0.23	0.30	0.25	0.23
O26	0.25	0.36	0.33	0.30	0.27	0.36	0.22	0.25	0.17	0.30	0.29	0.26
O27	0.25	0.13	0.22	0.06	0.28	0.37	0.20	0.21	0.23	0.17	0.19	0.21
O28	0.34	0.20	0.08	0.06	0.12	0.17	0.21	0.26	0.30	0.13	0.16	0.19
O29	0.30	0.24	0.06	0.19	0.20	0.40	0.25	0.19	0.08	0.10	0.19	0.17
O30	0.30	0.18	0.05	0.13	0.14	0.25	0.13	0.24	0.24	0.06	0.16	0.17
O31	0.29	0.19	0.07	0.06	0.07	0.14	0.04	0.07	0.25	0.18	0.13	0.13
O32	0.24	0.13	0.13	0.07	0.08	0.08	0.06	0.12	0.25	0.25	0.14	0.16
O33	0.04	0.02	0.05	0.13	0.09	0.18	0.07	0.04	0.02	0.09	0.08	0.08
O34	0.13	0.10	0.01	0.16	0.12	0.19	0.09	0.15	0.15	0.08	0.12	0.13
O35	0.06	0.11	0.15	0.13	0.06	0.44	0.19	0.13	0.11	0.11	0.14	0.15
O36	0.05	0.12	0.03	0.03	0.07	0.21	0.04	0.04	0.09	0.05	0.07	0.07
O37	0.07	0.05	0.03	0.11	0.06	0.08	0.13	0.15	0.19	0.18	0.10	0.14
O38	0.02	0.07	0.15	0.10	0.02	0.02	0.08	0.07	0.11	0.11	0.08	0.08
O39	0.15	0.21	0.18	0.04	0.10	0.12	0.13	0.13	0.17	0.01	0.12	0.10
O40	0.17	0.06	0.10	0.02	0.32	0.24	0.29	0.23	0.17	0.08	0.14	0.18
O41	0.17	0.16	0.30	0.20	0.33	0.22	0.19	0.14	0.12	0.06	0.20	0.16
O42	0.16	0.05	0.27	0.27	0.14	0.13	0.14	0.09	0.08	0.09	0.16	0.12
O43	0.01	0.14	0.22	0.24	0.14	0.13	0.16	0.07	0.06	0.08	0.14	0.11
O44	0.11	0.09	0.24	0.27	0.18	0.15	0.21	0.07	0.12	0.16	0.17	0.15
O45	0.11	0.08	0.16	0.25	0.08	0.10	0.10	0.08	0.18	0.12	0.14	0.13
O46	0.09	0.07	0.17	0.11	0.03	0.07	0.01	0.03	0.23	0.24	0.11	0.13

O47	0.06	0.15	0.09	0.05	0.05	0.06	0.04	0.03	0.20	0.21	0.09	0.11
O48	0.06	0.07	0.07	0.04	0.04	0.04	0.06	0.04	0.02	0.04	0.05	0.04
O49	0.06	0.03	0.12	0.06	0.33	0.25	0.26	0.22	0.16	0.11	0.14	0.18
O50	0.06	0.04	0.20	0.09	0.18	0.18	0.23	0.19	0.06	0.11	0.12	0.14
O51	0.08	0.13	0.13	0.08	0.15	0.16	0.16	0.08	0.07	0.21	0.12	0.13
O52	0.06	0.15	0.15	0.02	0.13	0.14	0.15	0.05	0.11	0.22	0.11	0.12
O53	0.11	0.12	0.19	0.35	0.37	0.28	0.22	0.13	0.07	0.24	0.22	0.21
O54	0.06	0.08	0.18	0.26	0.14	0.14	0.16	0.10	0.04	0.17	0.15	0.13
O55	0.05	0.06	0.09	0.19	0.08	0.11	0.14	0.04	0.10	0.07	0.10	0.10
O56	0.07	0.15	0.09	0.08	0.18	0.11	0.04	0.06	0.13	0.14	0.11	0.11
O57	0.24	0.18	0.27	0.21	0.25	0.19	0.24	0.05	0.10	0.10	0.19	0.14
O58	0.13	0.15	0.32	0.26	0.24	0.19	0.14	0.04	0.05	0.06	0.18	0.11
O59	0.10	0.12	0.15	0.12	0.13	0.15	0.11	0.01	0.08	0.06	0.11	0.08
O60	0.11	0.19	0.08	0.14	0.05	0.12	0.18	0.05	0.12	0.06	0.11	0.10
O61	0.08	0.15	0.10	0.08	0.14	0.07	0.10	0.05	0.06	0.16	0.10	0.09
O62	0.07	0.07	0.08	0.12	0.09	0.09	0.18	0.08	0.06	0.12	0.09	0.10
O63	0.20	0.18	0.23	0.17	0.24	0.07	0.05	0.06	0.09	0.05	0.15	0.09
O64	0.11	0.09	0.15	0.16	0.23	0.02	0.19	0.05	0.09	0.09	0.12	0.11
O65	0.07	0.12	0.11	0.09	0.20	0.04	0.17	0.06	0.09	0.17	0.11	0.12
O66	0.12	0.08	0.09	0.06	0.22	0.20	0.11	0.04	0.18	0.16	0.12	0.14
O67	0.05	0.02	0.02	0.01	0.01	0.04	0.06	0.07	0.21	0.12	0.05	0.09
O68	0.07	0.05	0.07	0.04	0.05	0.07	0.10	0.13	0.29	0.18	0.09	0.15
O69	0.07	0.03	0.05	0.04	0.05	0.08	0.01	0.15	0.26	0.06	0.08	0.11
O70	0.03	0.11	0.14	0.18	0.33	0.22	0.21	0.13	0.19	0.24	0.18	0.21
O71	0.05	0.11	0.10	0.16	0.17	0.15	0.09	0.08	0.29	0.28	0.15	0.19
O72	0.08	0.07	0.17	0.25	0.32	0.26	0.15	0.04	0.20	0.25	0.19	0.20
O73	0.05	0.08	0.18	0.09	0.14	0.17	0.06	0.04	0.06	0.03	0.10	0.07
O74	0.09	0.09	0.14	0.13	0.19	0.17	0.19	0.05	0.12	0.14	0.13	0.13
O75	0.05	0.13	0.01	0.01	0.14	0.10	0.11	0.12	0.31	0.37	0.12	0.20
O76	0.03	0.11	0.20	0.27	0.44	0.22	0.06	0.12	0.11	0.12	0.20	0.17
O77	0.12	0.13	0.15	0.25	0.32	0.21	0.22	0.13	0.26	0.38	0.22	0.26
O78	0.03	0.08	0.06	0.28	0.26	0.17	0.24	0.21	0.35	0.38	0.20	0.29
O79	0.07	0.15	0.06	0.29	0.29	0.19	0.18	0.16	0.27	0.35	0.21	0.26
O80	0.05	0.16	0.11	0.34	0.38	0.20	0.18	0.21	0.27	0.29	0.24	0.27
O81	0.02	0.09	0.06	0.05	0.11	0.18	0.19	0.28	0.41	0.41	0.15	0.27
O82	0.05	0.15	0.07	0.07	0.07	0.06	0.05	0.14	0.09	0.25	0.10	0.12
O83	0.07	0.12	0.04	0.02	0.07	0.08	0.07	0.16	0.21	0.12	0.09	0.12
O84	0.07	0.09	0.08	0.10	0.15	0.16	0.15	0.05	0.13	0.21	0.11	0.14
O85	0.04	0.07	0.16	0.09	0.13	0.04	0.02	0.06	0.10	0.15	0.10	0.09
O86	0.03	0.03	0.02	0.03	0.10	0.09	0.09	0.13	0.19	0.09	0.07	0.11
O87	0.13	0.04	0.03	0.01	0.05	0.10	0.08	0.05	0.18	0.16	0.07	0.11
O88	0.04	0.03	0.04	0.04	0.06	0.15	0.08	0.02	0.02	0.17	0.06	0.08
O89	0.01	0.02	0.08	0.08	0.14	0.11	0.19	0.16	0.02	0.22	0.09	0.13
O90	0.07	0.06	0.05	0.13	0.17	0.17	0.13	0.06	0.26	0.28	0.13	0.18
O91	0.02	0.07	0.08	0.12	0.22	0.18	0.03	0.29	0.38	0.29	0.17	0.25
O92	0.04	0.04	0.04	0.13	0.36	0.13	0.30	0.25	0.21	0.15	0.15	0.21
O93	0.03	0.10	0.06	0.01	0.06	0.03	0.13	0.09	0.07	0.09	0.06	0.07
O94	0.09	0.12	0.06	0.12	0.32	0.36	0.34	0.25	0.06	0.07	0.15	0.18
O95	0.08	0.05	0.18	0.21	0.23	0.18	0.33	0.10	0.08	0.16	0.15	0.16
O96	0.17	0.16	0.16	0.14	0.34	0.37	0.22	0.07	0.08	0.07	0.17	0.15

O97	0.09	0.04	0.10	0.17	0.33	0.30	0.26	0.07	0.19	0.11	0.16	0.18
O98	0.04	0.12	0.21	0.24	0.32	0.24	0.23	0.09	0.13	0.14	0.18	0.18
O99	0.05	0.11	0.21	0.29	0.34	0.27	0.20	0.07	0.23	0.06	0.20	0.18
O100	0.05	0.17	0.19	0.10	0.11	0.06	0.02	0.04	0.11	0.22	0.12	0.11
O101	0.24	0.10	0.15	0.15	0.13	0.15	0.21	0.13	0.16	0.13	0.15	0.15
O102	0.11	0.08	0.15	0.12	0.33	0.36	0.20	0.02	0.02	0.04	0.14	0.11
O103	0.04	0.06	0.10	0.23	0.34	0.33	0.22	0.03	0.09	0.12	0.16	0.16
O104	0.05	0.07	0.15	0.14	0.36	0.36	0.18	0.04	0.29	0.18	0.18	0.21
O105	0.08	0.08	0.14	0.14	0.20	0.03	0.04	0.12	0.25	0.11	0.13	0.14
O106	0.06	0.11	0.16	0.25	0.39	0.34	0.11	0.11	0.08	0.07	0.19	0.16
O107	0.13	0.14	0.18	0.22	0.22	0.04	0.02	0.15	0.09	0.11	0.16	0.12
O108	0.03	0.07	0.03	0.06	0.11	0.08	0.05	0.07	0.17	0.15	0.08	0.11
O109	0.03	0.07	0.07	0.14	0.15	0.08	0.03	0.15	0.17	0.10	0.11	0.12
O110	0.02	0.06	0.08	0.13	0.14	0.16	0.08	0.20	0.09	0.06	0.11	0.12
O111	0.07	0.09	0.10	0.07	0.07	0.03	0.09	0.28	0.32	0.28	0.13	0.20
O112	0.14	0.17	0.16	0.10	0.18	0.09	0.04	0.05	0.11	0.21	0.13	0.12
O113	0.22	0.11	0.05	0.15	0.14	0.09	0.21	0.25	0.30	0.34	0.17	0.24
O114	0.12	0.05	0.12	0.06	0.26	0.13	0.16	0.15	0.30	0.23	0.14	0.20
O115	0.18	0.14	0.18	0.25	0.19	0.06	0.08	0.07	0.06	0.05	0.15	0.09
O116	0.13	0.02	0.12	0.16	0.05	0.11	0.06	0.10	0.11	0.03	0.10	0.08
O117	0.16	0.07	0.07	0.07	0.04	0.06	0.06	0.06	0.06	0.05	0.07	0.06
O118	0.06	0.07	0.13	0.11	0.24	0.10	0.16	0.12	0.08	0.16	0.12	0.13
O119	0.02	0.04	0.10	0.06	0.06	0.07	0.13	0.13	0.10	0.05	0.07	0.09
O120	0.04	0.07	0.15	0.11	0.19	0.08	0.03	0.02	0.12	0.16	0.11	0.10
O121	0.05	0.03	0.05	0.07	0.04	0.05	0.14	0.14	0.09	0.01	0.06	0.07
O122	0.11	0.11	0.06	0.16	0.06	0.08	0.07	0.04	0.14	0.20	0.11	0.12
O123	0.18	0.12	0.09	0.13	0.14	0.10	0.13	0.20	0.12	0.12	0.13	0.14
O124	0.09	0.14	0.04	0.06	0.24	0.15	0.04	0.06	0.14	0.23	0.12	0.14
O125	0.04	0.29	0.33	0.38	0.16	0.12	0.04	0.18	0.10	0.25	0.23	0.18
O126	0.06	0.05	0.06	0.05	0.13	0.09	0.14	0.13	0.15	0.18	0.09	0.13
O127	0.09	0.06	0.09	0.09	0.12	0.09	0.18	0.21	0.13	0.05	0.10	0.12
O128	0.16	0.07	0.03	0.08	0.06	0.08	0.18	0.22	0.19	0.08	0.10	0.14
O129	0.20	0.04	0.04	0.03	0.10	0.09	0.10	0.22	0.17	0.06	0.09	0.12
O130	0.08	0.26	0.29	0.31	0.15	0.11	0.06	0.19	0.01	0.07	0.19	0.11
O131	0.12	0.07	0.25	0.07	0.11	0.09	0.02	0.08	0.09	0.27	0.12	0.12
O132	0.31	0.19	0.13	0.13	0.13	0.11	0.07	0.08	0.15	0.22	0.16	0.14
O133	0.31	0.13	0.04	0.10	0.16	0.09	0.03	0.12	0.16	0.26	0.14	0.15
O134	0.29	0.16	0.06	0.12	0.06	0.06	0.00	0.13	0.20	0.31	0.14	0.16
O135	0.35	0.30	0.22	0.14	0.17	0.17	0.18	0.14	0.26	0.35	0.22	0.22
O136	0.29	0.34	0.17	0.23	0.15	0.20	0.22	0.20	0.24	0.39	0.24	0.25
O137	0.32	0.15	0.02	0.15	0.07	0.07	0.01	0.14	0.18	0.30	0.15	0.16
O138	0.32	0.33	0.18	0.18	0.19	0.13	0.07	0.12	0.21	0.27	0.21	0.18
O139	0.32	0.27	0.18	0.13	0.16	0.09	0.02	0.16	0.22	0.33	0.20	0.18
O140	0.35	0.34	0.27	0.21	0.22	0.14	0.06	0.13	0.28	0.40	0.26	0.23
O141	0.26	0.09	0.07	0.16	0.15	0.14	0.11	0.18	0.25	0.37	0.17	0.22
O142	0.35	0.36	0.33	0.29	0.16	0.17	0.21	0.22	0.34	0.41	0.29	0.28
O143	0.29	0.28	0.27	0.29	0.18	0.14	0.20	0.19	0.09	0.22	0.23	0.18
O144	0.32	0.34	0.32	0.35	0.22	0.29	0.26	0.11	0.27	0.24	0.29	0.24
O145	0.34	0.35	0.34	0.42	0.23	0.36	0.28	0.16	0.27	0.41	0.33	0.30
O146	0.32	0.34	0.29	0.37	0.21	0.32	0.24	0.16	0.15	0.30	0.29	0.24

O147	0.33	0.34	0.30	0.39	0.25	0.19	0.17	0.14	0.17	0.30	0.29	0.23
O148	0.33	0.33	0.30	0.40	0.26	0.25	0.19	0.17	0.41	0.40	0.33	0.31
O149	0.32	0.34	0.35	0.35	0.22	0.18	0.16	0.11	0.27	0.34	0.29	0.24
O150	0.34	0.35	0.38	0.26	0.17	0.22	0.14	0.07	0.38	0.30	0.28	0.24
O151	0.35	0.35	0.30	0.42	0.26	0.22	0.16	0.14	0.22	0.31	0.31	0.25
O152	0.35	0.36	0.35	0.41	0.29	0.27	0.18	0.18	0.24	0.23	0.32	0.25
O153	0.31	0.33	0.35	0.37	0.24	0.23	0.18	0.18	0.38	0.38	0.32	0.30
O154	0.31	0.33	0.36	0.28	0.22	0.17	0.13	0.13	0.25	0.20	0.26	0.20
O155	0.33	0.34	0.28	0.40	0.26	0.24	0.21	0.21	0.42	0.41	0.33	0.32
O156	0.35	0.35	0.33	0.37	0.28	0.21	0.23	0.22	0.43	0.37	0.33	0.32
O157	0.32	0.33	0.31	0.40	0.25	0.21	0.19	0.19	0.40	0.41	0.33	0.31
O158	0.36	0.38	0.33	0.41	0.29	0.15	0.22	0.19	0.32	0.38	0.33	0.29
O159	0.34	0.36	0.29	0.36	0.31	0.35	0.23	0.19	0.28	0.34	0.32	0.29
O160	0.33	0.35	0.35	0.41	0.25	0.12	0.21	0.19	0.32	0.36	0.32	0.28
O161	0.31	0.34	0.37	0.34	0.24	0.14	0.16	0.11	0.20	0.32	0.28	0.22
O162	0.36	0.37	0.31	0.40	0.30	0.15	0.24	0.22	0.39	0.45	0.34	0.33
O163	0.36	0.37	0.35	0.33	0.30	0.25	0.25	0.23	0.45	0.47	0.34	0.35
O164	0.34	0.36	0.31	0.31	0.38	0.41	0.23	0.19	0.30	0.39	0.33	0.31
O165	0.36	0.37	0.35	0.40	0.39	0.45	0.25	0.18	0.36	0.47	0.37	0.36
O166	0.34	0.36	0.36	0.38	0.28	0.33	0.21	0.20	0.23	0.35	0.33	0.28
O167	0.34	0.36	0.39	0.42	0.28	0.21	0.18	0.16	0.25	0.29	0.32	0.25
O168	0.35	0.37	0.35	0.42	0.37	0.47	0.25	0.22	0.34	0.46	0.38	0.36
O169	0.34	0.35	0.38	0.39	0.28	0.37	0.20	0.18	0.22	0.34	0.33	0.27
O170	0.34	0.34	0.33	0.33	0.26	0.19	0.10	0.14	0.19	0.30	0.28	0.22
O171	0.32	0.33	0.37	0.25	0.19	0.16	0.16	0.02	0.11	0.19	0.23	0.15
O172	0.31	0.32	0.26	0.29	0.29	0.32	0.16	0.17	0.18	0.22	0.27	0.22
O173	0.34	0.33	0.40	0.29	0.21	0.35	0.19	0.21	0.30	0.32	0.31	0.27
O174	0.35	0.37	0.31	0.34	0.38	0.44	0.22	0.21	0.23	0.35	0.33	0.30
O175	0.34	0.35	0.34	0.29	0.30	0.44	0.35	0.20	0.40	0.32	0.33	0.33
O176	0.33	0.29	0.28	0.31	0.25	0.37	0.22	0.11	0.16	0.31	0.27	0.23
O177	0.35	0.36	0.38	0.31	0.28	0.39	0.33	0.17	0.25	0.37	0.32	0.29
P1	0.25	0.24	0.31	0.21	0.23	0.43	0.15	0.08	0.04	0.12	0.22	0.15
P2	0.06	0.23	0.37	0.11	0.11	0.19	0.22	0.09	0.05	0.03	0.15	0.10
P3	0.11	0.26	0.23	0.23	0.11	0.07	0.21	0.07	0.03	0.06	0.15	0.10
P4	0.36	0.34	0.14	0.18	0.08	0.06	0.23	0.08	0.10	0.02	0.16	0.10
P5	0.22	0.23	0.08	0.21	0.25	0.31	0.25	0.07	0.05	0.07	0.17	0.14
P6	0.13	0.04	0.07	0.11	0.25	0.30	0.29	0.05	0.06	0.05	0.12	0.13
P7	0.35	0.25	0.21	0.14	0.26	0.35	0.21	0.28	0.33	0.20	0.24	0.25
P8	0.33	0.19	0.25	0.22	0.21	0.28	0.19	0.20	0.22	0.16	0.23	0.21
P9	0.33	0.21	0.22	0.26	0.16	0.18	0.25	0.30	0.23	0.12	0.23	0.21
P10	0.03	0.13	0.32	0.27	0.18	0.15	0.06	0.09	0.09	0.15	0.18	0.13
P11	0.03	0.13	0.15	0.20	0.21	0.15	0.12	0.06	0.05	0.09	0.13	0.11
P12	0.14	0.06	0.16	0.18	0.16	0.16	0.19	0.12	0.04	0.17	0.14	0.13
P13	0.22	0.11	0.16	0.21	0.18	0.17	0.21	0.08	0.07	0.03	0.15	0.11
P14	0.22	0.20	0.11	0.21	0.16	0.11	0.22	0.11	0.16	0.14	0.17	0.16
P15	0.06	0.04	0.07	0.09	0.10	0.04	0.05	0.11	0.23	0.12	0.09	0.12
P16	0.10	0.08	0.08	0.12	0.10	0.02	0.04	0.08	0.25	0.14	0.11	0.13
P17	0.13	0.11	0.11	0.09	0.07	0.03	0.03	0.09	0.26	0.12	0.11	0.12
P18	0.08	0.12	0.19	0.07	0.18	0.13	0.14	0.10	0.27	0.04	0.13	0.13
P19	0.07	0.07	0.13	0.11	0.12	0.05	0.10	0.10	0.20	0.05	0.10	0.11

P20	0.09	0.20	0.09	0.12	0.14	0.15	0.12	0.07	0.13	0.16	0.13	0.13
P21	0.08	0.19	0.13	0.09	0.20	0.21	0.19	0.10	0.14	0.24	0.14	0.17
P22	0.08	0.04	0.10	0.10	0.23	0.22	0.15	0.06	0.19	0.21	0.13	0.16
P23	0.11	0.07	0.11	0.09	0.24	0.19	0.08	0.02	0.03	0.26	0.12	0.12
P24	0.06	0.13	0.16	0.08	0.26	0.16	0.16	0.15	0.19	0.35	0.16	0.21
P25	0.05	0.19	0.07	0.13	0.26	0.15	0.13	0.15	0.21	0.19	0.15	0.18
P26	0.05	0.05	0.03	0.07	0.23	0.13	0.07	0.04	0.12	0.20	0.10	0.13
P27	0.04	0.04	0.10	0.07	0.24	0.15	0.12	0.09	0.10	0.11	0.10	0.12
P28	0.07	0.07	0.13	0.12	0.23	0.15	0.14	0.13	0.16	0.09	0.13	0.14
P29	0.08	0.04	0.05	0.14	0.22	0.13	0.17	0.07	0.09	0.08	0.10	0.11
P30	0.06	0.07	0.16	0.21	0.29	0.27	0.29	0.13	0.29	0.09	0.18	0.21
P31	0.09	0.07	0.11	0.06	0.04	0.03	0.12	0.17	0.11	0.17	0.09	0.11
P32	0.17	0.04	0.06	0.04	0.05	0.02	0.18	0.21	0.26	0.21	0.10	0.17
P33	0.06	0.03	0.07	0.03	0.06	0.05	0.16	0.22	0.26	0.08	0.08	0.14
P34	0.30	0.32	0.31	0.35	0.10	0.08	0.07	0.18	0.23	0.20	0.25	0.19
P35	0.24	0.37	0.37	0.37	0.17	0.13	0.10	0.14	0.08	0.15	0.25	0.15
P36	0.31	0.31	0.33	0.33	0.19	0.14	0.21	0.16	0.04	0.25	0.25	0.18
P37	0.33	0.34	0.36	0.28	0.17	0.26	0.13	0.07	0.33	0.27	0.27	0.22
P38	0.33	0.35	0.37	0.25	0.17	0.18	0.12	0.08	0.36	0.23	0.26	0.21
P39	0.34	0.36	0.39	0.24	0.17	0.13	0.10	0.15	0.28	0.18	0.25	0.19
P40	0.31	0.33	0.36	0.25	0.22	0.17	0.14	0.09	0.19	0.25	0.25	0.19
P41	0.31	0.33	0.37	0.30	0.22	0.21	0.12	0.13	0.18	0.30	0.27	0.21
P42	0.31	0.34	0.38	0.33	0.23	0.13	0.15	0.06	0.18	0.30	0.27	0.20
P43	0.33	0.35	0.39	0.36	0.20	0.11	0.16	0.12	0.15	0.29	0.28	0.20
P44	0.34	0.36	0.39	0.40	0.25	0.15	0.19	0.14	0.19	0.28	0.30	0.23
P45	0.33	0.35	0.35	0.33	0.18	0.12	0.16	0.13	0.33	0.31	0.28	0.24
P46	0.33	0.33	0.30	0.32	0.16	0.10	0.14	0.12	0.17	0.27	0.25	0.19
P47	0.33	0.34	0.35	0.25	0.12	0.06	0.07	0.10	0.13	0.25	0.23	0.15
P48	0.34	0.36	0.38	0.21	0.10	0.07	0.09	0.07	0.12	0.14	0.21	0.12
P49	0.28	0.28	0.10	0.11	0.03	0.05	0.01	0.04	0.07	0.14	0.12	0.07
P50	0.11	0.10	0.26	0.18	0.12	0.04	0.13	0.03	0.04	0.03	0.12	0.07
S1	0.27	0.25	0.21	0.15	0.24	0.33	0.23	0.22	0.35	0.17	0.23	0.24
S2	0.05	0.06	0.07	0.20	0.21	0.20	0.16	0.04	0.05	0.13	0.12	0.12
S3	0.03	0.10	0.12	0.17	0.22	0.22	0.18	0.05	0.08	0.14	0.13	0.13
S4	0.04	0.12	0.15	0.10	0.04	0.14	0.10	0.04	0.04	0.05	0.09	0.06
S5	0.18	0.08	0.15	0.18	0.14	0.17	0.20	0.15	0.15	0.10	0.15	0.14
S6	0.02	0.06	0.08	0.08	0.08	0.11	0.04	0.03	0.14	0.01	0.07	0.07
S7	0.19	0.27	0.15	0.24	0.05	0.12	0.06	0.05	0.07	0.08	0.15	0.09
S8	0.12	0.26	0.23	0.28	0.17	0.16	0.21	0.06	0.12	0.08	0.19	0.14
S9	0.22	0.22	0.11	0.19	0.17	0.15	0.24	0.14	0.20	0.10	0.17	0.17
S10	0.32	0.21	0.09	0.32	0.16	0.12	0.13	0.13	0.15	0.13	0.20	0.16
S11	0.26	0.29	0.23	0.25	0.17	0.11	0.10	0.08	0.04	0.12	0.19	0.11
S12	0.29	0.34	0.04	0.25	0.07	0.09	0.11	0.06	0.04	0.11	0.16	0.10
S13	0.33	0.26	0.07	0.20	0.06	0.13	0.07	0.03	0.05	0.10	0.14	0.08
S14	0.16	0.08	0.05	0.16	0.08	0.11	0.06	0.14	0.01	0.07	0.10	0.08
S15	0.02	0.06	0.04	0.03	0.05	0.07	0.09	0.05	0.13	0.11	0.06	0.09
S16	0.27	0.23	0.09	0.10	0.18	0.11	0.09	0.08	0.09	0.07	0.13	0.09
S17	0.07	0.03	0.10	0.05	0.10	0.13	0.01	0.09	0.19	0.12	0.09	0.11
S18	0.08	0.16	0.09	0.03	0.08	0.10	0.15	0.01	0.09	0.06	0.07	0.07
S19	0.09	0.06	0.09	0.11	0.14	0.03	0.13	0.04	0.03	0.07	0.08	0.07

S20	0.21	0.05	0.02	0.11	0.03	0.01	0.03	0.03	0.02	0.04	0.06	0.04
S21	0.10	0.07	0.06	0.09	0.04	0.09	0.04	0.03	0.06	0.05	0.06	0.05
S22	0.14	0.02	0.18	0.04	0.08	0.05	0.15	0.05	0.11	0.05	0.08	0.08
S23	0.28	0.06	0.16	0.07	0.07	0.07	0.05	0.03	0.16	0.05	0.10	0.08
S24	0.06	0.28	0.18	0.13	0.04	0.05	0.01	0.04	0.04	0.05	0.11	0.05
S25	0.34	0.30	0.08	0.09	0.07	0.04	0.01	0.04	0.09	0.10	0.13	0.07
S26	0.26	0.11	0.09	0.06	0.09	0.03	0.02	0.05	0.08	0.03	0.09	0.05
S27	0.07	0.06	0.17	0.05	0.01	0.08	0.16	0.09	0.11	0.06	0.08	0.08
S28	0.02	0.04	0.14	0.02	0.01	0.07	0.22	0.12	0.10	0.07	0.06	0.09
S29	0.06	0.07	0.04	0.03	0.05	0.16	0.15	0.07	0.07	0.12	0.07	0.09
S30	0.04	0.05	0.04	0.05	0.03	0.15	0.15	0.03	0.06	0.09	0.06	0.07
S31	0.26	0.26	0.09	0.10	0.07	0.12	0.19	0.05	0.09	0.04	0.12	0.09
S32	0.06	0.13	0.11	0.21	0.08	0.23	0.21	0.09	0.19	0.13	0.14	0.16

Appendix D – Detailed Velocity Ratio for Each Test Point for Proposed Scheme

Proposed Scheme

	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	Annual	Summer
Annual	7.2%	9.8%	10.2%	18.1%	9.8%	6.7%		7.0%	7.7%	6.7%	83.2%	
Summer				8.1%	7.8%	6.6%	8.2%	12.9%	16.5%	16.3%		76.4%
O1	0.31	0.41	0.36	0.19	0.22	0.28	0.22	0.23	0.34	0.30	0.29	0.27
O2	0.24	0.31	0.32	0.20	0.10	0.15	0.11	0.17	0.37	0.30	0.23	0.23
O3	0.32	0.33	0.31	0.45	0.11	0.12	0.14	0.22	0.39	0.32	0.31	0.27
O4	0.32	0.35	0.34	0.38	0.06	0.06	0.15	0.27	0.39	0.31	0.29	0.26
O5	0.29	0.36	0.33	0.30	0.03	0.11	0.12	0.25	0.36	0.31	0.26	0.24
O6	0.34	0.39	0.37	0.11	0.17	0.26	0.14	0.17	0.36	0.24	0.25	0.22
O7	0.36	0.37	0.31	0.28	0.21	0.35	0.22	0.20	0.33	0.29	0.30	0.27
O8	0.36	0.34	0.28	0.25	0.09	0.41	0.19	0.21	0.28	0.32	0.27	0.26
O9	0.38	0.37	0.35	0.21	0.18	0.28	0.19	0.18	0.28	0.26	0.27	0.23
O10	0.35	0.37	0.39	0.18	0.13	0.18	0.16	0.26	0.22	0.20	0.25	0.20
O11	0.33	0.38	0.33	0.37	0.11	0.14	0.18	0.28	0.30	0.30	0.29	0.26
O12	0.33	0.38	0.37	0.24	0.07	0.09	0.20	0.31	0.37	0.31	0.27	0.26
O13	0.34	0.42	0.36	0.29	0.07	0.06	0.30	0.31	0.19	0.30	0.27	0.23
O14	0.29	0.37	0.39	0.32	0.11	0.11	0.20	0.30	0.14	0.13	0.26	0.18
O15	0.30	0.34	0.38	0.16	0.14	0.18	0.15	0.29	0.15	0.21	0.23	0.19
O16	0.35	0.35	0.28	0.27	0.25	0.35	0.22	0.18	0.21	0.31	0.28	0.25
O17	0.29	0.38	0.36	0.29	0.17	0.43	0.19	0.20	0.24	0.27	0.29	0.25
O18	0.14	0.26	0.32	0.35	0.25	0.31	0.16	0.16	0.11	0.10	0.24	0.18
O19	0.14	0.26	0.34	0.27	0.23	0.40	0.23	0.24	0.25	0.28	0.27	0.27
O20	0.23	0.34	0.29	0.25	0.19	0.30	0.16	0.30	0.20	0.28	0.26	0.24
O21	0.16	0.30	0.37	0.19	0.10	0.13	0.21	0.29	0.18	0.24	0.22	0.21
O22	0.17	0.33	0.39	0.32	0.08	0.10	0.25	0.27	0.03	0.04	0.22	0.14
O23	0.23	0.40	0.34	0.28	0.16	0.11	0.31	0.31	0.14	0.26	0.26	0.23
O24	0.31	0.29	0.23	0.25	0.09	0.12	0.19	0.14	0.32	0.25	0.23	0.21
O25	0.12	0.15	0.25	0.26	0.19	0.29	0.10	0.20	0.30	0.30	0.23	0.24
O26	0.15	0.27	0.33	0.27	0.26	0.35	0.16	0.29	0.25	0.30	0.27	0.27
O27	0.35	0.27	0.16	0.08	0.25	0.35	0.23	0.24	0.30	0.25	0.22	0.25
O28	0.30	0.22	0.06	0.13	0.14	0.14	0.26	0.29	0.42	0.30	0.20	0.27
O29	0.25	0.19	0.04	0.20	0.19	0.34	0.25	0.25	0.28	0.13	0.20	0.23
O30	0.29	0.15	0.03	0.14	0.12	0.25	0.15	0.21	0.46	0.28	0.19	0.26
O31	0.27	0.15	0.05	0.06	0.15	0.19	0.02	0.04	0.42	0.04	0.14	0.15
O32	0.25	0.11	0.03	0.11	0.15	0.08	0.07	0.10	0.40	0.09	0.14	0.16
O33	0.06	0.04	0.03	0.12	0.12	0.26	0.10	0.05	0.03	0.11	0.09	0.10
O34	0.12	0.11	0.06	0.12	0.07	0.19	0.08	0.18	0.03	0.14	0.11	0.11
O35	0.06	0.06	0.12	0.10	0.05	0.45	0.20	0.14	0.14	0.16	0.13	0.16
O36	0.09	0.11	0.03	0.06	0.08	0.21	0.07	0.03	0.08	0.08	0.08	0.08
O37	0.07	0.03	0.05	0.07	0.05	0.09	0.13	0.17	0.21	0.26	0.10	0.16
O38	0.11	0.10	0.09	0.05	0.08	0.05	0.06	0.06	0.09	0.16	0.08	0.09
O39	0.11	0.17	0.14	0.14	0.13	0.11	0.15	0.13	0.08	0.12	0.13	0.12
O40	0.09	0.03	0.06	0.06	0.30	0.24	0.26	0.16	0.09	0.10	0.12	0.16
O41	0.27	0.23	0.23	0.19	0.32	0.21	0.19	0.03	0.02	0.06	0.19	0.11
O42	0.22	0.22	0.27	0.22	0.15	0.12	0.18	0.08	0.04	0.16	0.18	0.12
O43	0.28	0.16	0.26	0.21	0.14	0.14	0.17	0.10	0.04	0.11	0.17	0.11
O44	0.13	0.09	0.08	0.22	0.06	0.13	0.20	0.17	0.19	0.09	0.14	0.15
O45	0.20	0.16	0.09	0.15	0.18	0.06	0.05	0.15	0.16	0.07	0.14	0.12
O46	0.11	0.24	0.14	0.06	0.26	0.24	0.16	0.08	0.06	0.26	0.15	0.15

O47	0.19	0.29	0.07	0.06	0.35	0.26	0.23	0.19	0.10	0.37	0.19	0.22
O48	0.07	0.27	0.13	0.05	0.20	0.24	0.22	0.19	0.14	0.34	0.17	0.21
O49	0.06	0.22	0.09	0.12	0.21	0.16	0.16	0.09	0.08	0.10	0.13	0.12
O50	0.06	0.17	0.22	0.06	0.16	0.17	0.20	0.10	0.05	0.17	0.12	0.12
O51	0.19	0.19	0.10	0.05	0.12	0.13	0.15	0.08	0.19	0.05	0.12	0.11
O52	0.04	0.23	0.08	0.04	0.29	0.19	0.08	0.03	0.02	0.23	0.12	0.12
O53	0.08	0.13	0.17	0.30	0.37	0.27	0.22	0.05	0.07	0.21	0.20	0.18
O54	0.13	0.13	0.17	0.24	0.13	0.14	0.15	0.02	0.04	0.09	0.14	0.10
O55	0.07	0.04	0.08	0.17	0.08	0.08	0.12	0.05	0.01	0.10	0.09	0.08
O56	0.13	0.28	0.01	0.02	0.29	0.25	0.22	0.19	0.10	0.36	0.16	0.21
O57	0.07	0.24	0.22	0.25	0.25	0.18	0.22	0.05	0.09	0.08	0.18	0.14
O58	0.15	0.16	0.24	0.28	0.24	0.17	0.10	0.03	0.04	0.07	0.17	0.11
O59	0.07	0.11	0.14	0.16	0.10	0.10	0.07	0.03	0.05	0.08	0.10	0.08
O60	0.10	0.16	0.08	0.10	0.02	0.07	0.09	0.04	0.07	0.06	0.08	0.06
O61	0.14	0.11	0.03	0.03	0.09	0.04	0.08	0.08	0.08	0.10	0.07	0.08
O62	0.10	0.05	0.09	0.16	0.10	0.09	0.14	0.04	0.13	0.16	0.11	0.12
O63	0.22	0.13	0.28	0.18	0.24	0.04	0.03	0.09	0.11	0.05	0.16	0.10
O64	0.14	0.05	0.22	0.18	0.22	0.02	0.17	0.06	0.13	0.14	0.14	0.13
O65	0.18	0.15	0.13	0.10	0.16	0.04	0.14	0.02	0.17	0.19	0.13	0.13
O66	0.20	0.15	0.08	0.03	0.09	0.14	0.07	0.13	0.20	0.20	0.12	0.14
O67	0.19	0.09	0.14	0.11	0.23	0.09	0.04	0.10	0.14	0.27	0.15	0.15
O68	0.16	0.16	0.13	0.07	0.16	0.08	0.07	0.13	0.21	0.31	0.15	0.17
O69	0.04	0.05	0.04	0.08	0.21	0.17	0.11	0.05	0.14	0.06	0.09	0.11
O70	0.11	0.19	0.18	0.20	0.34	0.22	0.21	0.10	0.22	0.20	0.20	0.20
O71	0.20	0.16	0.14	0.18	0.16	0.11	0.08	0.08	0.31	0.26	0.18	0.19
O72	0.03	0.04	0.17	0.25	0.30	0.23	0.13	0.09	0.22	0.22	0.18	0.20
O73	0.17	0.15	0.13	0.07	0.14	0.14	0.04	0.03	0.05	0.10	0.11	0.08
O74	0.16	0.17	0.16	0.11	0.15	0.11	0.15	0.08	0.16	0.16	0.14	0.13
O75	0.16	0.23	0.05	0.03	0.14	0.11	0.09	0.08	0.32	0.32	0.14	0.19
O76	0.15	0.12	0.19	0.25	0.42	0.23	0.02	0.07	0.07	0.13	0.20	0.15
O77	0.12	0.17	0.16	0.27	0.35	0.23	0.21	0.15	0.28	0.38	0.24	0.28
O78	0.08	0.21	0.15	0.31	0.27	0.19	0.24	0.21	0.34	0.38	0.24	0.29
O79	0.14	0.12	0.13	0.28	0.31	0.20	0.18	0.16	0.28	0.35	0.22	0.26
O80	0.13	0.06	0.13	0.33	0.40	0.22	0.19	0.19	0.26	0.28	0.23	0.26
O81	0.08	0.08	0.06	0.03	0.08	0.14	0.22	0.25	0.32	0.31	0.13	0.22
O82	0.07	0.08	0.13	0.10	0.05	0.04	0.04	0.08	0.03	0.15	0.09	0.08
O83	0.18	0.28	0.14	0.09	0.11	0.11	0.06	0.12	0.20	0.17	0.15	0.14
O84	0.02	0.01	0.19	0.11	0.07	0.12	0.16	0.12	0.18	0.27	0.12	0.16
O85	0.06	0.08	0.03	0.15	0.05	0.07	0.06	0.06	0.07	0.17	0.09	0.10
O86	0.03	0.03	0.18	0.04	0.04	0.07	0.05	0.12	0.16	0.17	0.09	0.11
O87	0.02	0.09	0.13	0.03	0.02	0.03	0.03	0.03	0.05	0.18	0.06	0.07
O88	0.06	0.08	0.26	0.06	0.06	0.11	0.06	0.03	0.05	0.11	0.09	0.07
O89	0.08	0.02	0.09	0.11	0.14	0.09	0.16	0.13	0.03	0.21	0.10	0.12
O90	0.15	0.11	0.05	0.14	0.19	0.16	0.15	0.03	0.24	0.24	0.14	0.17
O91	0.06	0.19	0.06	0.10	0.21	0.19	0.06	0.25	0.34	0.22	0.17	0.22
O92	0.04	0.16	0.04	0.12	0.34	0.14	0.29	0.24	0.21	0.22	0.16	0.22
O93	0.10	0.01	0.10	0.04	0.07	0.01	0.08	0.06	0.03	0.09	0.06	0.06
O94	0.11	0.04	0.16	0.13	0.35	0.30	0.34	0.23	0.03	0.08	0.16	0.17
O95	0.13	0.14	0.13	0.20	0.18	0.21	0.12	0.23	0.26	0.08	0.17	0.18
O96	0.10	0.10	0.18	0.16	0.37	0.34	0.25	0.10	0.06	0.02	0.16	0.14

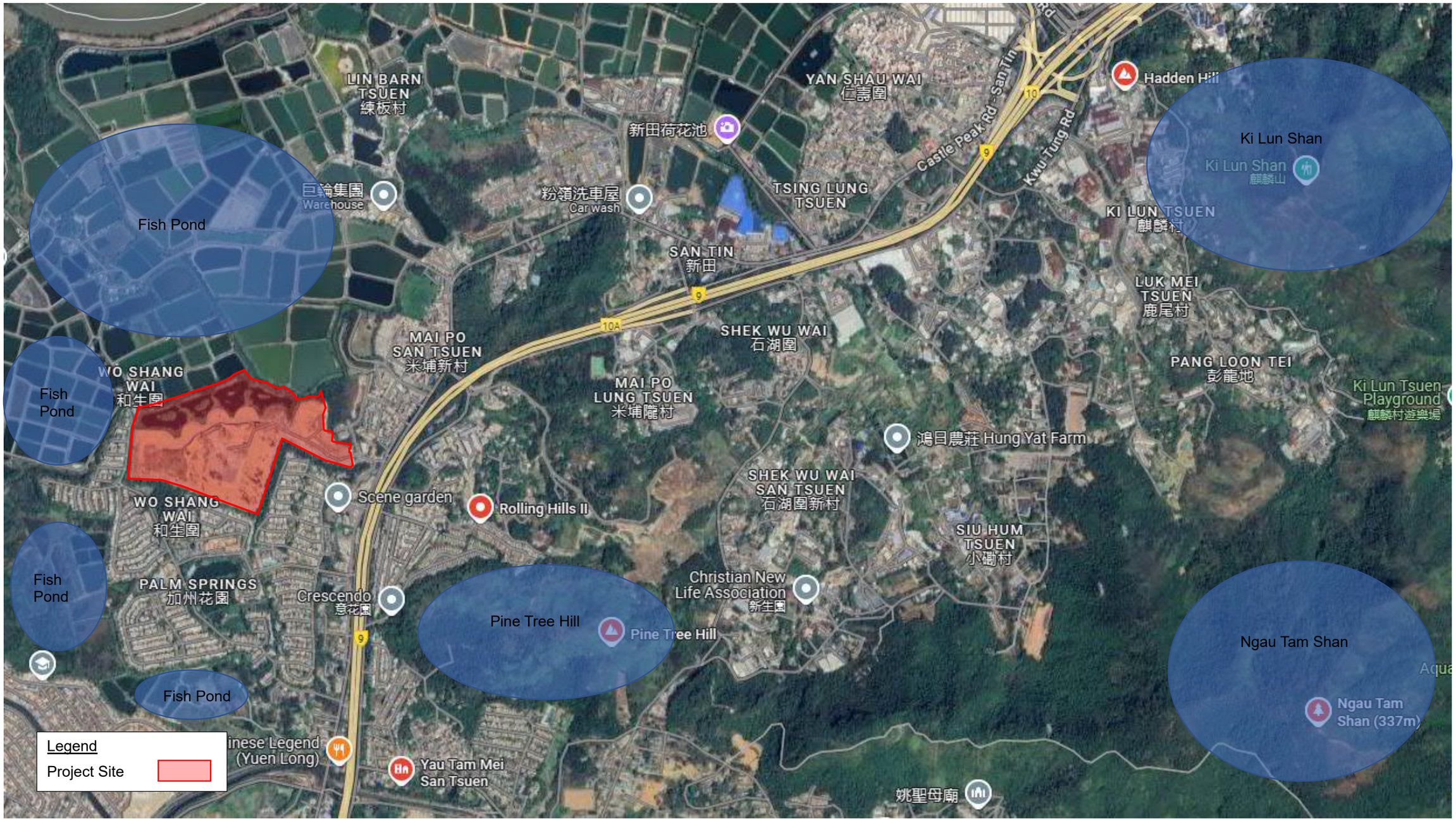
O97	0.14	0.18	0.12	0.21	0.33	0.18	0.23	0.11	0.09	0.05	0.17	0.14
O98	0.09	0.17	0.14	0.26	0.31	0.24	0.28	0.24	0.04	0.12	0.19	0.18
O99	0.12	0.02	0.06	0.16	0.18	0.16	0.16	0.11	0.19	0.09	0.12	0.15
O100	0.07	0.05	0.07	0.03	0.13	0.14	0.04	0.14	0.12	0.23	0.10	0.13
O101	0.20	0.08	0.04	0.04	0.16	0.16	0.17	0.11	0.13	0.13	0.10	0.13
O102	0.13	0.18	0.18	0.13	0.34	0.31	0.24	0.10	0.06	0.01	0.16	0.13
O103	0.10	0.15	0.10	0.26	0.35	0.22	0.24	0.13	0.10	0.08	0.18	0.17
O104	0.12	0.19	0.20	0.16	0.36	0.33	0.19	0.09	0.14	0.14	0.19	0.18
O105	0.07	0.04	0.10	0.14	0.21	0.03	0.06	0.02	0.22	0.10	0.11	0.12
O106	0.09	0.17	0.12	0.30	0.40	0.28	0.26	0.14	0.09	0.06	0.20	0.18
O107	0.08	0.05	0.08	0.20	0.19	0.09	0.10	0.10	0.06	0.04	0.11	0.10
O108	0.05	0.07	0.04	0.06	0.10	0.03	0.04	0.03	0.14	0.10	0.07	0.08
O109	0.07	0.10	0.07	0.15	0.14	0.07	0.05	0.03	0.14	0.10	0.10	0.10
O110	0.02	0.08	0.11	0.10	0.15	0.16	0.18	0.12	0.06	0.09	0.10	0.11
O111	0.04	0.07	0.05	0.07	0.07	0.03	0.06	0.28	0.32	0.26	0.12	0.20
O112	0.07	0.02	0.09	0.07	0.17	0.12	0.05	0.07	0.04	0.15	0.09	0.09
O113	0.24	0.06	0.11	0.12	0.21	0.15	0.17	0.27	0.31	0.32	0.18	0.24
O114	0.22	0.07	0.06	0.05	0.29	0.18	0.14	0.18	0.31	0.24	0.16	0.21
O115	0.22	0.06	0.04	0.09	0.06	0.08	0.07	0.04	0.03	0.05	0.07	0.06
O116	0.18	0.08	0.03	0.06	0.01	0.10	0.16	0.14	0.16	0.12	0.09	0.12
O117	0.19	0.06	0.03	0.03	0.05	0.04	0.04	0.04	0.05	0.09	0.06	0.05
O118	0.19	0.06	0.01	0.01	0.06	0.14	0.17	0.14	0.17	0.14	0.09	0.13
O119	0.01	0.07	0.14	0.08	0.10	0.18	0.21	0.19	0.35	0.16	0.13	0.20
O120	0.05	0.16	0.15	0.11	0.04	0.04	0.13	0.08	0.15	0.13	0.10	0.11
O121	0.26	0.29	0.17	0.05	0.10	0.02	0.03	0.20	0.27	0.14	0.16	0.14
O122	0.14	0.03	0.05	0.15	0.11	0.05	0.11	0.12	0.24	0.25	0.13	0.17
O123	0.13	0.08	0.12	0.15	0.10	0.12	0.02	0.25	0.18	0.16	0.14	0.15
O124	0.13	0.09	0.10	0.16	0.04	0.09	0.04	0.05	0.16	0.23	0.12	0.13
O125	0.28	0.31	0.34	0.26	0.16	0.09	0.05	0.20	0.14	0.28	0.24	0.18
O126	0.11	0.07	0.14	0.11	0.16	0.17	0.20	0.18	0.33	0.16	0.15	0.20
O127	0.19	0.08	0.13	0.09	0.07	0.10	0.26	0.24	0.35	0.20	0.15	0.21
O128	0.31	0.34	0.20	0.05	0.13	0.12	0.00	0.25	0.27	0.17	0.19	0.16
O129	0.19	0.07	0.05	0.03	0.09	0.10	0.08	0.24	0.09	0.14	0.09	0.12
O130	0.10	0.23	0.27	0.26	0.15	0.06	0.04	0.23	0.03	0.12	0.18	0.13
O131	0.12	0.08	0.22	0.21	0.09	0.02	0.01	0.10	0.13	0.30	0.15	0.14
O132	0.29	0.04	0.09	0.10	0.01	0.15	0.12	0.15	0.19	0.22	0.12	0.15
O133	0.23	0.16	0.11	0.12	0.12	0.03	0.15	0.16	0.17	0.25	0.14	0.16
O134	0.26	0.19	0.09	0.06	0.09	0.06	0.15	0.20	0.24	0.31	0.15	0.19
O135	0.35	0.23	0.13	0.09	0.05	0.11	0.14	0.21	0.29	0.37	0.18	0.22
O136	0.27	0.35	0.17	0.21	0.14	0.12	0.16	0.25	0.25	0.33	0.23	0.23
O137	0.30	0.19	0.03	0.16	0.16	0.02	0.20	0.19	0.19	0.30	0.17	0.19
O138	0.34	0.34	0.18	0.18	0.21	0.10	0.14	0.16	0.24	0.30	0.22	0.21
O139	0.32	0.19	0.13	0.14	0.04	0.09	0.13	0.22	0.25	0.34	0.18	0.21
O140	0.32	0.35	0.25	0.17	0.08	0.08	0.23	0.17	0.27	0.36	0.22	0.22
O141	0.22	0.10	0.07	0.22	0.15	0.08	0.07	0.23	0.26	0.35	0.18	0.22
O142	0.35	0.36	0.31	0.29	0.19	0.11	0.18	0.24	0.33	0.42	0.29	0.28
O143	0.28	0.28	0.28	0.32	0.17	0.09	0.03	0.26	0.10	0.21	0.24	0.17
O144	0.32	0.34	0.34	0.41	0.27	0.16	0.04	0.09	0.33	0.30	0.30	0.24
O145	0.34	0.35	0.34	0.33	0.30	0.19	0.10	0.23	0.28	0.42	0.31	0.28
O146	0.32	0.34	0.32	0.35	0.29	0.15	0.09	0.23	0.25	0.33	0.30	0.25

O147	0.32	0.34	0.32	0.31	0.30	0.21	0.18	0.22	0.14	0.27	0.28	0.23
O148	0.31	0.33	0.33	0.32	0.27	0.27	0.06	0.13	0.36	0.39	0.30	0.27
O149	0.31	0.33	0.37	0.38	0.28	0.16	0.17	0.19	0.23	0.34	0.30	0.25
O150	0.32	0.35	0.39	0.44	0.24	0.11	0.16	0.14	0.28	0.34	0.31	0.25
O151	0.34	0.35	0.30	0.33	0.30	0.24	0.18	0.21	0.16	0.29	0.29	0.24
O152	0.35	0.36	0.34	0.41	0.27	0.28	0.18	0.24	0.24	0.28	0.32	0.27
O153	0.30	0.32	0.36	0.30	0.27	0.26	0.02	0.08	0.31	0.40	0.29	0.25
O154	0.29	0.33	0.37	0.42	0.26	0.22	0.00	0.08	0.20	0.29	0.30	0.21
O155	0.32	0.33	0.29	0.37	0.19	0.27	0.02	0.10	0.37	0.40	0.30	0.27
O156	0.34	0.35	0.33	0.39	0.20	0.27	0.05	0.16	0.34	0.34	0.31	0.26
O157	0.31	0.33	0.34	0.34	0.18	0.26	0.05	0.05	0.34	0.42	0.29	0.25
O158	0.35	0.37	0.37	0.43	0.27	0.28	0.18	0.13	0.28	0.43	0.34	0.29
O159	0.33	0.35	0.31	0.39	0.23	0.19	0.18	0.15	0.24	0.42	0.30	0.27
O160	0.32	0.35	0.37	0.38	0.19	0.24	0.15	0.04	0.28	0.41	0.30	0.25
O161	0.29	0.33	0.38	0.33	0.19	0.23	0.12	0.09	0.17	0.35	0.27	0.21
O162	0.35	0.37	0.31	0.42	0.28	0.29	0.17	0.06	0.33	0.47	0.33	0.30
O163	0.35	0.37	0.35	0.37	0.27	0.29	0.19	0.05	0.38	0.46	0.33	0.30
O164	0.33	0.36	0.31	0.35	0.24	0.15	0.19	0.18	0.27	0.44	0.30	0.28
O165	0.34	0.36	0.35	0.37	0.32	0.20	0.20	0.20	0.32	0.48	0.34	0.32
O166	0.33	0.35	0.38	0.41	0.23	0.18	0.17	0.06	0.19	0.41	0.30	0.24
O167	0.33	0.35	0.40	0.34	0.26	0.23	0.15	0.05	0.12	0.39	0.29	0.22
O168	0.34	0.36	0.35	0.39	0.34	0.26	0.20	0.18	0.31	0.47	0.34	0.32
O169	0.32	0.35	0.39	0.41	0.22	0.13	0.14	0.03	0.15	0.41	0.29	0.22
O170	0.31	0.33	0.31	0.31	0.24	0.07	0.09	0.02	0.07	0.28	0.23	0.15
O171	0.27	0.32	0.40	0.22	0.10	0.02	0.05	0.06	0.17	0.12	0.20	0.11
O172	0.28	0.30	0.29	0.21	0.23	0.41	0.25	0.23	0.16	0.14	0.25	0.21
O173	0.33	0.32	0.38	0.31	0.21	0.27	0.15	0.28	0.27	0.28	0.30	0.26
O174	0.34	0.36	0.34	0.38	0.24	0.19	0.17	0.03	0.20	0.42	0.29	0.24
O175	0.33	0.35	0.37	0.33	0.36	0.47	0.30	0.13	0.13	0.42	0.32	0.28
O176	0.30	0.30	0.30	0.32	0.16	0.11	0.10	0.13	0.05	0.26	0.23	0.16
O177	0.33	0.35	0.39	0.35	0.37	0.47	0.31	0.16	0.11	0.37	0.33	0.28
P1	0.19	0.17	0.33	0.38	0.13	0.24	0.31	0.21	0.13	0.17	0.24	0.21
P2	0.20	0.11	0.10	0.21	0.29	0.23	0.26	0.20	0.12	0.06	0.17	0.17
P3	0.12	0.05	0.14	0.45	0.23	0.12	0.23	0.16	0.12	0.14	0.20	0.19
P4	0.15	0.17	0.09	0.35	0.06	0.10	0.25	0.16	0.10	0.12	0.17	0.15
P5	0.24	0.28	0.10	0.08	0.19	0.27	0.18	0.10	0.06	0.07	0.15	0.12
P6	0.30	0.32	0.03	0.08	0.21	0.29	0.22	0.13	0.31	0.26	0.19	0.22
P7	0.31	0.31	0.07	0.04	0.22	0.33	0.29	0.24	0.30	0.25	0.20	0.25
P8	0.41	0.35	0.22	0.16	0.14	0.18	0.26	0.32	0.39	0.35	0.26	0.29
P9	0.26	0.22	0.30	0.25	0.13	0.13	0.11	0.18	0.28	0.37	0.24	0.23
P10	0.09	0.13	0.16	0.15	0.12	0.15	0.22	0.03	0.08	0.15	0.12	0.12
P11	0.15	0.03	0.19	0.25	0.22	0.14	0.09	0.08	0.13	0.10	0.16	0.13
P12	0.30	0.15	0.20	0.28	0.14	0.09	0.17	0.21	0.08	0.20	0.19	0.17
P13	0.17	0.11	0.07	0.27	0.09	0.12	0.24	0.18	0.32	0.17	0.17	0.21
P14	0.21	0.17	0.08	0.23	0.13	0.21	0.15	0.14	0.30	0.18	0.19	0.20
P15	0.16	0.17	0.12	0.15	0.11	0.23	0.32	0.30	0.20	0.32	0.18	0.24
P16	0.11	0.23	0.16	0.02	0.33	0.27	0.28	0.24	0.22	0.33	0.19	0.25
P17	0.14	0.15	0.11	0.06	0.39	0.31	0.29	0.24	0.21	0.37	0.20	0.27
P18	0.17	0.27	0.19	0.11	0.30	0.30	0.30	0.22	0.13	0.38	0.22	0.25
P19	0.18	0.32	0.35	0.26	0.37	0.24	0.16	0.25	0.25	0.30	0.28	0.26

P20	0.20	0.11	0.32	0.19	0.19	0.05	0.08	0.16	0.13	0.19	0.18	0.15
P21	0.15	0.34	0.21	0.23	0.22	0.25	0.20	0.26	0.34	0.29	0.25	0.27
P22	0.13	0.32	0.30	0.22	0.17	0.05	0.03	0.13	0.29	0.26	0.22	0.19
P23	0.02	0.23	0.16	0.20	0.17	0.12	0.04	0.16	0.31	0.37	0.19	0.23
P24	0.07	0.19	0.05	0.17	0.19	0.13	0.30	0.14	0.24	0.19	0.15	0.20
P25	0.10	0.16	0.04	0.09	0.14	0.12	0.25	0.12	0.18	0.12	0.12	0.15
P26	0.02	0.09	0.03	0.03	0.10	0.09	0.13	0.05	0.13	0.12	0.07	0.10
P27	0.07	0.04	0.14	0.20	0.10	0.12	0.16	0.10	0.32	0.12	0.14	0.17
P28	0.10	0.09	0.12	0.01	0.13	0.17	0.22	0.18	0.24	0.10	0.11	0.16
P29	0.05	0.04	0.03	0.07	0.18	0.16	0.16	0.17	0.26	0.12	0.11	0.17
P30	0.13	0.13	0.16	0.20	0.29	0.22	0.25	0.24	0.26	0.10	0.19	0.22
P31	0.09	0.05	0.06	0.03	0.05	0.03	0.20	0.21	0.06	0.17	0.07	0.12
P32	0.08	0.04	0.09	0.09	0.08	0.07	0.23	0.22	0.23	0.21	0.12	0.18
P33	0.05	0.04	0.05	0.02	0.09	0.11	0.09	0.27	0.35	0.21	0.11	0.20
P34	0.35	0.36	0.34	0.18	0.13	0.09	0.09	0.27	0.28	0.22	0.24	0.20
P35	0.29	0.36	0.36	0.32	0.19	0.09	0.02	0.21	0.07	0.15	0.25	0.14
P36	0.29	0.30	0.33	0.35	0.19	0.10	0.07	0.22	0.06	0.25	0.25	0.17
P37	0.31	0.32	0.36	0.40	0.21	0.12	0.12	0.14	0.29	0.30	0.29	0.24
P38	0.31	0.34	0.37	0.42	0.23	0.11	0.16	0.12	0.22	0.29	0.29	0.22
P39	0.32	0.35	0.38	0.44	0.25	0.16	0.11	0.07	0.20	0.28	0.30	0.21
P40	0.29	0.32	0.35	0.42	0.25	0.22	0.04	0.09	0.17	0.29	0.29	0.21
P41	0.28	0.33	0.37	0.40	0.26	0.26	0.07	0.06	0.16	0.33	0.29	0.21
P42	0.29	0.33	0.38	0.35	0.19	0.23	0.12	0.10	0.16	0.35	0.28	0.22
P43	0.31	0.35	0.40	0.31	0.10	0.25	0.16	0.06	0.14	0.37	0.27	0.20
P44	0.32	0.35	0.40	0.32	0.23	0.26	0.15	0.07	0.12	0.37	0.28	0.21
P45	0.31	0.34	0.32	0.32	0.15	0.25	0.14	0.06	0.10	0.28	0.25	0.18
P46	0.30	0.29	0.32	0.33	0.14	0.20	0.09	0.04	0.08	0.25	0.23	0.15
P47	0.30	0.32	0.36	0.32	0.15	0.05	0.08	0.05	0.02	0.22	0.22	0.12
P48	0.29	0.34	0.41	0.29	0.12	0.05	0.09	0.07	0.07	0.13	0.22	0.11
P49	0.22	0.28	0.40	0.20	0.04	0.04	0.06	0.03	0.16	0.12	0.18	0.10
P50	0.16	0.21	0.36	0.08	0.12	0.07	0.06	0.06	0.15	0.18	0.15	0.11
S1	0.37	0.35	0.07	0.05	0.20	0.32	0.30	0.18	0.28	0.36	0.21	0.25
S2	0.44	0.43	0.25	0.24	0.06	0.15	0.22	0.07	0.14	0.09	0.22	0.13
S3	0.14	0.04	0.06	0.26	0.22	0.16	0.17	0.14	0.15	0.09	0.15	0.15
S4	0.28	0.04	0.01	0.28	0.15	0.16	0.35	0.15	0.18	0.15	0.16	0.19
S5	0.18	0.05	0.13	0.25	0.17	0.17	0.28	0.20	0.19	0.18	0.18	0.20
S6	0.20	0.09	0.10	0.01	0.15	0.09	0.15	0.11	0.33	0.22	0.13	0.18
S7	0.34	0.12	0.02	0.07	0.14	0.15	0.07	0.06	0.26	0.26	0.14	0.16
S8	0.37	0.28	0.16	0.19	0.11	0.14	0.20	0.13	0.35	0.22	0.21	0.21
S9	0.25	0.18	0.10	0.24	0.13	0.20	0.18	0.14	0.25	0.19	0.19	0.19
S10	0.12	0.05	0.04	0.02	0.20	0.19	0.17	0.05	0.06	0.09	0.08	0.10
S11	0.13	0.08	0.09	0.03	0.15	0.04	0.05	0.04	0.01	0.10	0.07	0.06
S12	0.13	0.11	0.22	0.05	0.08	0.02	0.05	0.06	0.03	0.02	0.08	0.04
S13	0.07	0.18	0.10	0.02	0.04	0.04	0.05	0.04	0.05	0.06	0.06	0.04
S14	0.04	0.05	0.06	0.07	0.05	0.03	0.04	0.01	0.02	0.05	0.05	0.04
S15	0.10	0.14	0.10	0.05	0.06	0.08	0.03	0.06	0.07	0.20	0.09	0.09
S16	0.19	0.20	0.18	0.14	0.03	0.08	0.01	0.18	0.22	0.24	0.16	0.15
S17	0.05	0.15	0.07	0.04	0.09	0.12	0.08	0.14	0.14	0.17	0.10	0.12
S18	0.05	0.04	0.09	0.05	0.02	0.09	0.11	0.06	0.09	0.05	0.06	0.07
S19	0.10	0.24	0.07	0.30	0.25	0.22	0.05	0.05	0.04	0.14	0.18	0.13

S20	0.15	0.14	0.10	0.29	0.16	0.11	0.19	0.12	0.09	0.15	0.17	0.15
S21	0.22	0.17	0.11	0.17	0.14	0.21	0.18	0.08	0.02	0.14	0.14	0.12
S22	0.25	0.22	0.12	0.15	0.25	0.26	0.16	0.14	0.12	0.05	0.17	0.14
S23	0.26	0.19	0.28	0.08	0.06	0.08	0.01	0.16	0.05	0.01	0.13	0.06
S24	0.09	0.10	0.17	0.22	0.14	0.26	0.28	0.27	0.19	0.10	0.18	0.20
S25	0.08	0.22	0.06	0.06	0.11	0.15	0.17	0.15	0.18	0.12	0.12	0.14
S26	0.20	0.35	0.08	0.18	0.10	0.07	0.09	0.20	0.21	0.15	0.17	0.16
S27	0.21	0.32	0.09	0.04	0.22	0.30	0.13	0.14	0.05	0.08	0.15	0.12
S28	0.13	0.09	0.17	0.03	0.24	0.16	0.17	0.16	0.07	0.15	0.12	0.13
S29	0.08	0.06	0.17	0.03	0.09	0.24	0.09	0.14	0.19	0.27	0.12	0.17
S30	0.07	0.11	0.16	0.02	0.09	0.10	0.11	0.18	0.30	0.35	0.13	0.20
S31	0.13	0.17	0.23	0.19	0.12	0.08	0.09	0.17	0.20	0.24	0.17	0.17
S32	0.12	0.10	0.09	0.04	0.06	0.09	0.15	0.26	0.21	0.19	0.11	0.16

Appendix E – Bird View of the Topography Surrounding Project Site


LIN BARN TSUEN
練板村
YAN SHAU WAI
仁壽圍
新田荷花池
Castle Peak Rd - San Tin
Kwu Tung Rd
Hadden Hill
Ki Lun Shan
Ki Lun Shan
麒麟山
巨輪集團
Warehouse
粉嶺洗車屋
Car wash
TSING LUNG TSUEN
KI LUN TSUEN
麒麟村
Fish Pond
SAN TIN
新田
LUK MEI TSUEN
鹿尾村
MAI PO SAN TSUEN
米埔新村
SHEK WU WAI
石湖圍
PANG LOON TEI
彭龍地
WO SHANG WAI
和生圍
Fish Pond
MAI PO LUNG TSUEN
米埔隴村
Ki Lun Tsuen Playground
麒麟村遊樂場
鴻日農莊 Hung Yat Farm
SHEK WU WAI SAN TSUEN
石湖圍新村
WO SHANG WAI
和生圍
Scene garden
Rolling Hills II
SIU HUM TSUEN
小磡村
Fish Pond
PALM SPRINGS
加州花園
Crescendo
意花園
Christian New Life Association
新生團
Pine Tree Hill
Pine Tree Hill
Ngau Tam Shan
Fish Pond
Ngau Tam Shan (337m)
Legend
Project Site
Yau Tam Mei San Tsuen
姚聖母廟

Appendix F – VR Contour and Vector plots of the Whole Computational Domain (Baseline Scheme & Proposed Scheme)

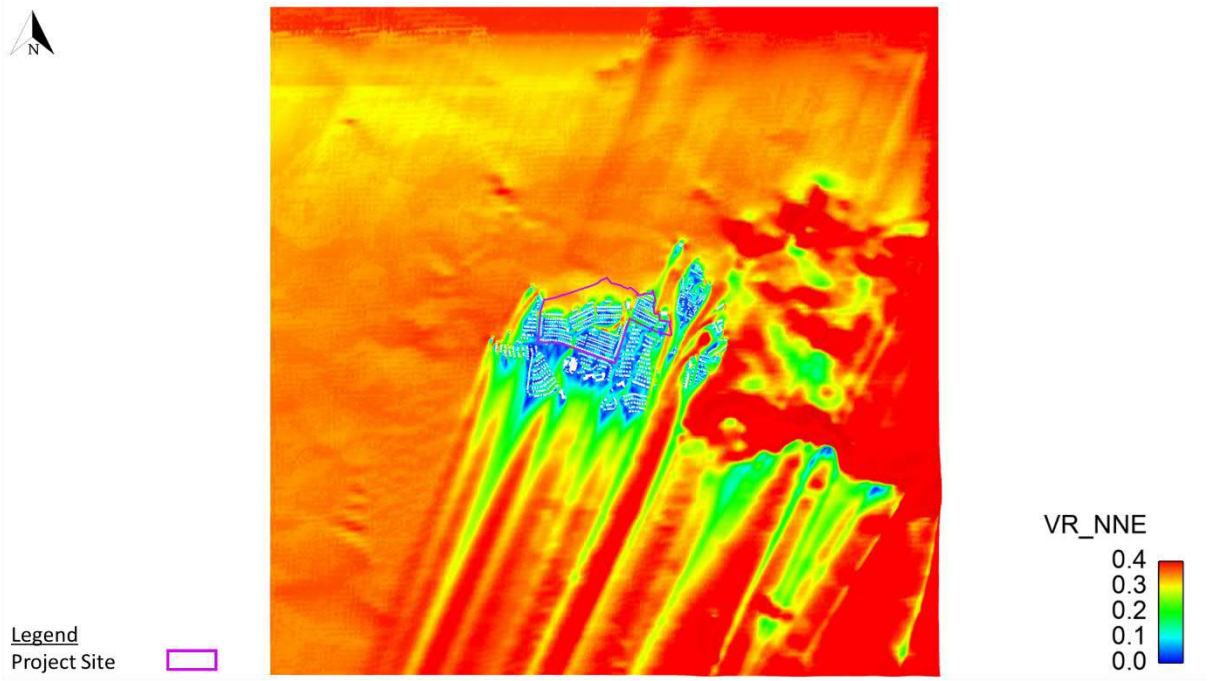


Figure 1 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

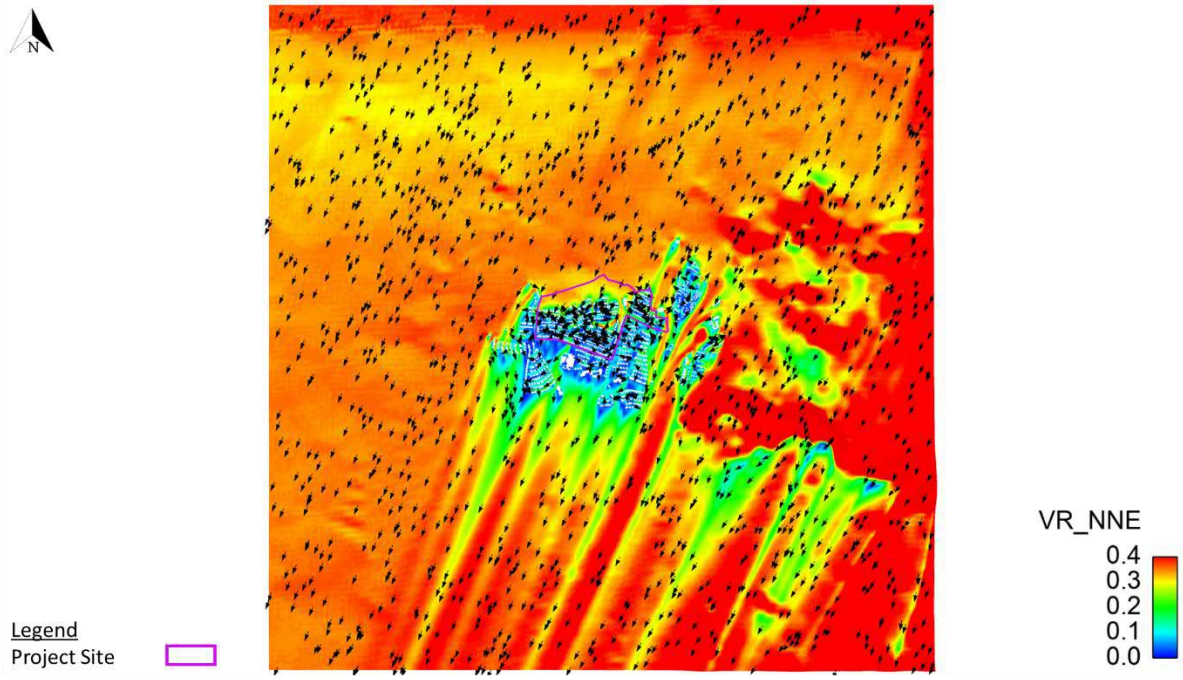


Figure 2 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Baseline Scheme

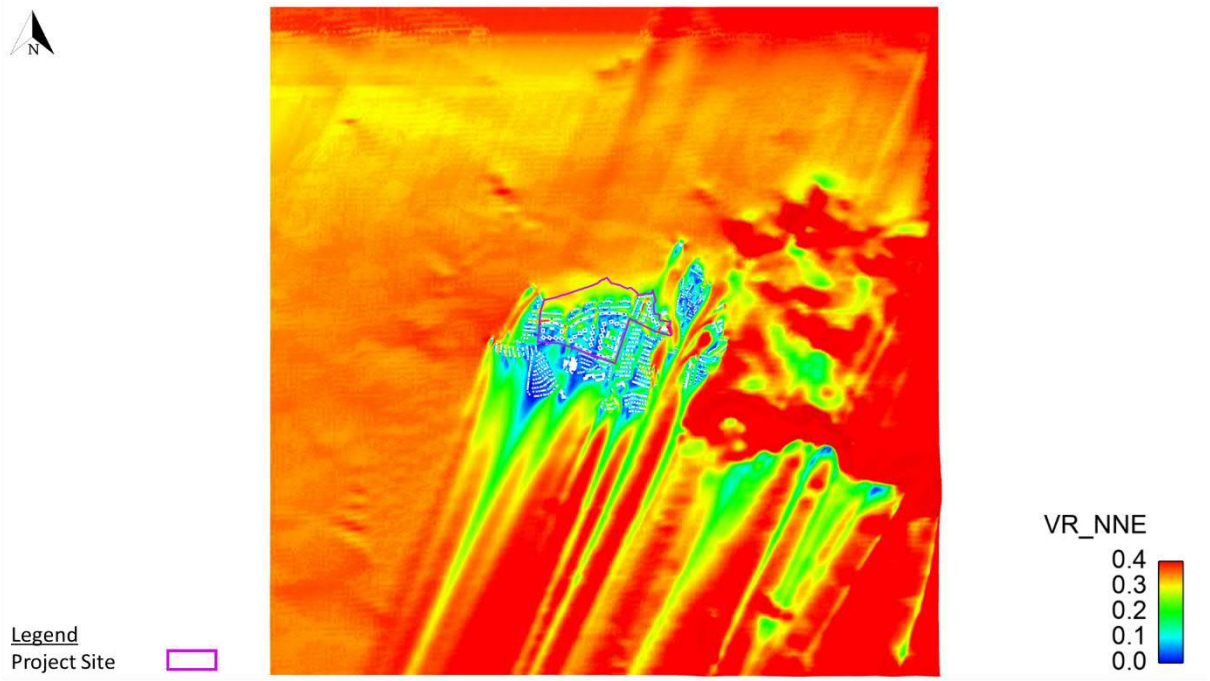


Figure 3 VR Contour Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

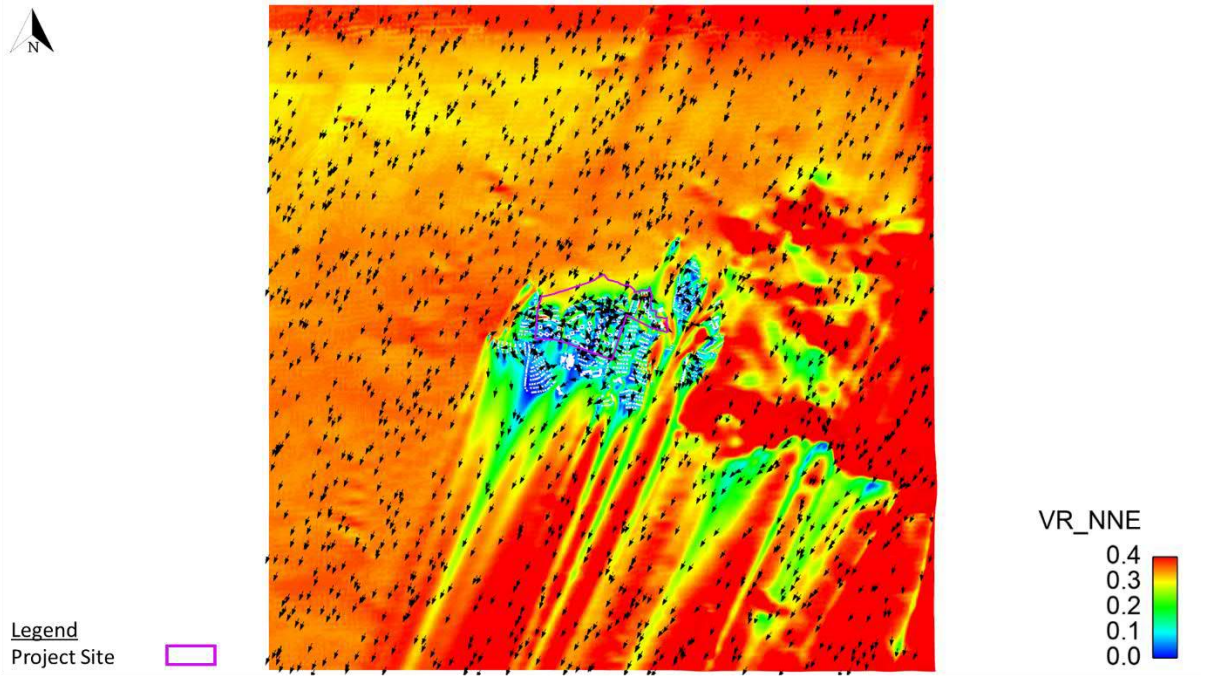


Figure 4 VR Vector Plot of Whole Domain at Pedestrian Level under NNE Wind for Proposed Scheme

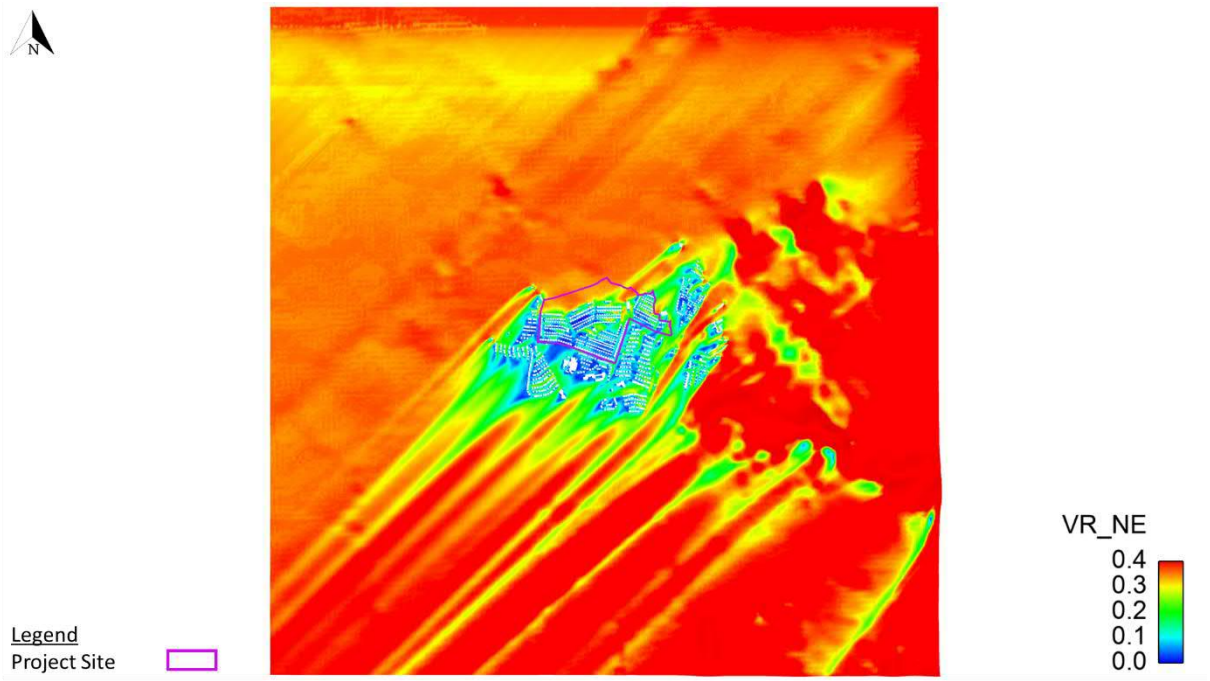


Figure 5 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

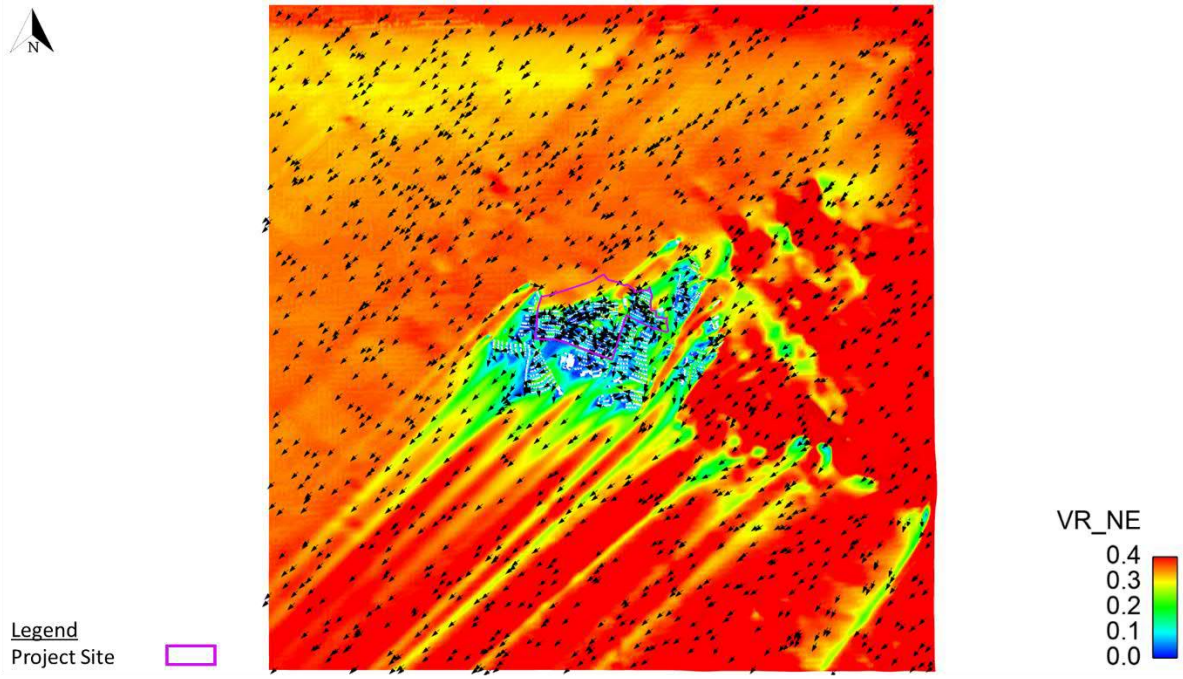


Figure 6 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Baseline Scheme

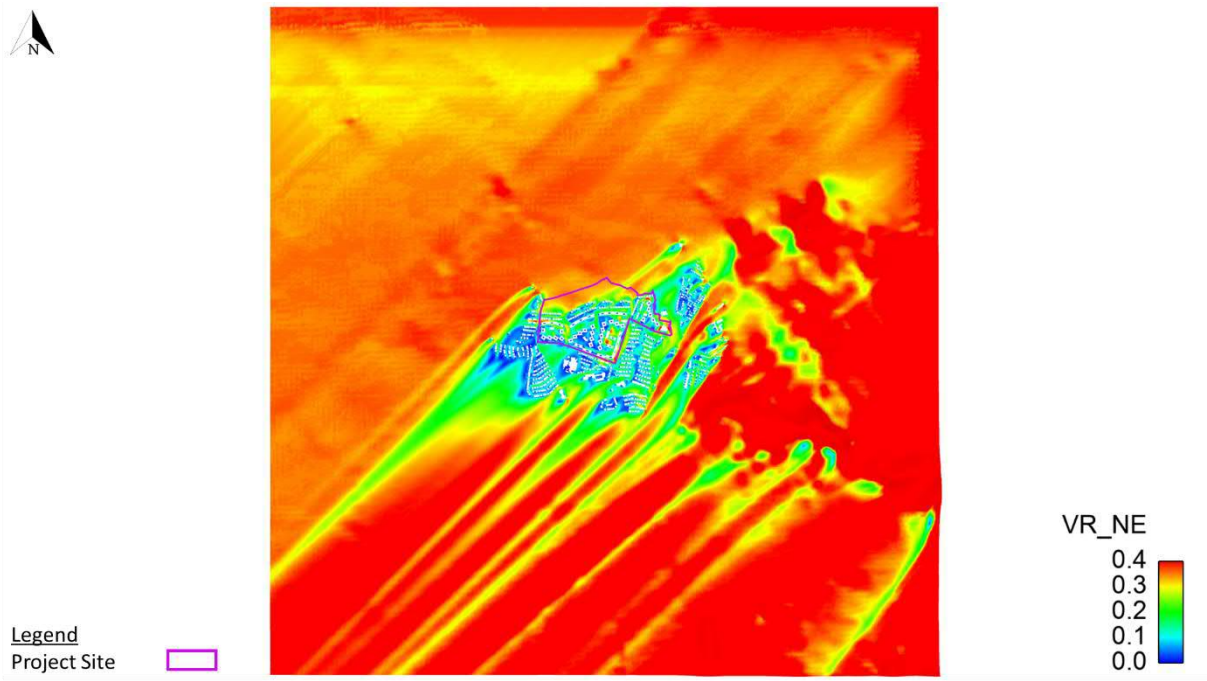


Figure 7 VR Contour Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

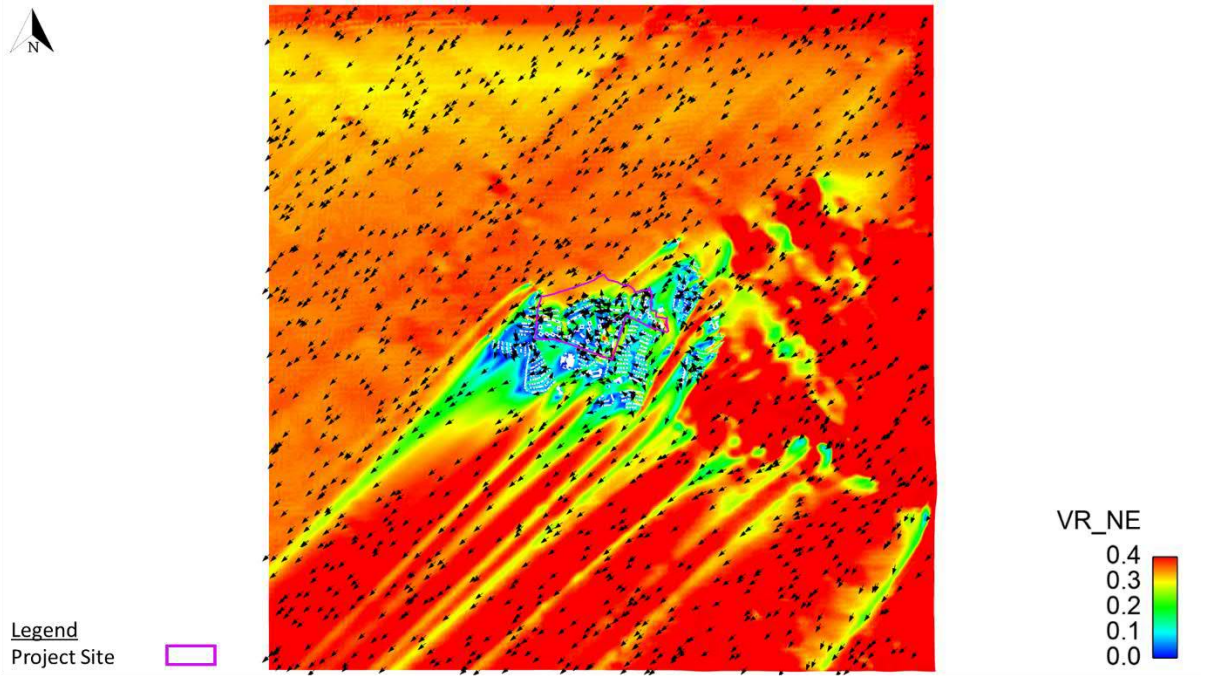


Figure 8 VR Vector Plot of Whole Domain at Pedestrian Level under NE Wind for Proposed Scheme

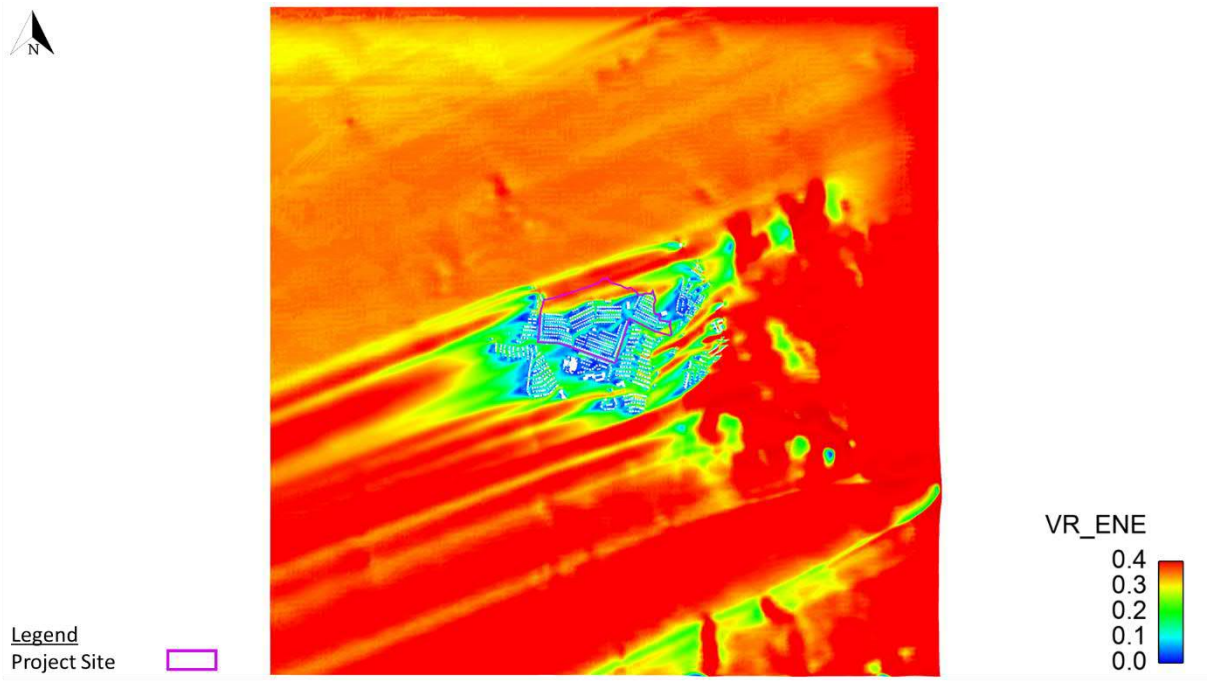


Figure 9 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

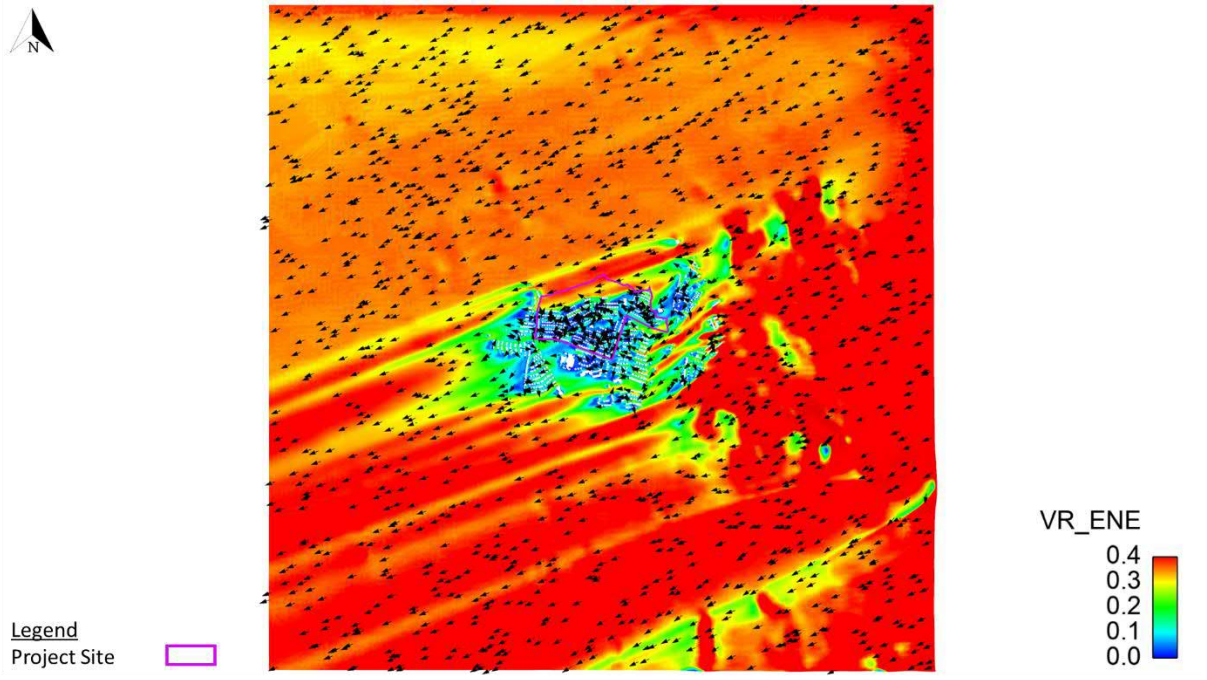


Figure 10 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Baseline Scheme

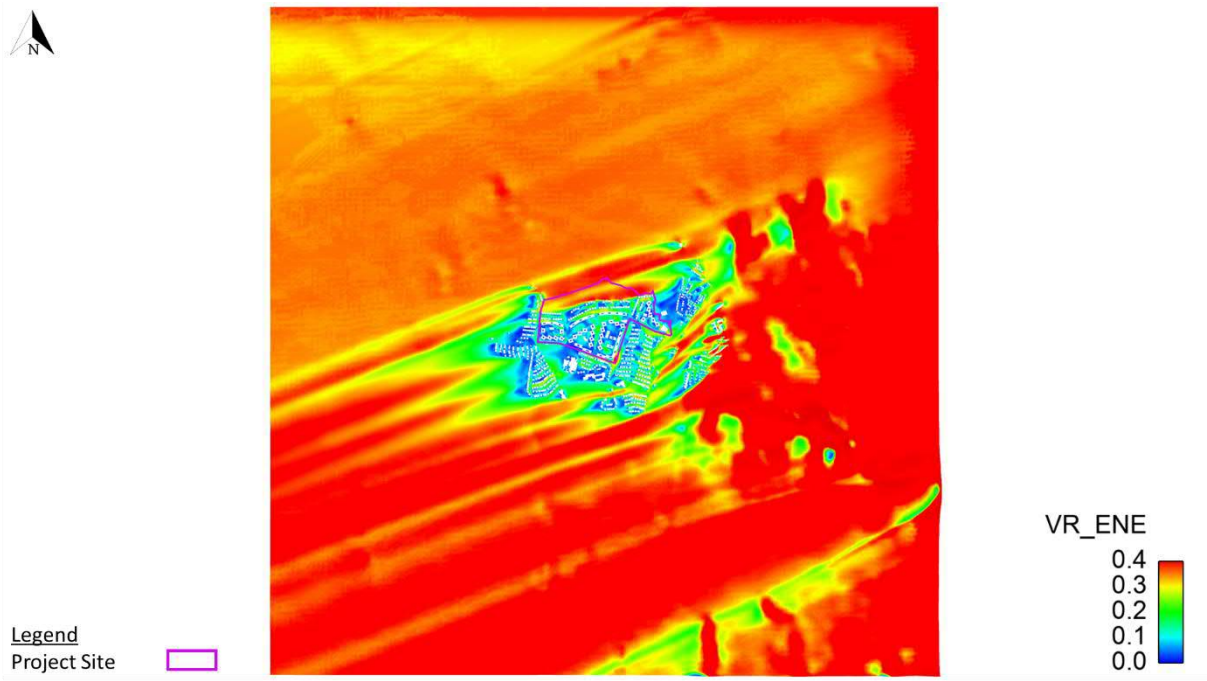


Figure 11 VR Contour Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

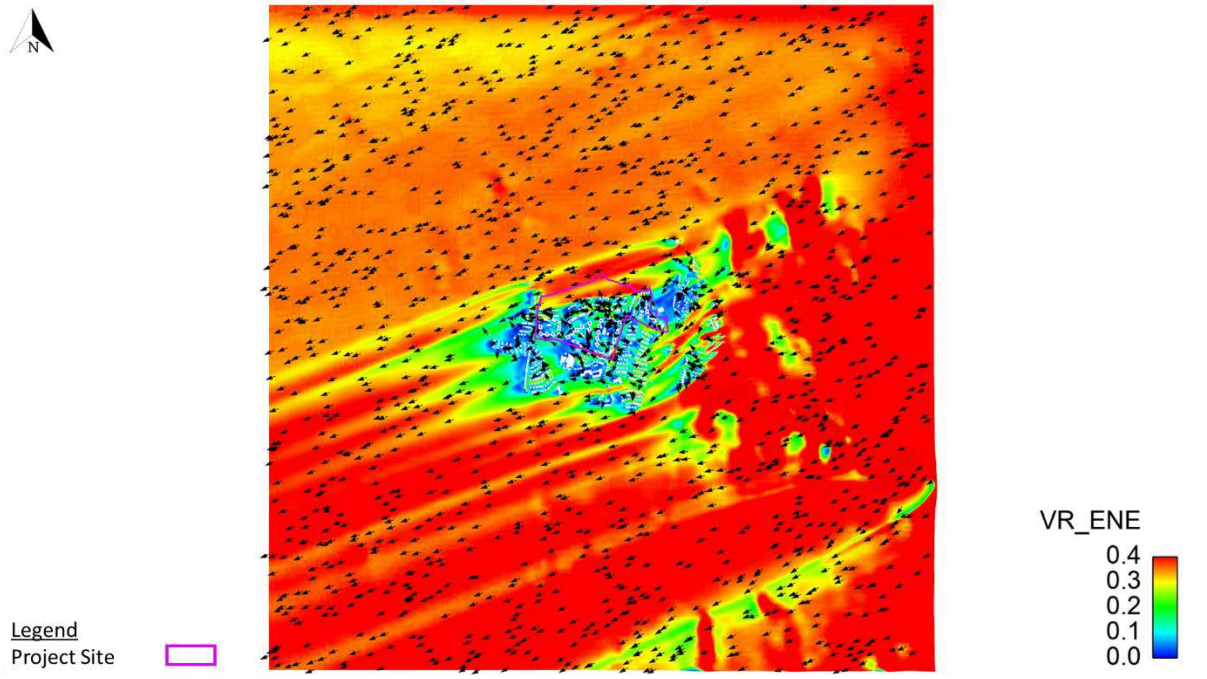


Figure 12 VR Vector Plot of Whole Domain at Pedestrian Level under ENE Wind for Proposed Scheme

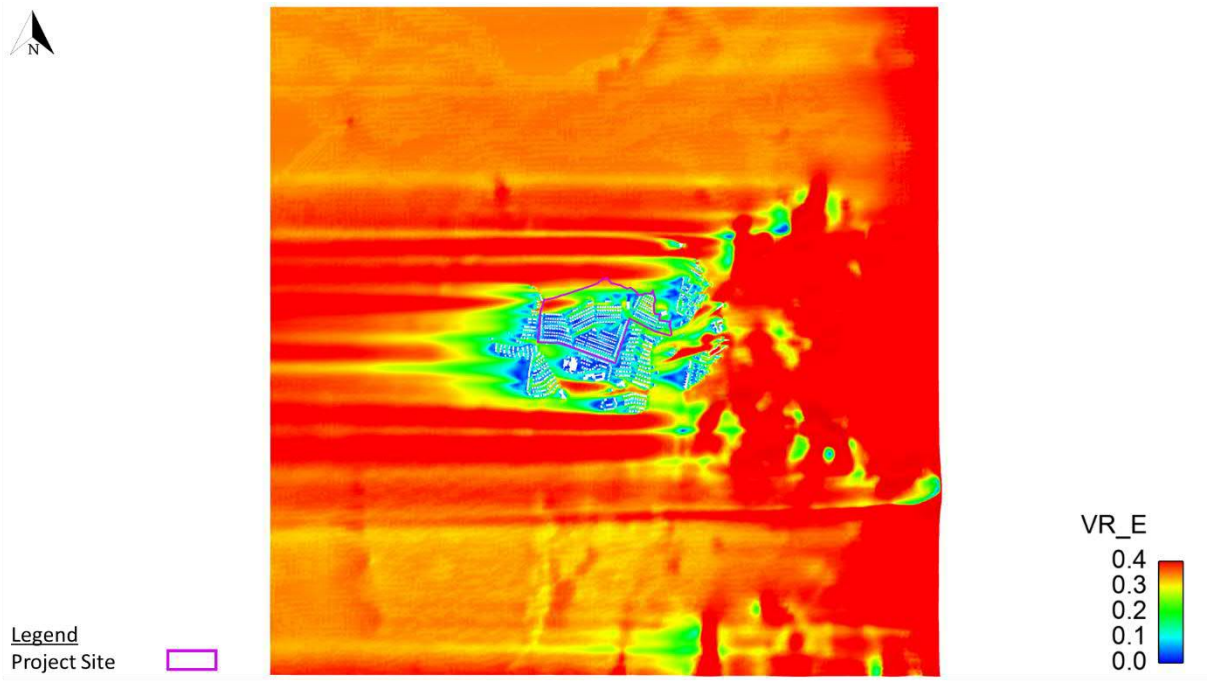


Figure 13 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

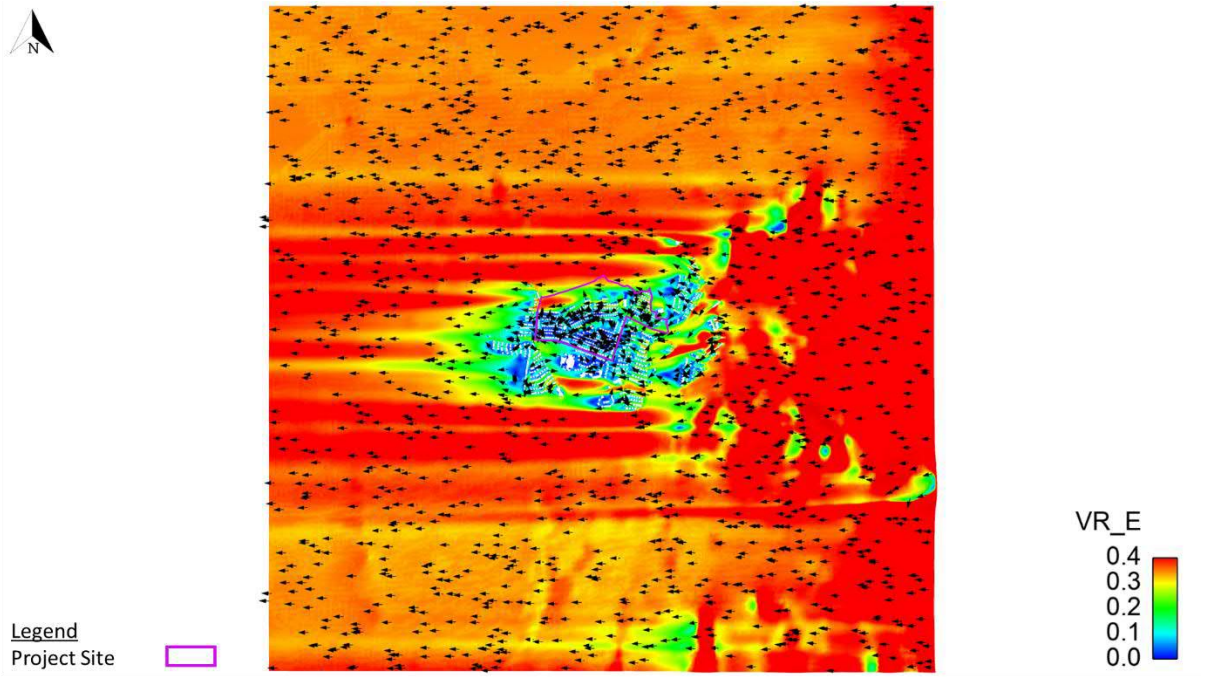


Figure 14 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Baseline Scheme

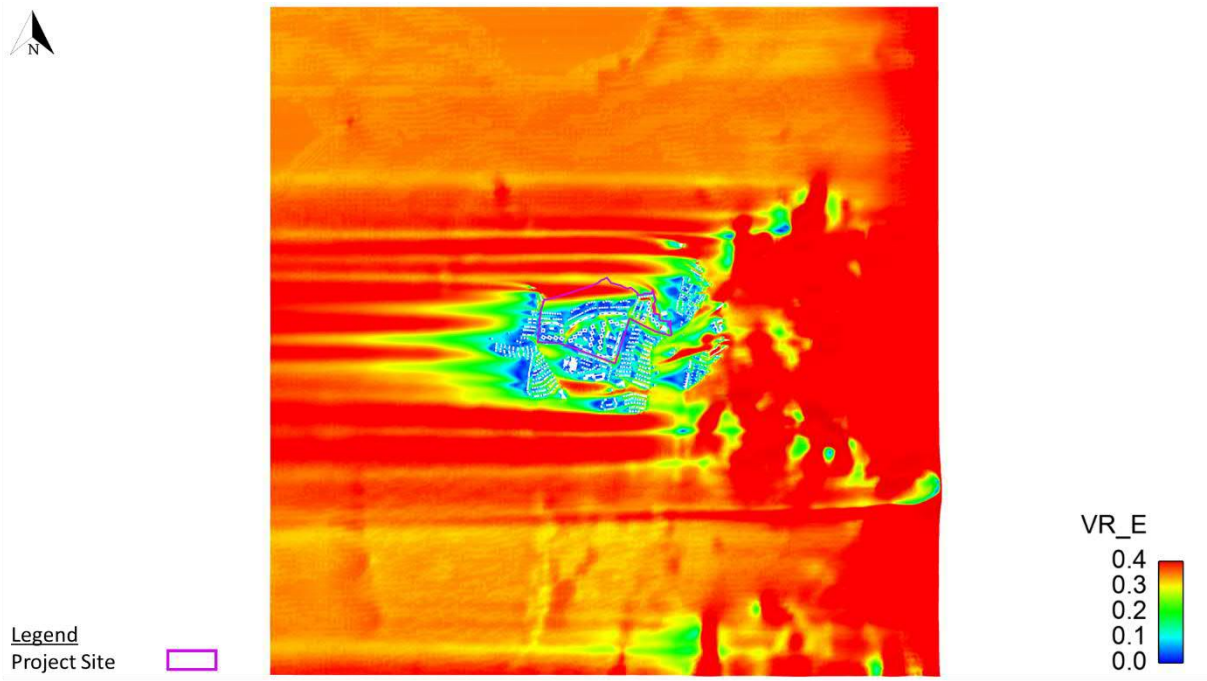


Figure 15 VR Contour Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

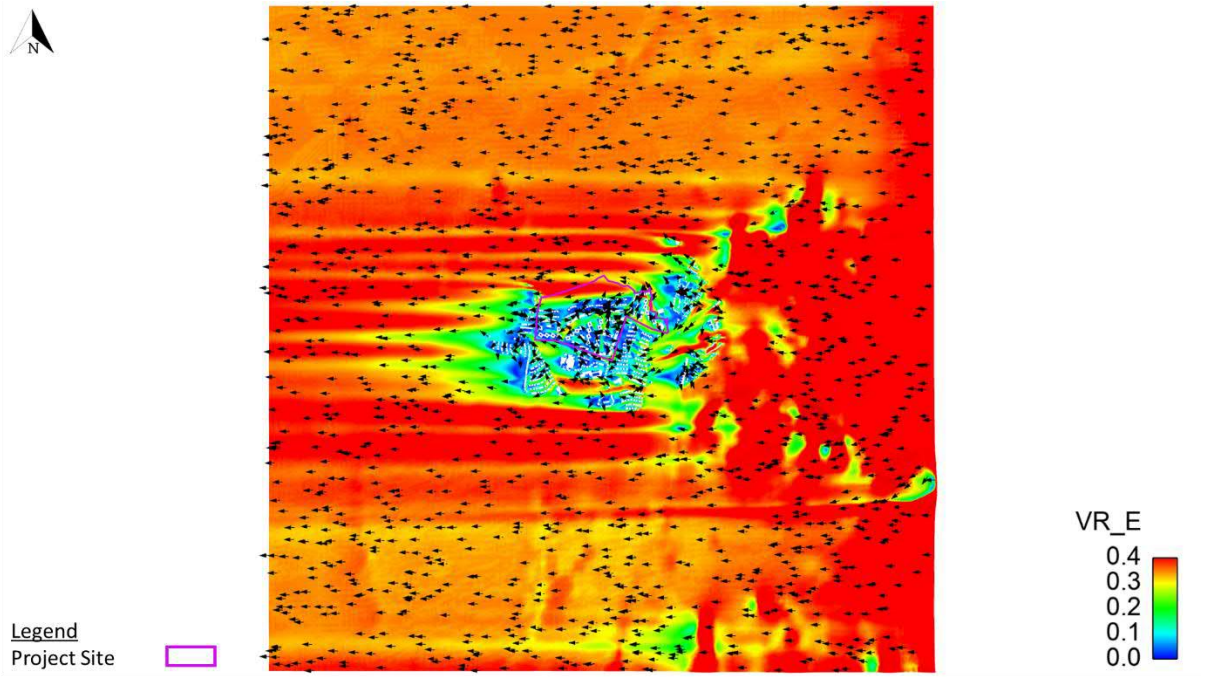


Figure 16 VR Vector Plot of Whole Domain at Pedestrian Level under E Wind for Proposed Scheme

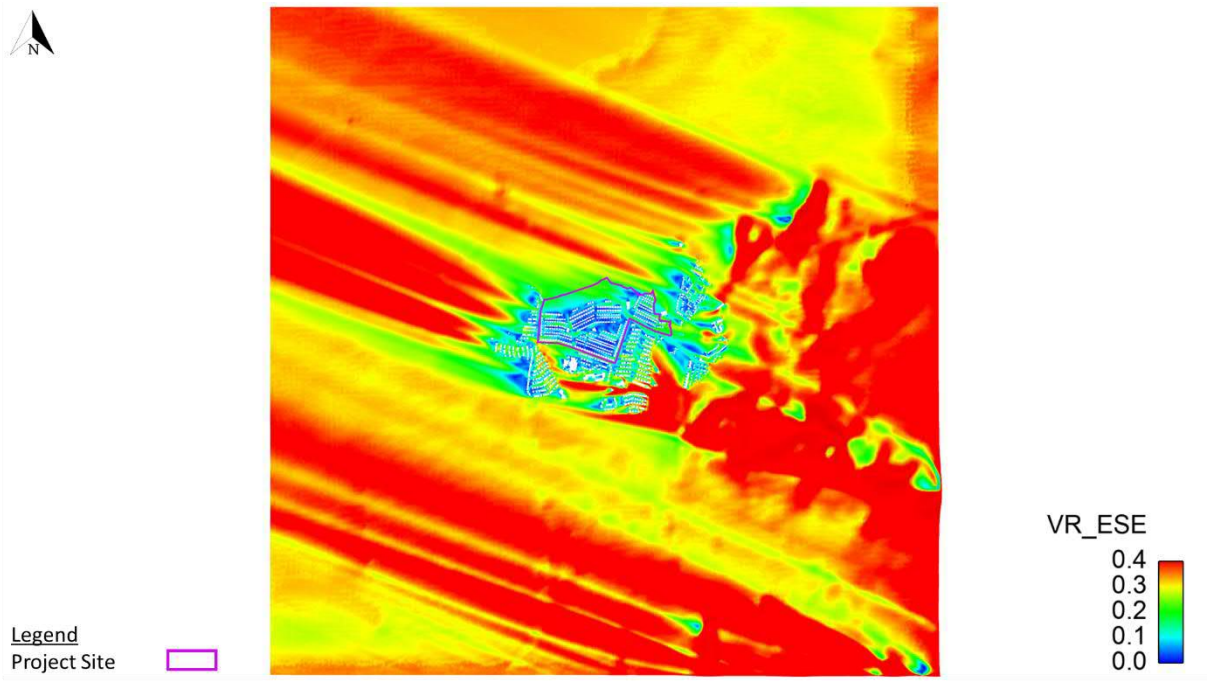


Figure 17 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

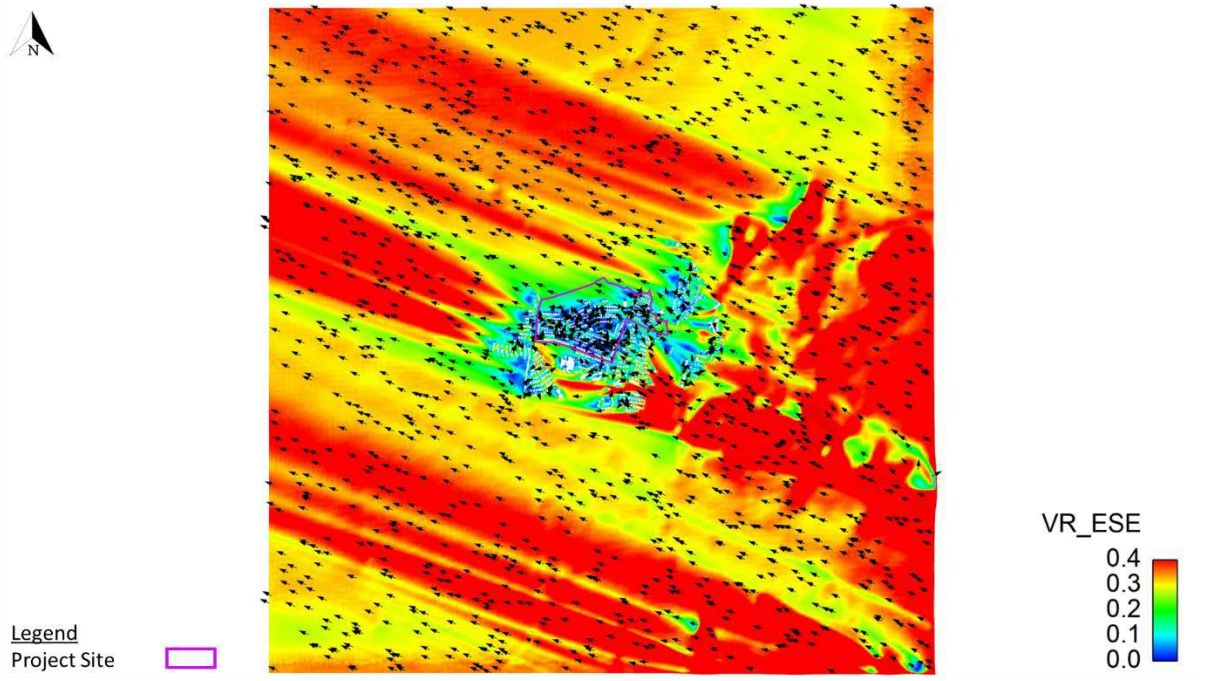


Figure 18 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Baseline Scheme

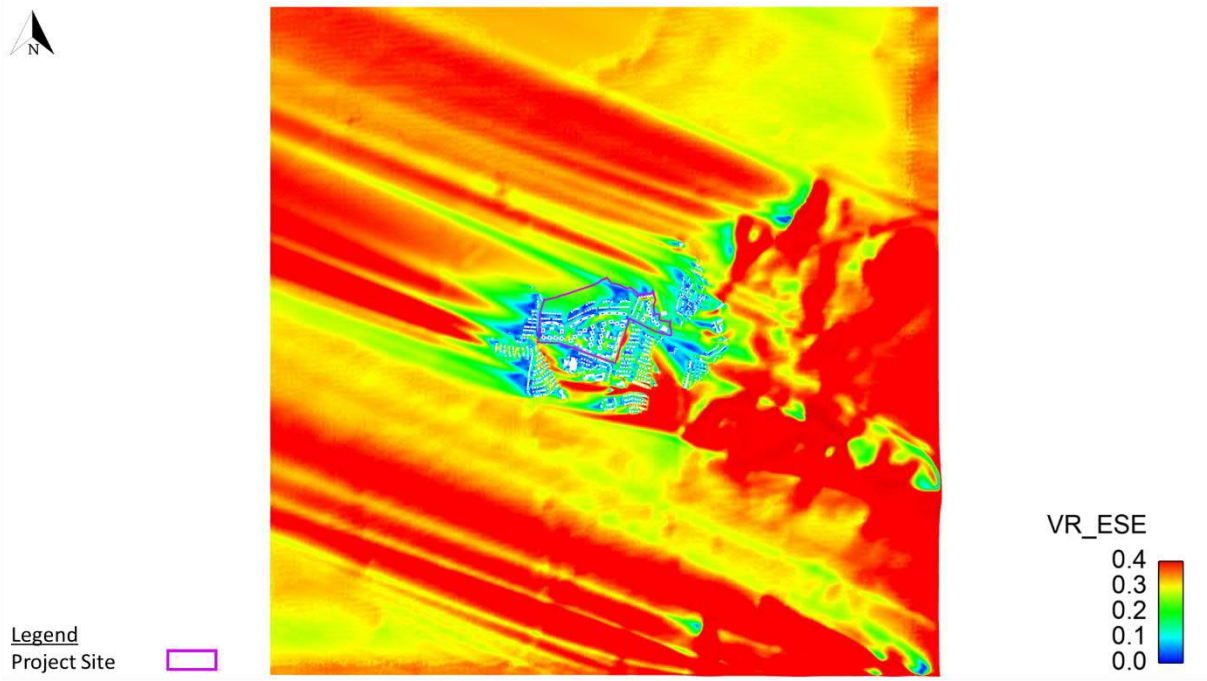


Figure 19 VR Contour Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

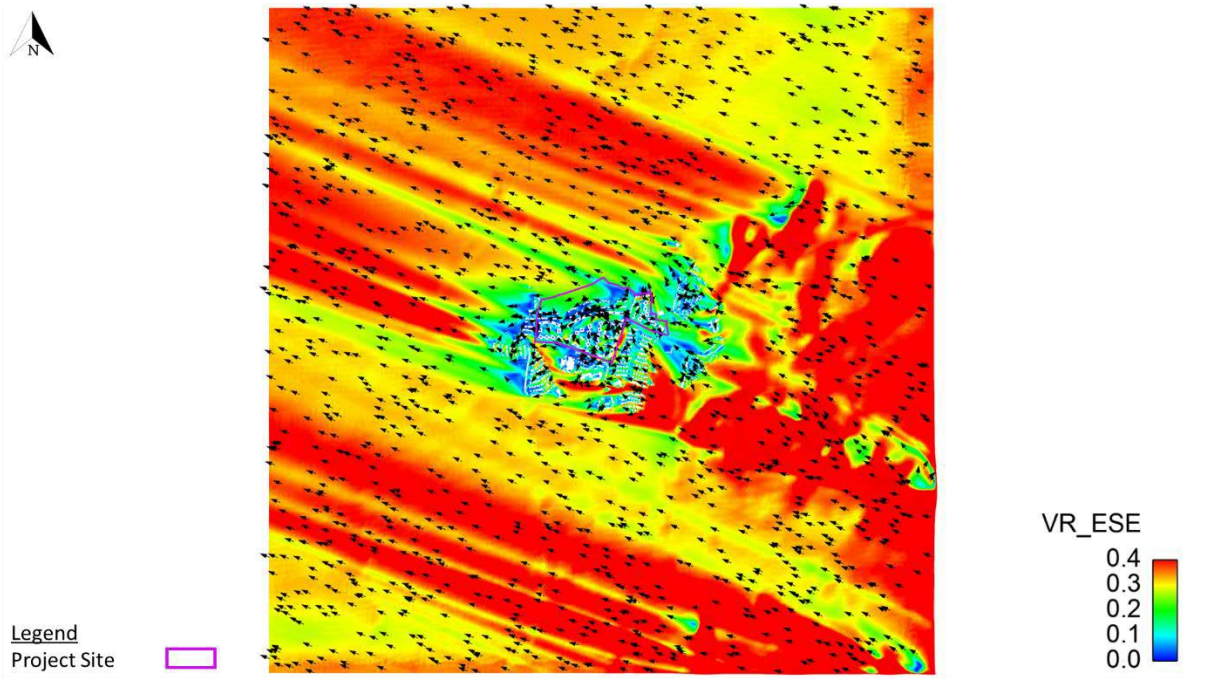


Figure 20 VR Vector Plot of Whole Domain at Pedestrian Level under ESE Wind for Proposed Scheme

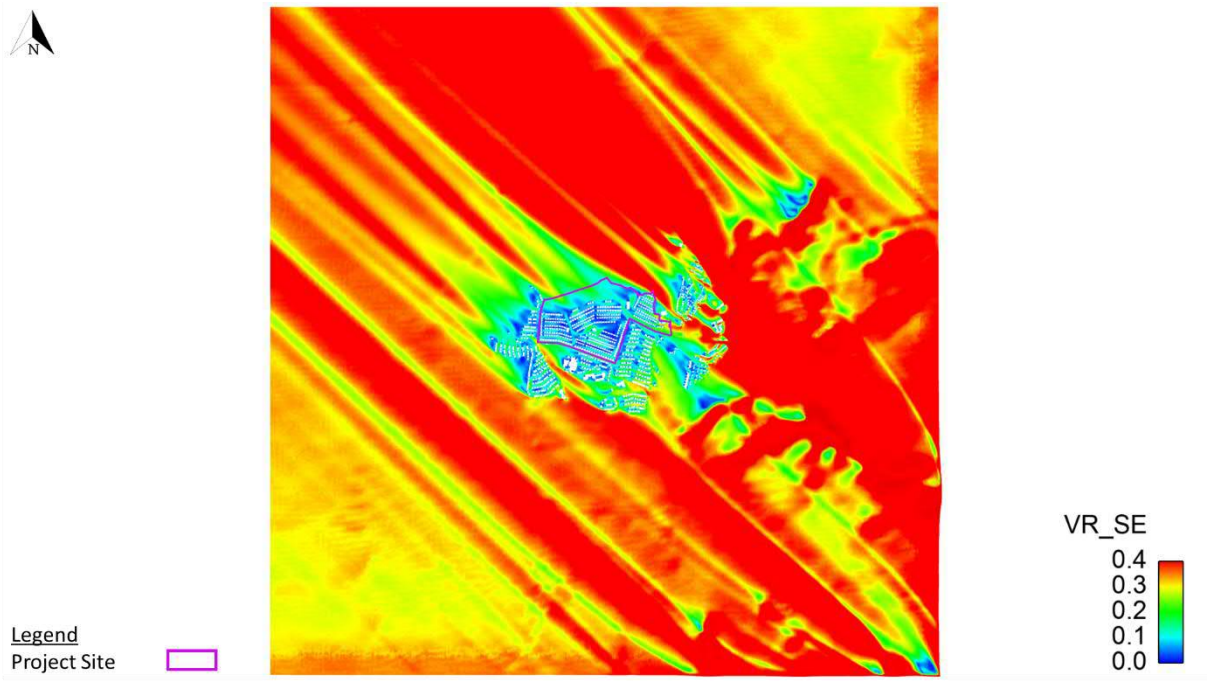


Figure 21 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

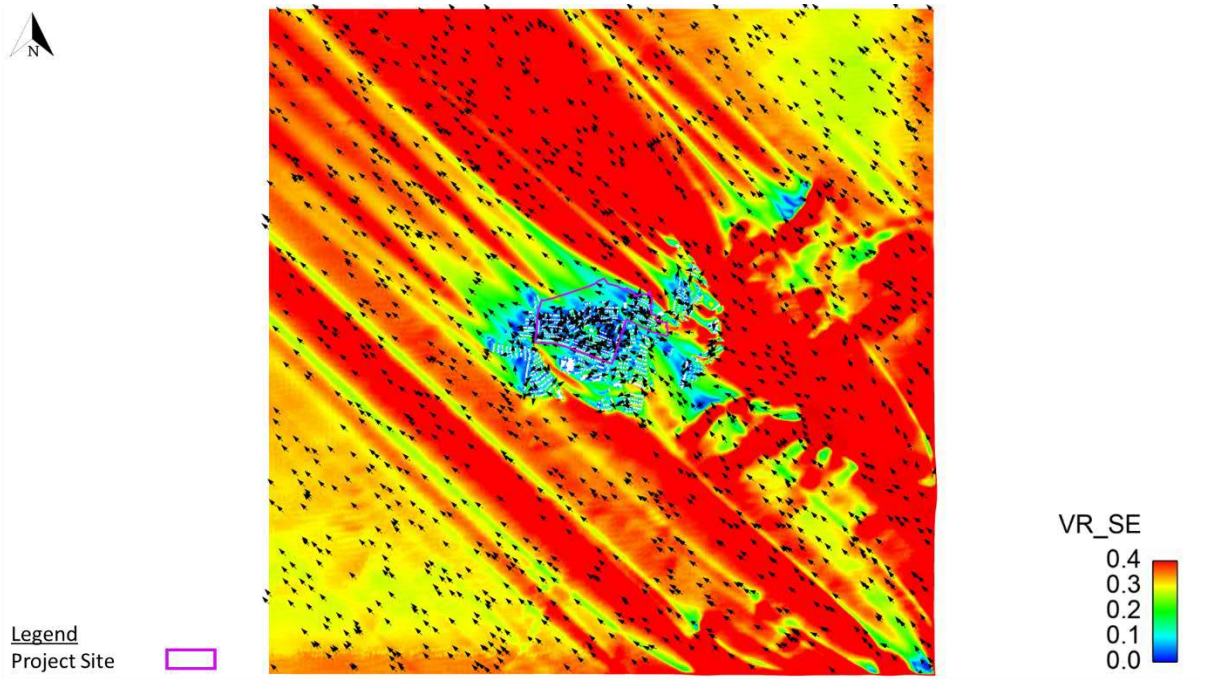


Figure 22 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Baseline Scheme

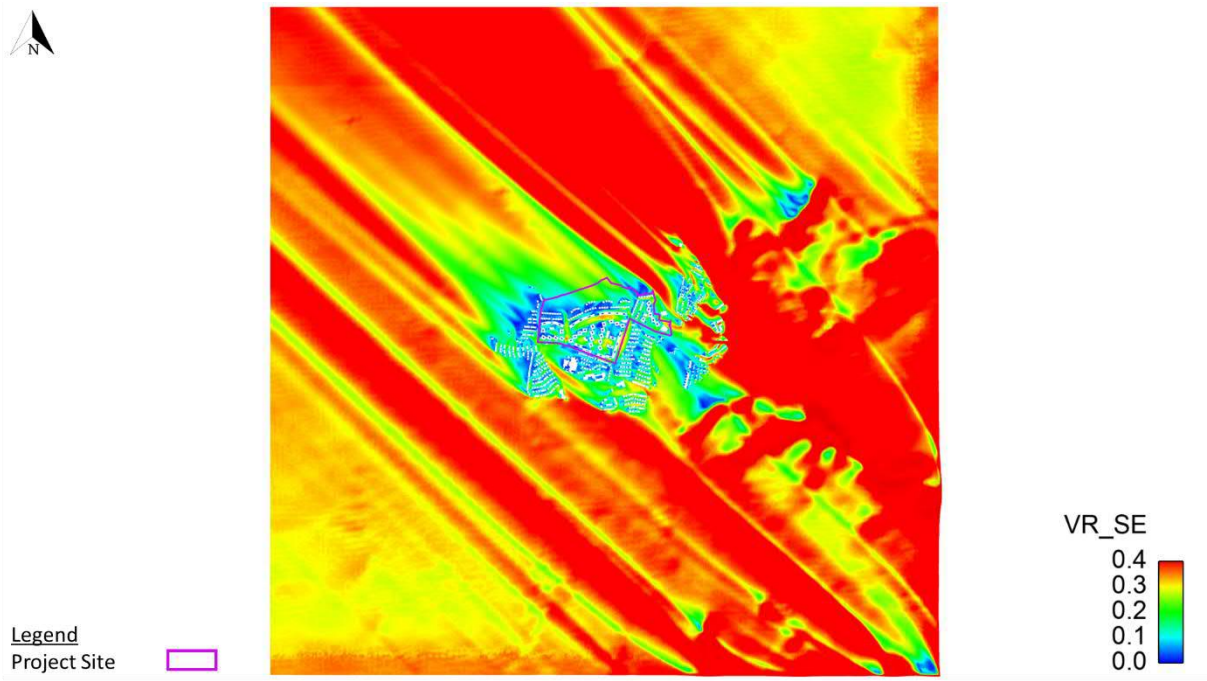


Figure 23 VR Contour Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

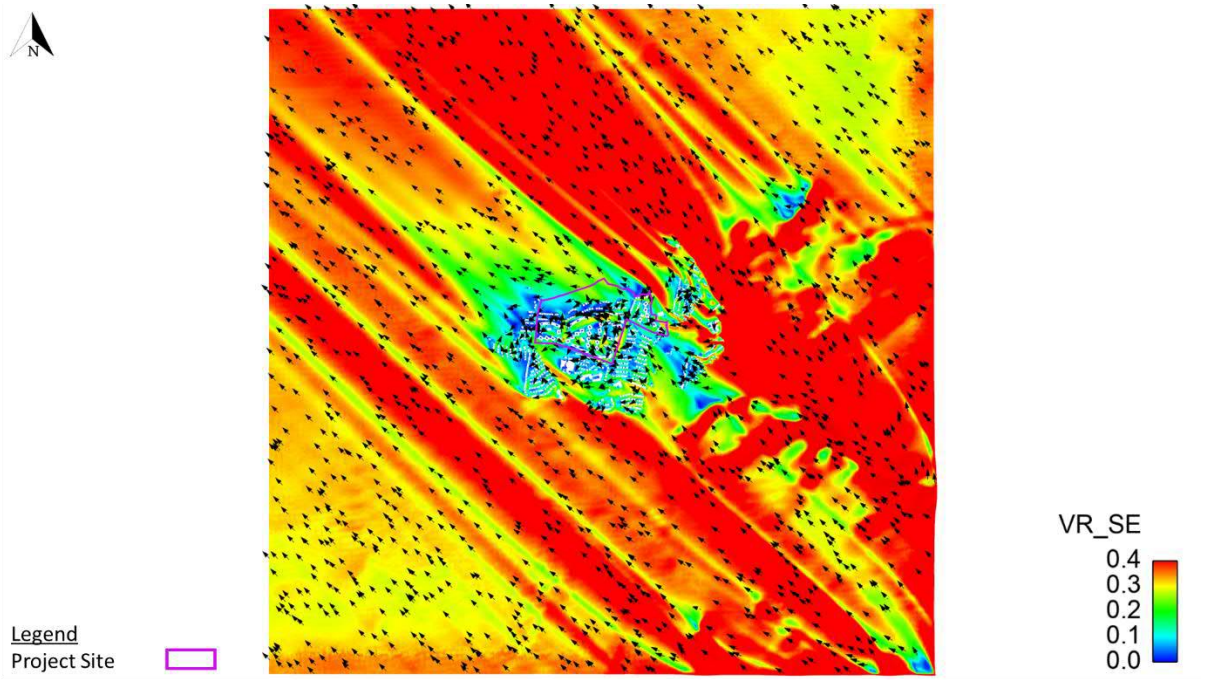


Figure 24 VR Vector Plot of Whole Domain at Pedestrian Level under SE Wind for Proposed Scheme

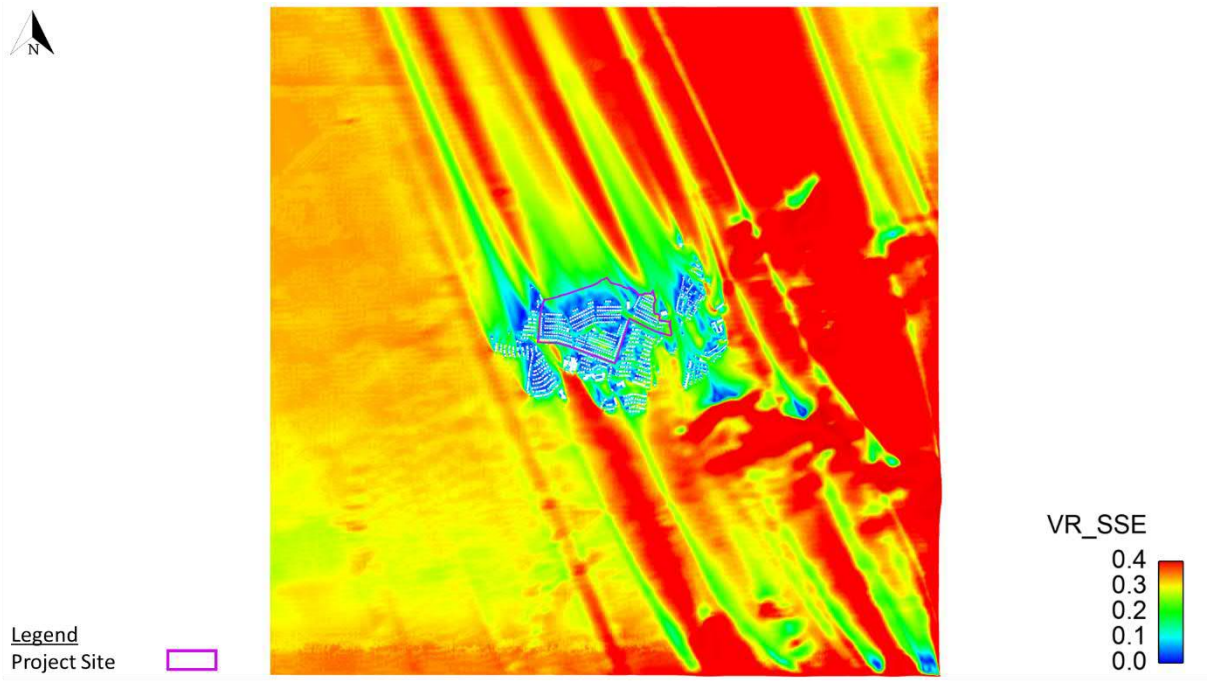


Figure 25 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

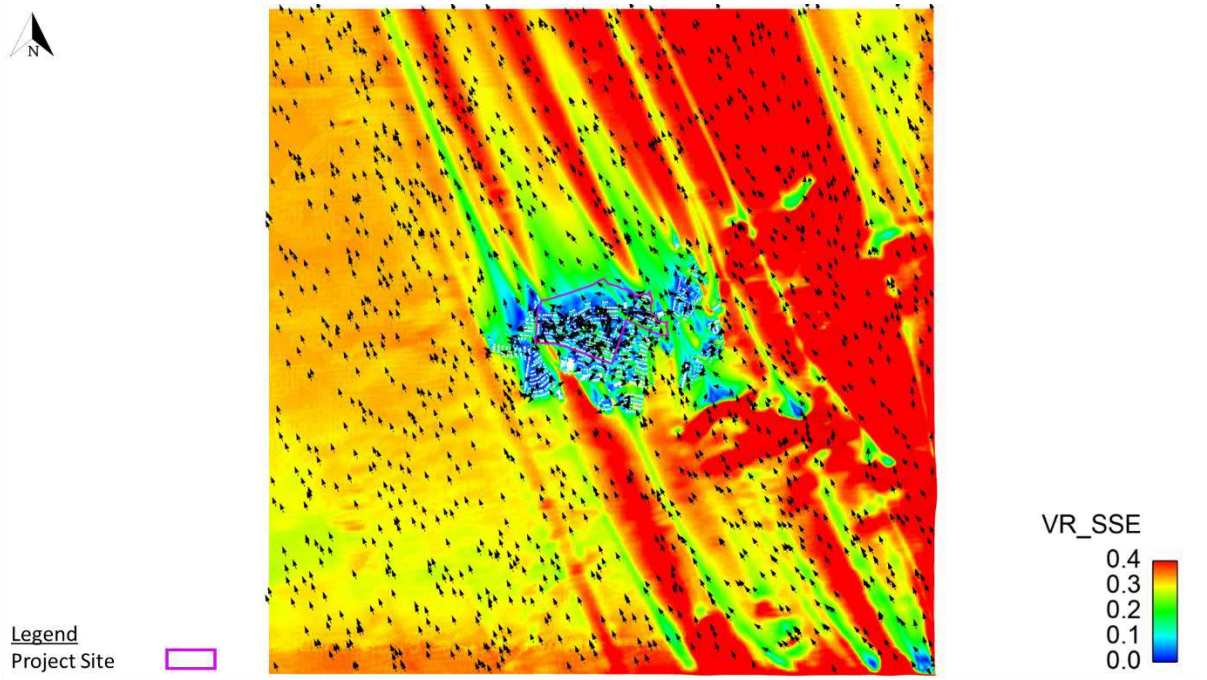


Figure 26 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Baseline Scheme

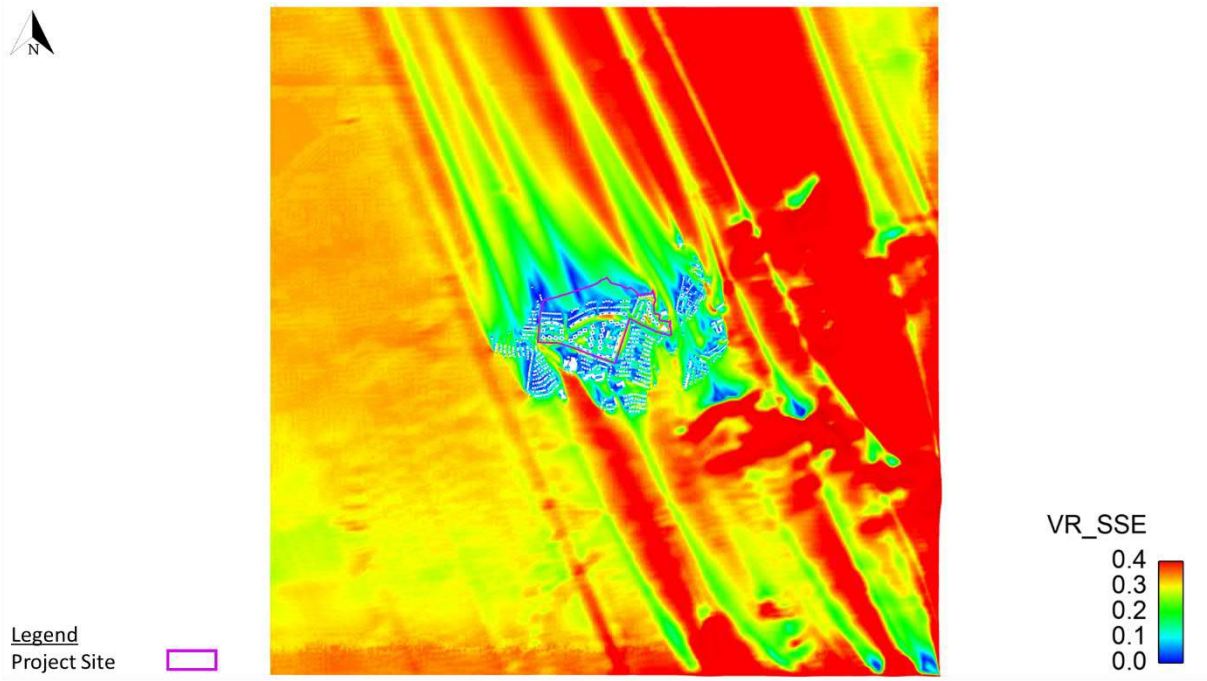


Figure 27 VR Contour Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

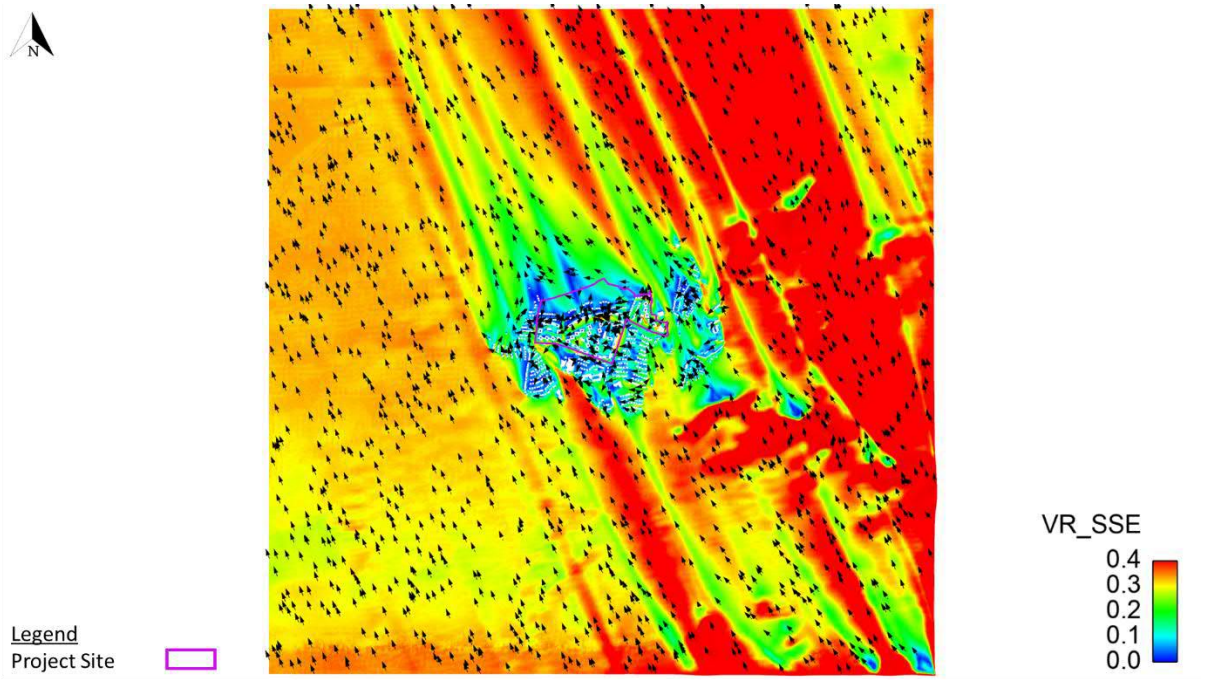


Figure 28 VR Vector Plot of Whole Domain at Pedestrian Level under SSE Wind for Proposed Scheme

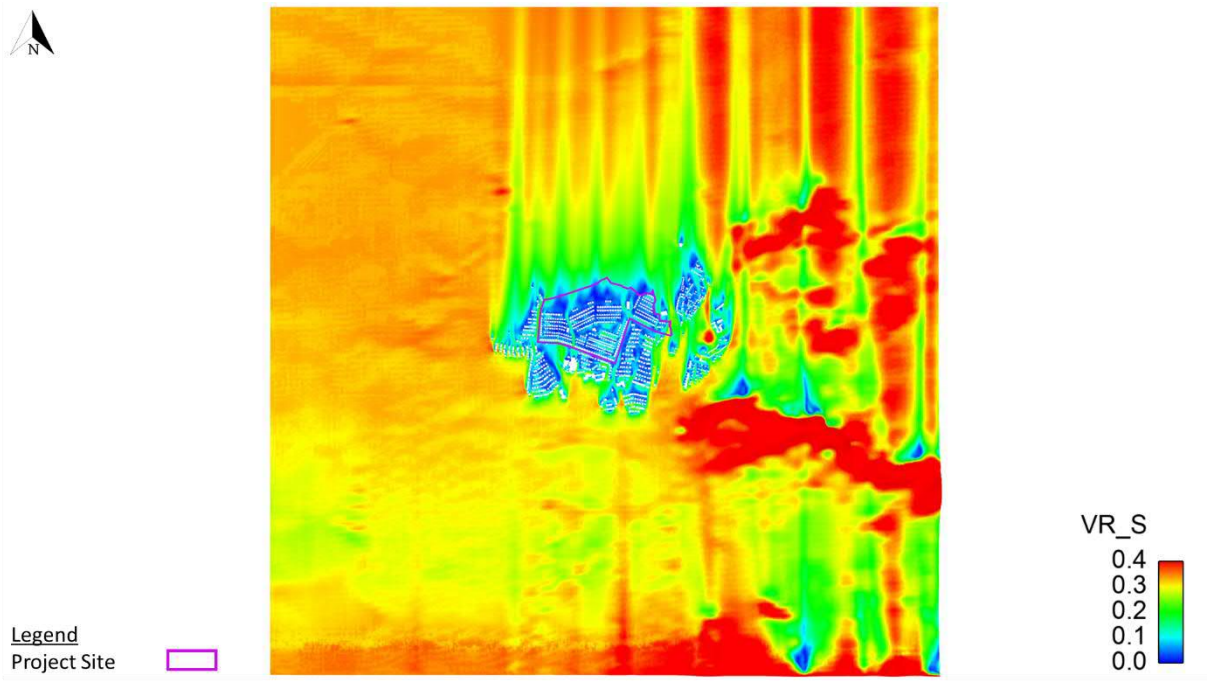


Figure 29 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

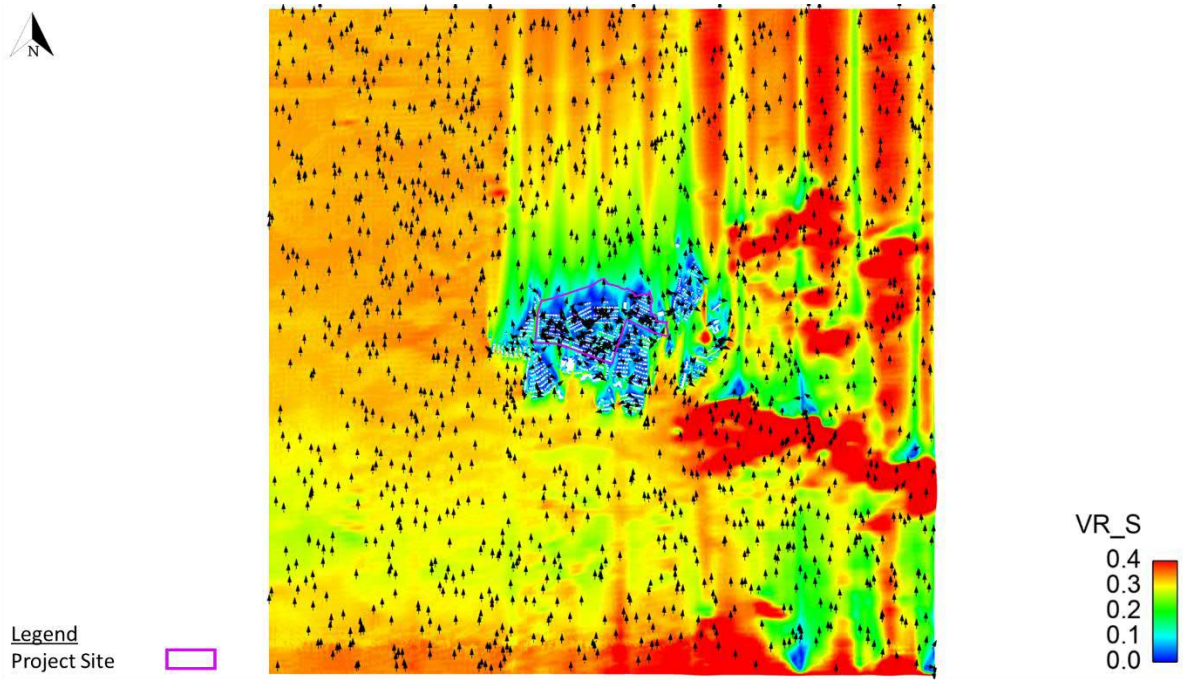


Figure 30 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Baseline Scheme

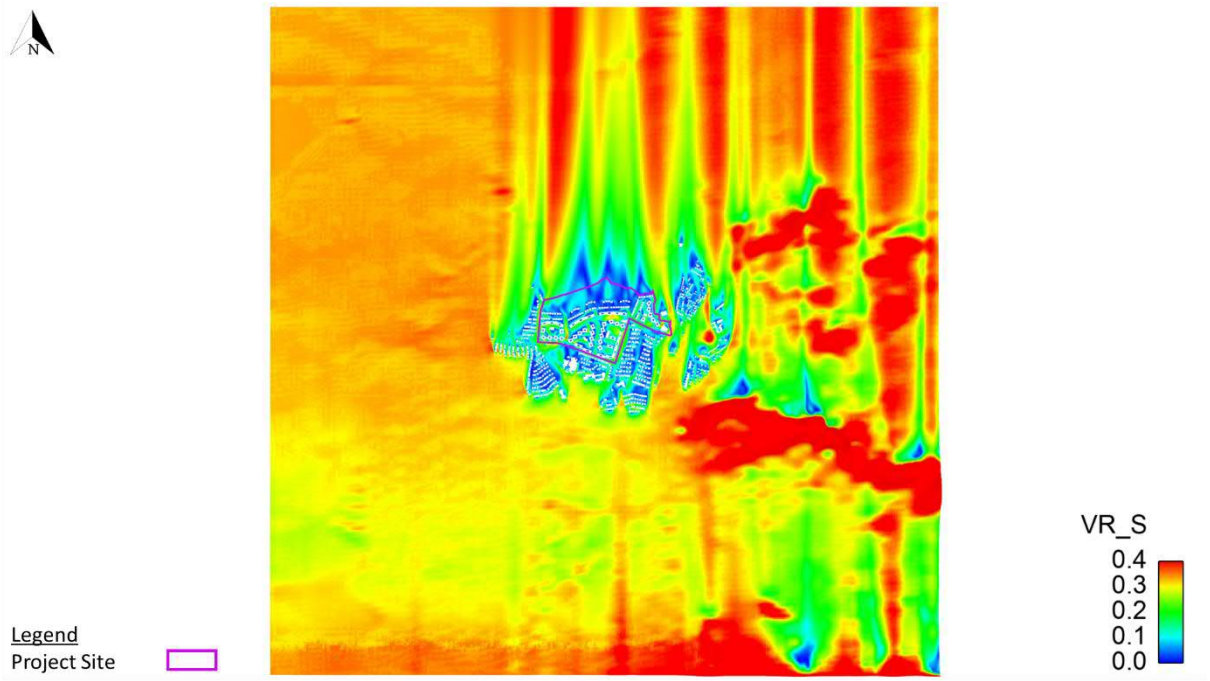


Figure 31 VR Contour Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

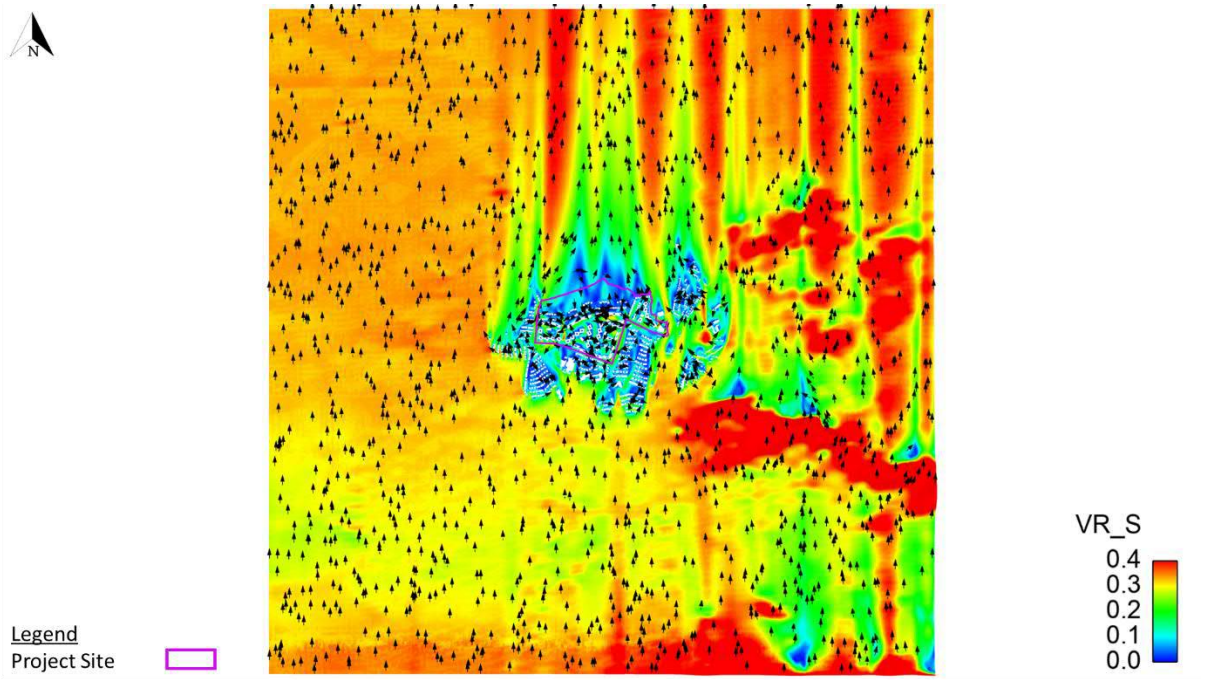


Figure 32 VR Vector Plot of Whole Domain at Pedestrian Level under S Wind for Proposed Scheme

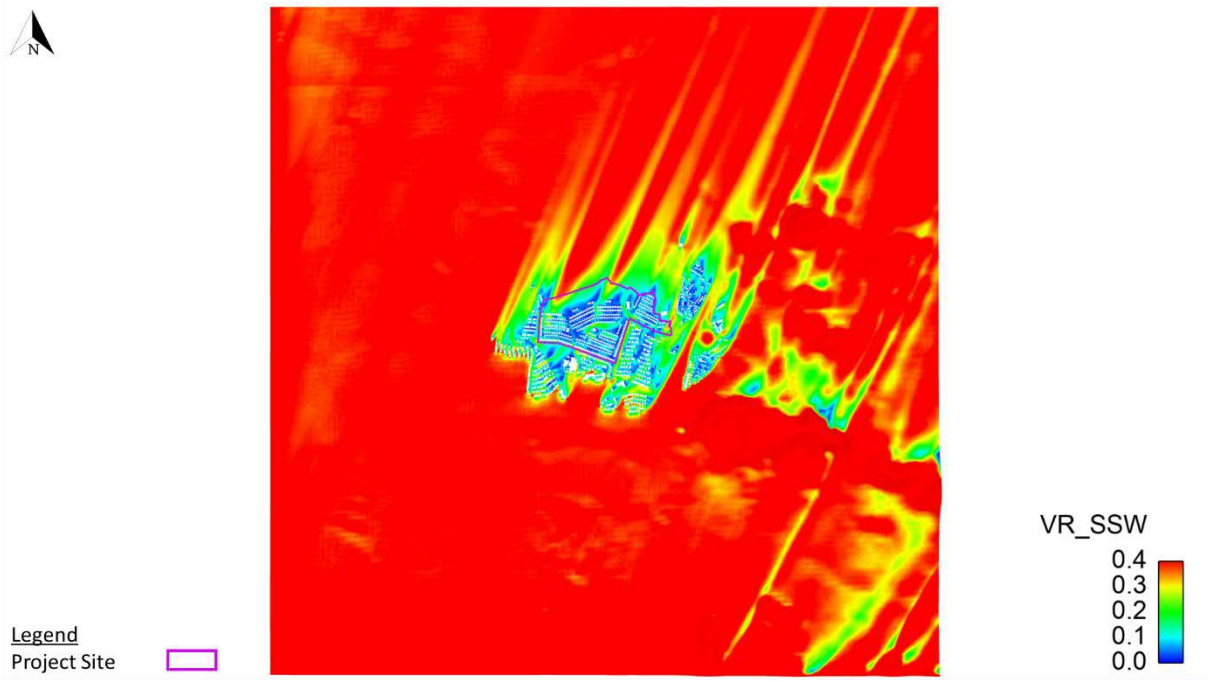


Figure 33 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

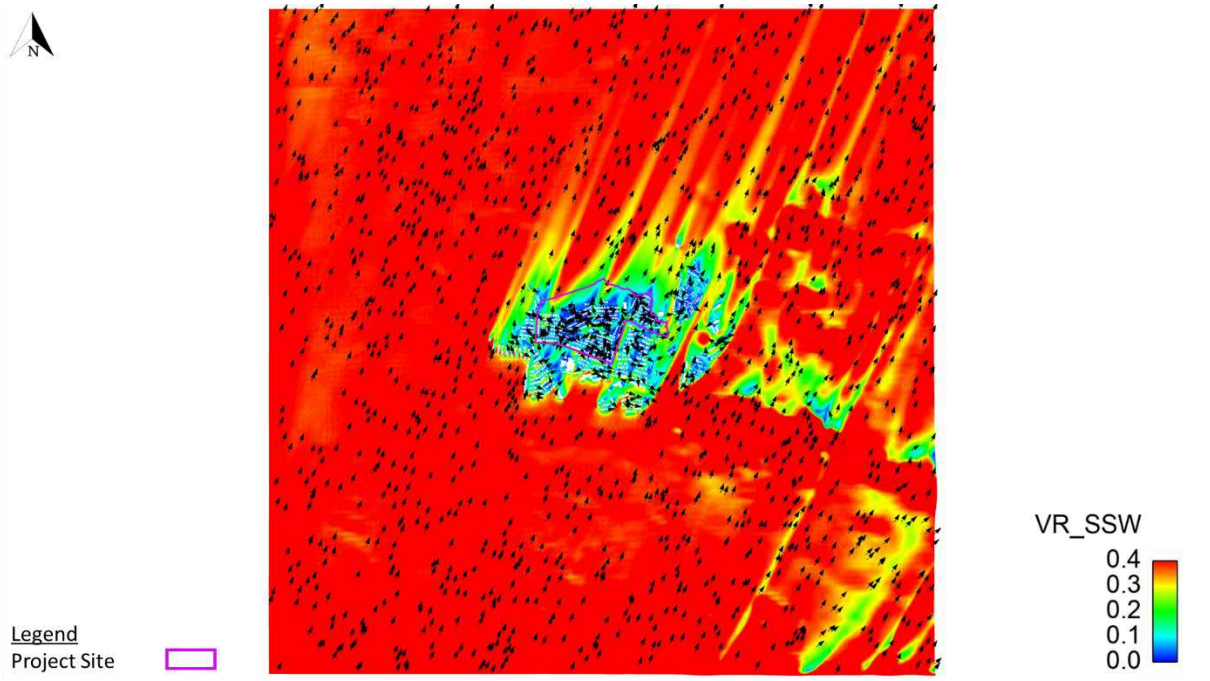


Figure 34 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Baseline Scheme

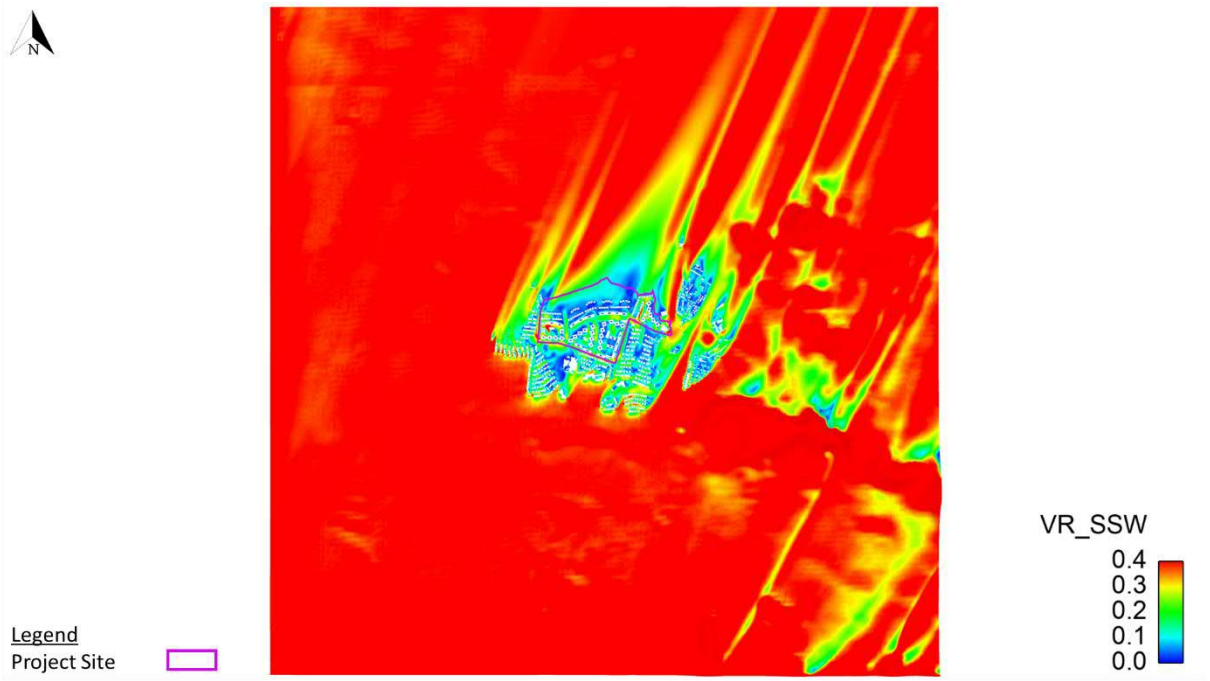


Figure 35 VR Contour Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

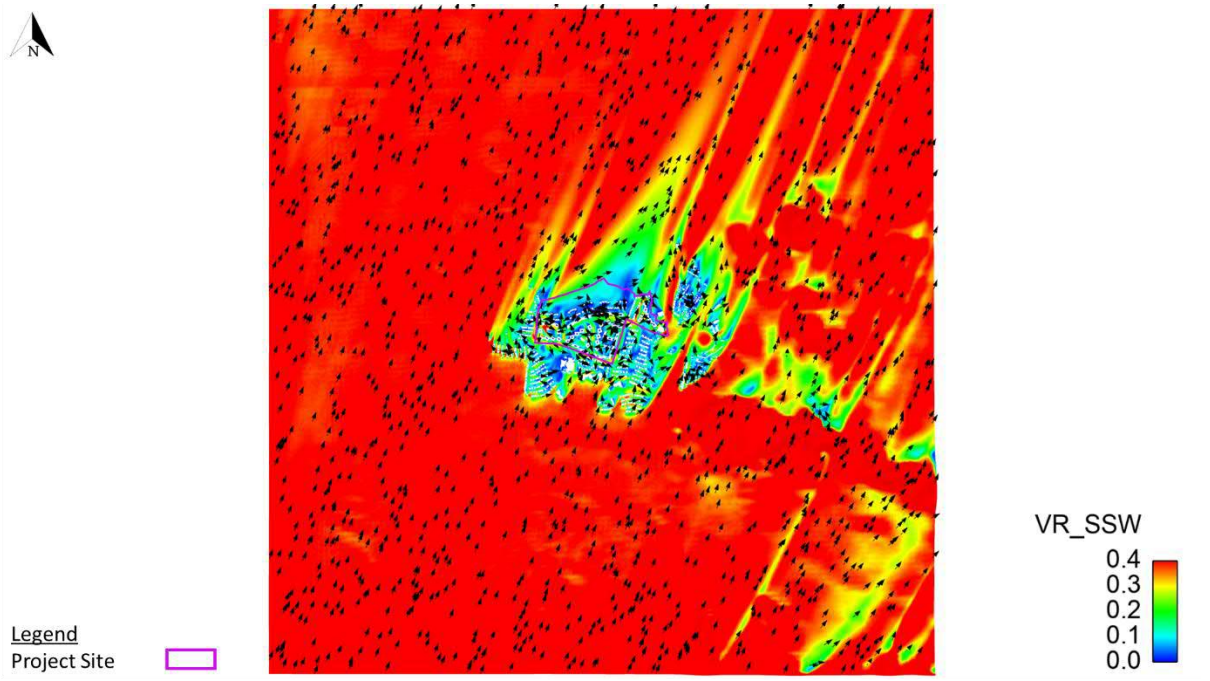


Figure 36 VR Vector Plot of Whole Domain at Pedestrian Level under SSW Wind for Proposed Scheme

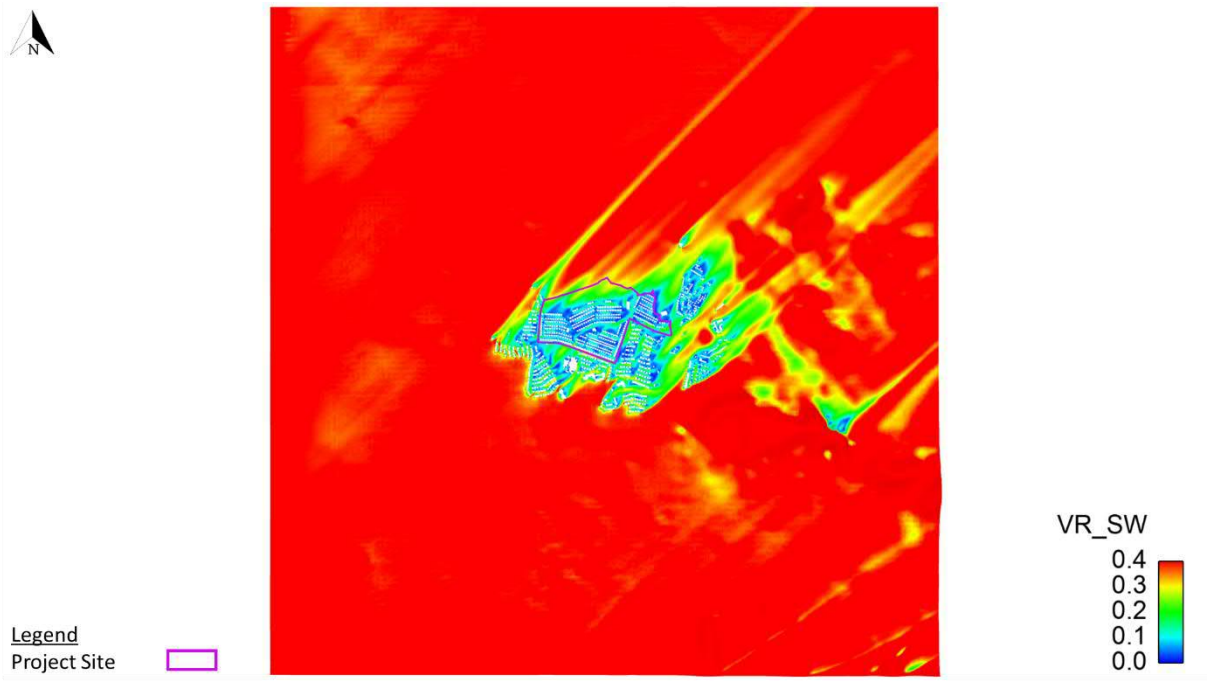


Figure 37 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

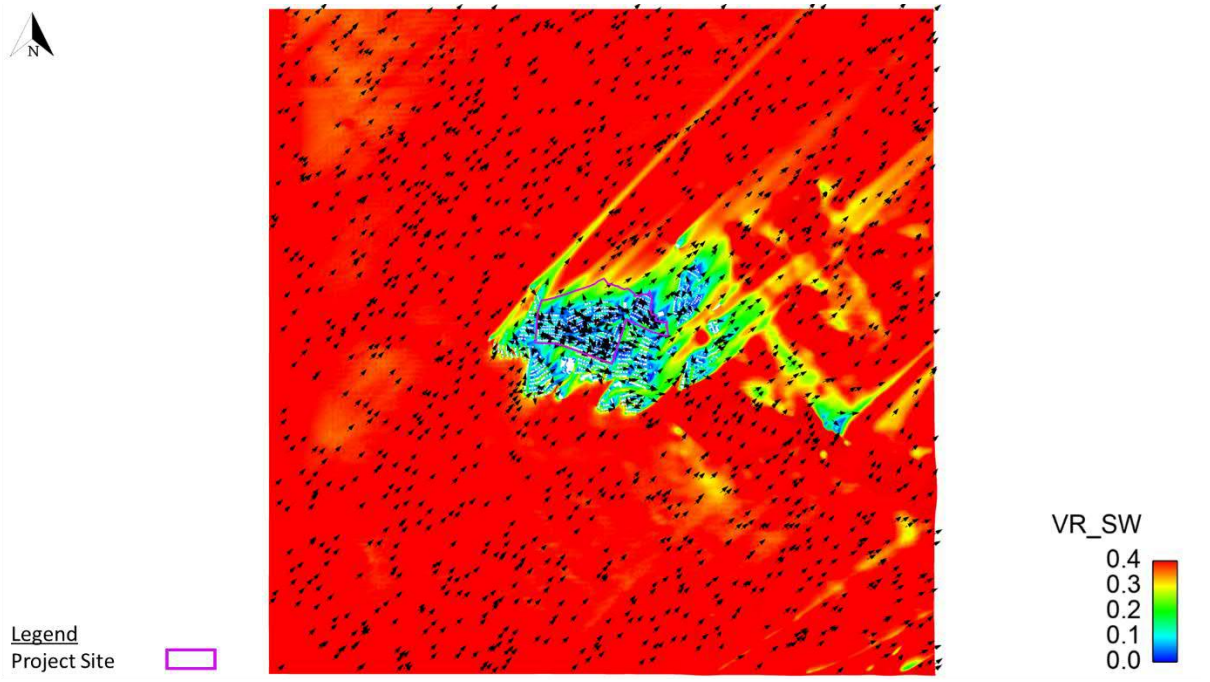


Figure 38 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Baseline Scheme

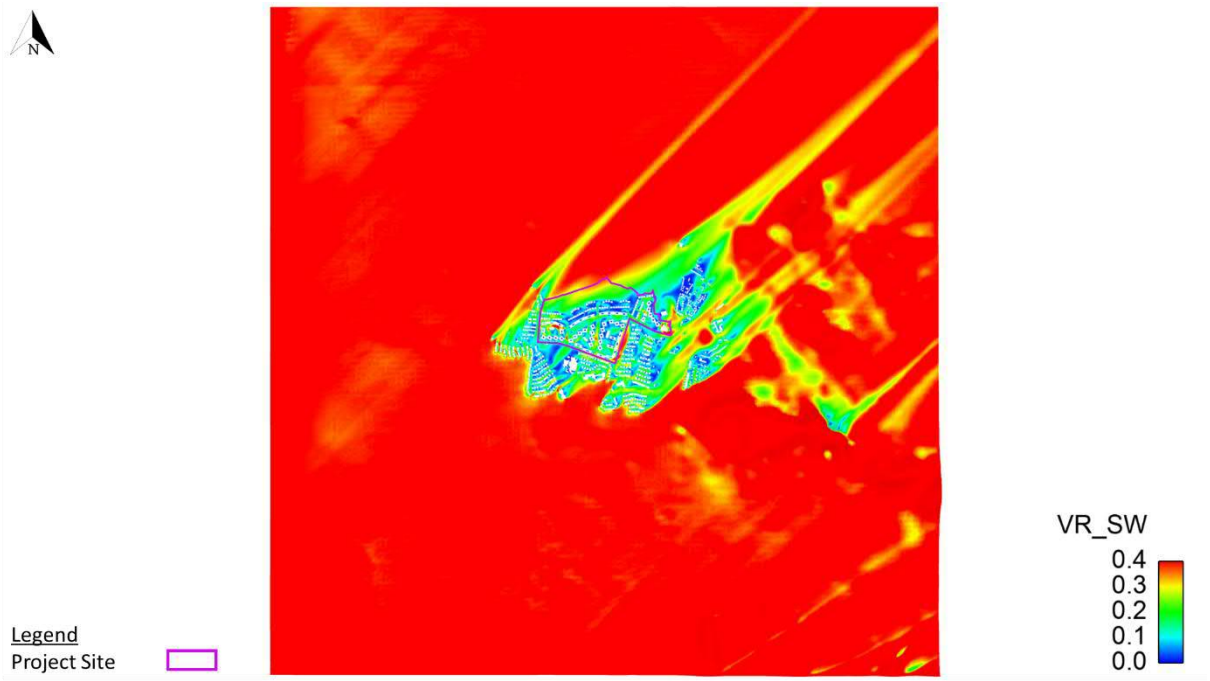


Figure 39 VR Contour Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

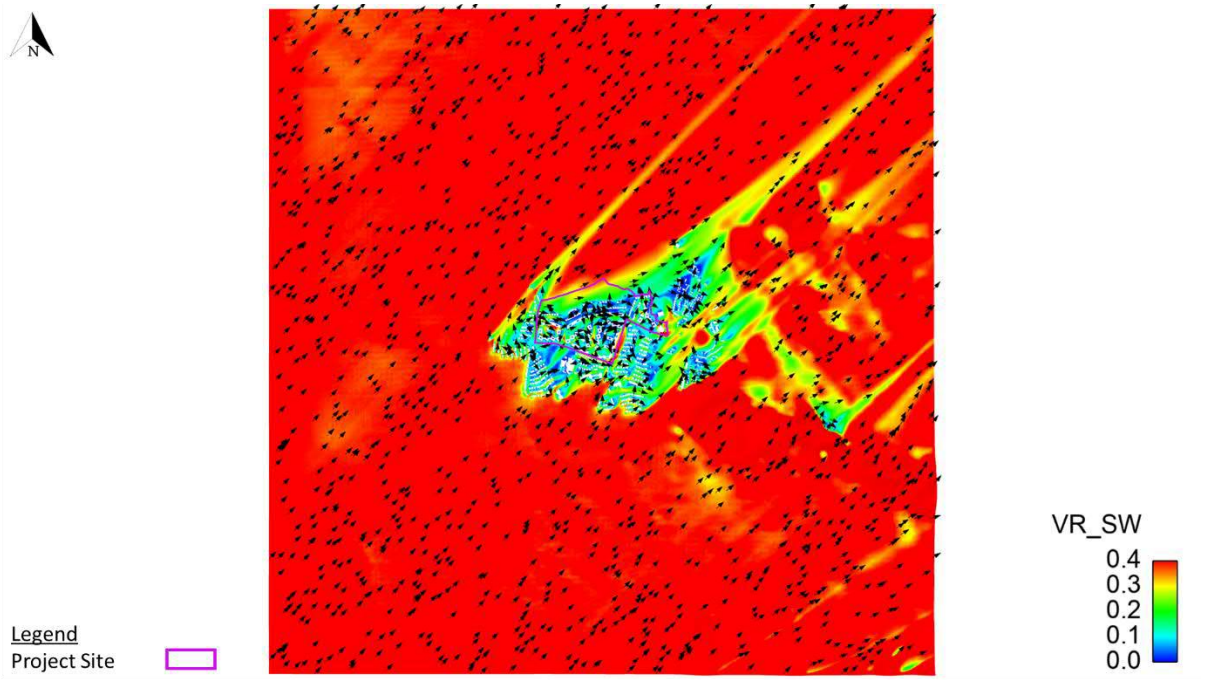


Figure 40 VR Vector Plot of Whole Domain at Pedestrian Level under SW Wind for Proposed Scheme

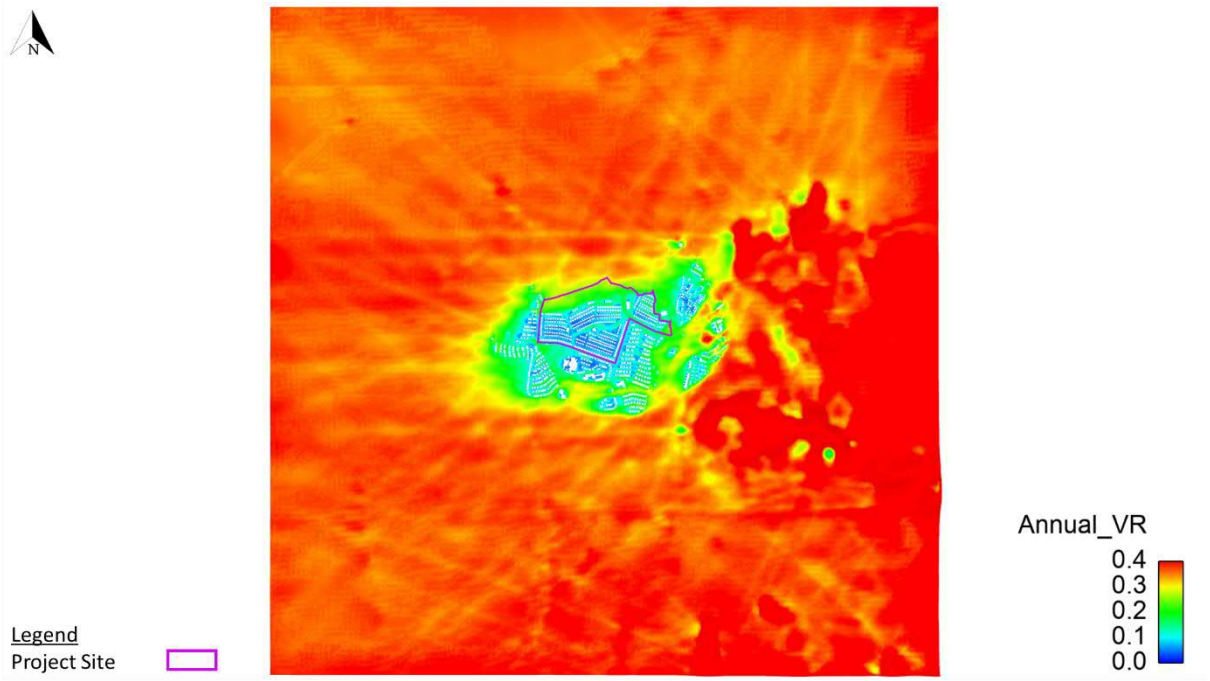


Figure 41 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

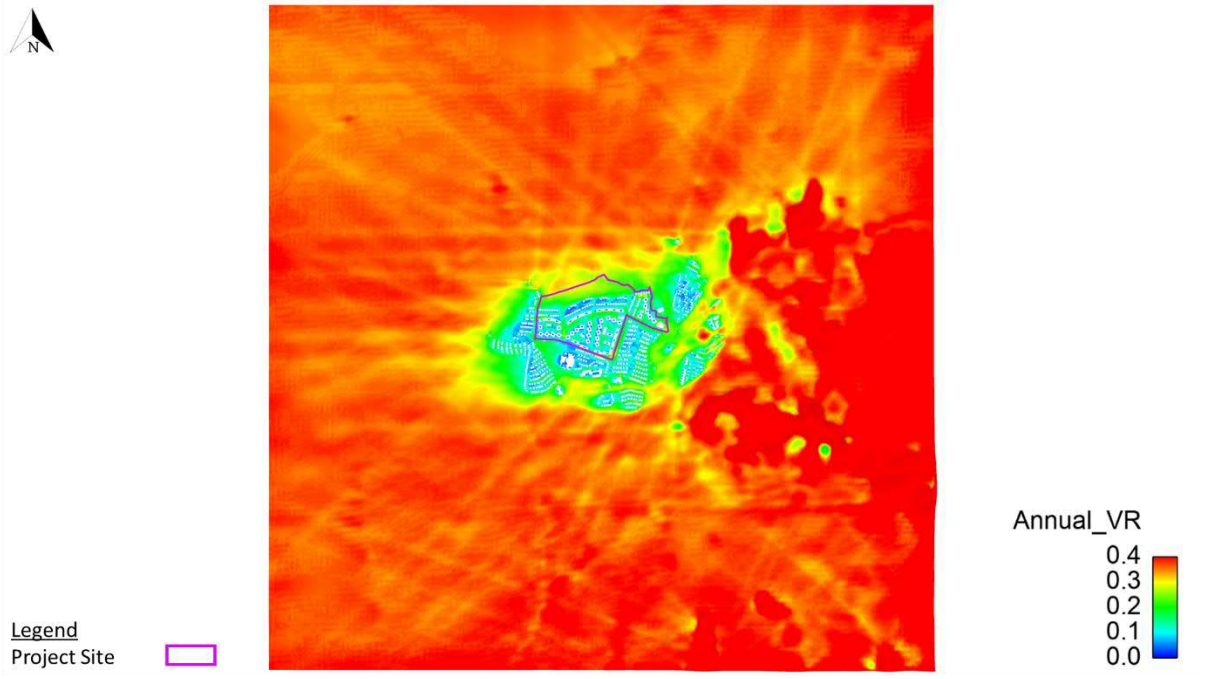


Figure 42 Annual Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

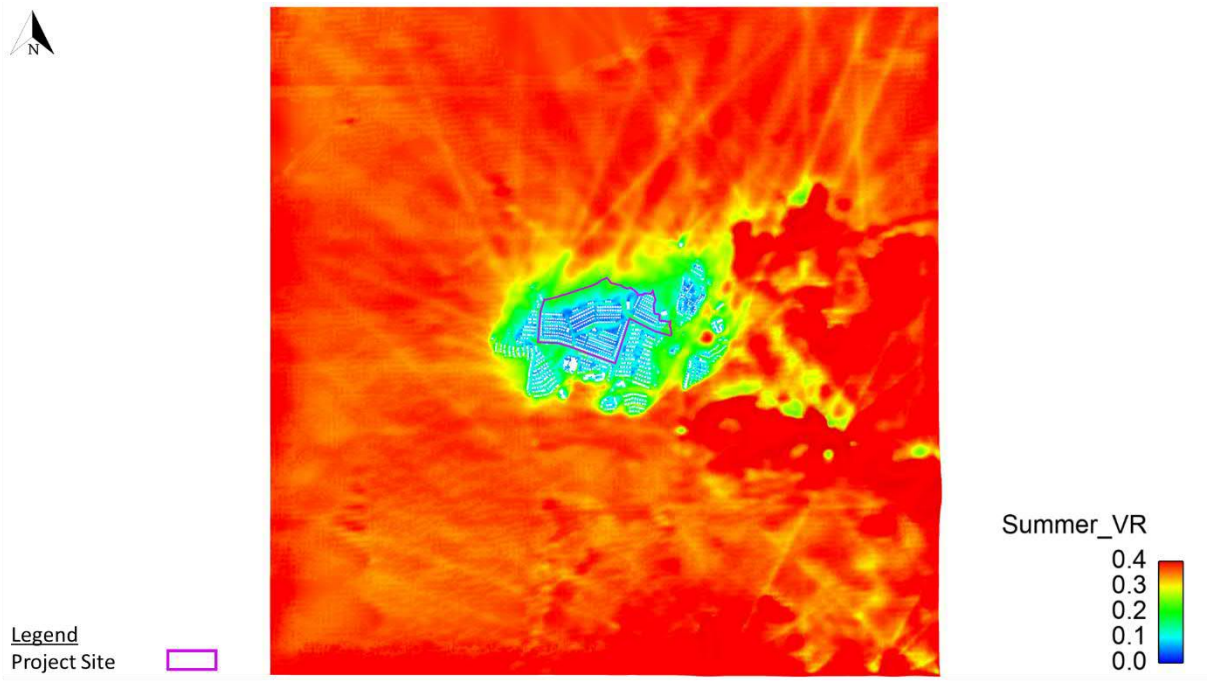


Figure 43 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Baseline Scheme

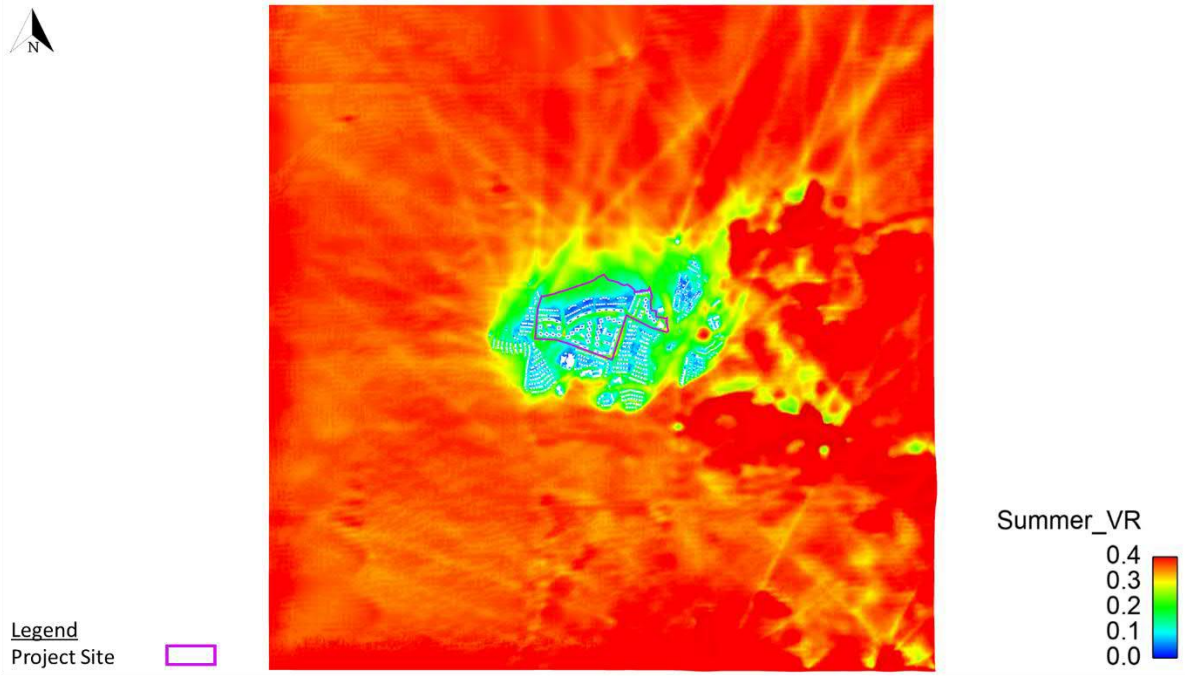
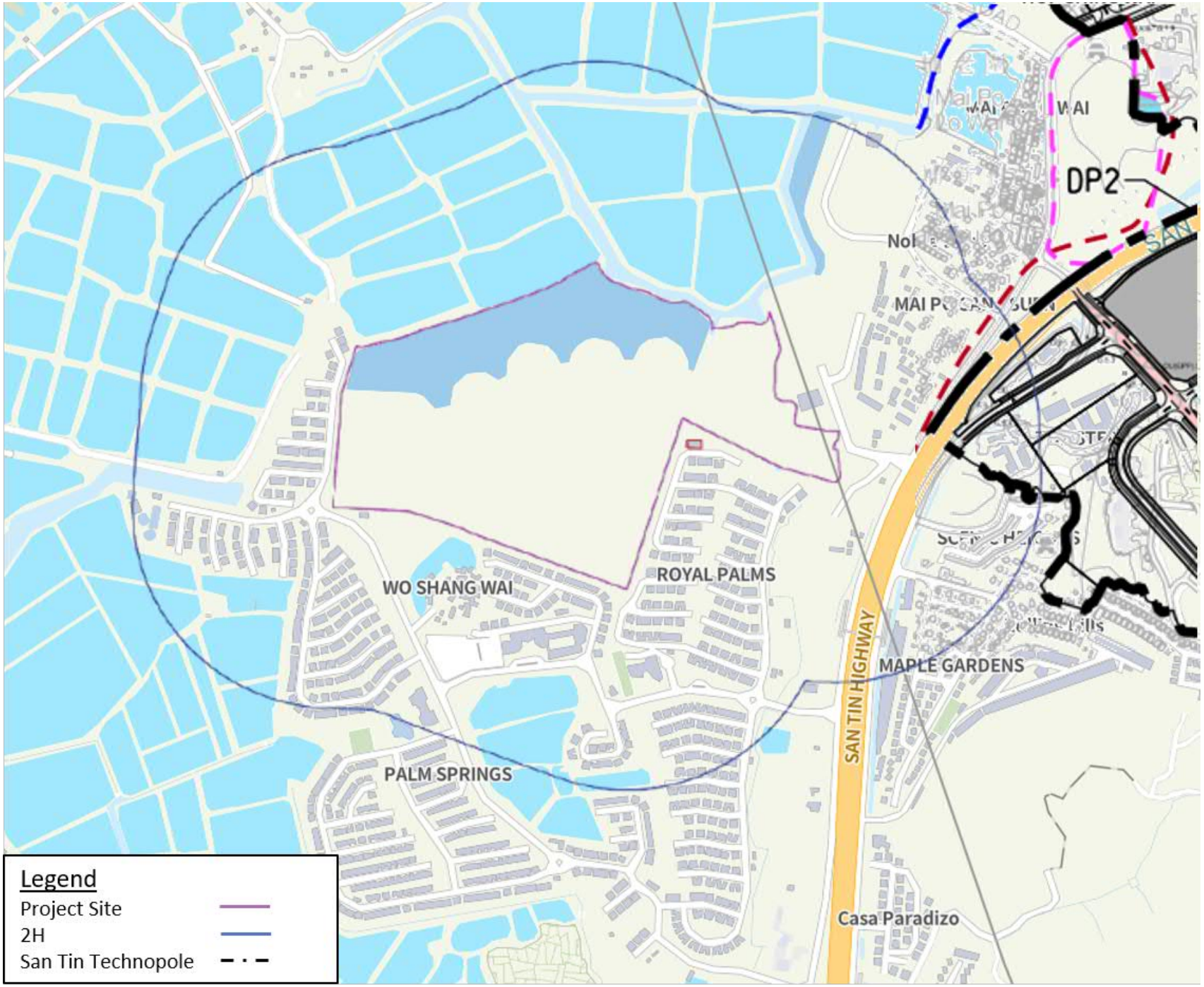


Figure 44 Summer Weighted Average VR Contour Plot of Whole Domain at Pedestrian Level for Proposed Scheme

Appendix G – Location of the Planned / Committed Developments within the Surrounding Area


DP2
WO SHANG WAI
ROYAL PALMS
PALM SPRINGS
SAN TIN HIGHWAY
MAPLE GARDENS
Casa Paradizo
Legend
Project Site
2H
San Tin Technopole

ISO A1 594mm x 841mm

Approved:

Checked:

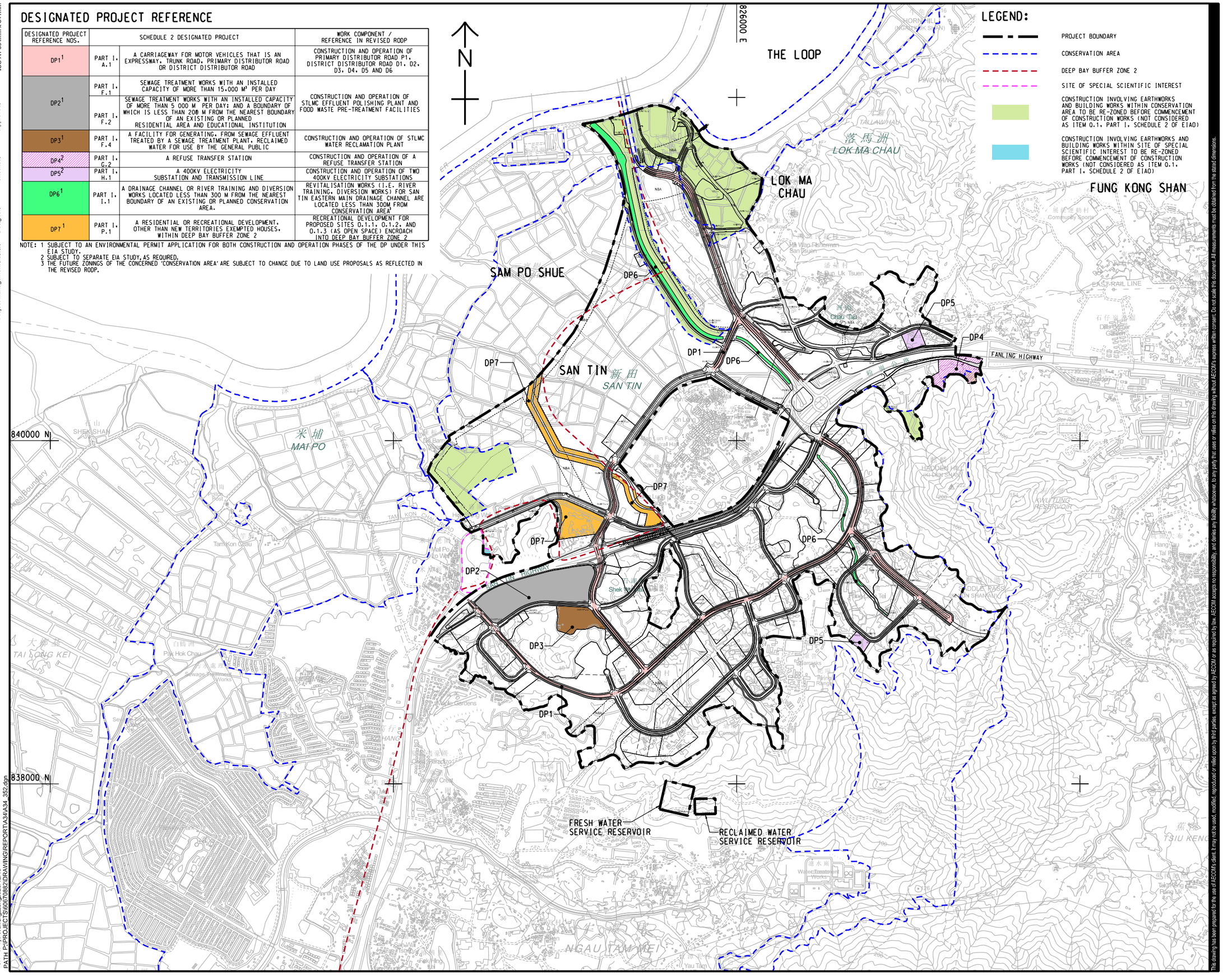
Designer:

Project Management Initials:

DESIGNATED PROJECT REFERENCE

DESIGNATED PROJECT REFERENCE NOS.	SCHEDULE 2 DESIGNATED PROJECT		WORK COMPONENT / REFERENCE IN REVISED RODP
DP1[1]	PART I, A.1	A CARRIAGEWAY FOR MOTOR VEHICLES THAT IS AN EXPRESSWAY, TRUNK ROAD, PRIMARY DISTRIBUTOR ROAD OR DISTRICT DISTRIBUTOR ROAD	CONSTRUCTION AND OPERATION OF PRIMARY DISTRIBUTOR ROAD P1, DISTRICT DISTRIBUTOR ROAD D1, D2, D3, D4, D5 AND D6
DP2[1]	PART I, F.1	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 15,000 M^3 PER DAY	CONSTRUCTION AND OPERATION OF STLMC EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES
	PART I, F.2	SEWAGE TREATMENT WORKS WITH AN INSTALLED CAPACITY OF MORE THAN 5 000 M PER DAY; AND A BOUNDARY OF WHICH IS LESS THAN 200 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED RESIDENTIAL AREA AND EDUCATIONAL INSTITUTION	
DP3[1]	PART I, F.4	A FACILITY FOR GENERATING, FROM SEWAGE EFFLUENT TREATED BY A SEWAGE TREATMENT PLANT, RECLAIMED WATER FOR USE BY THE GENERAL PUBLIC	CONSTRUCTION AND OPERATION OF STLMC WATER RECLAMATION PLANT
DP4[2]	PART I, G.2	A REFUSE TRANSFER STATION	CONSTRUCTION AND OPERATION OF A REFUSE TRANSFER STATION
DP5[2]	PART I, H.1	A 400KV ELECTRICITY SUBSTATION AND TRANSMISSION LINE	CONSTRUCTION AND OPERATION OF TWO 400KV ELECTRICITY SUBSTATIONS
DP6[1]	PART I, I.1	A DRAINAGE CHANNEL OR RIVER TRAINING AND DIVERSION WORKS LOCATED LESS THAN 300 M FROM THE NEAREST BOUNDARY OF AN EXISTING OR PLANNED CONSERVATION AREA.	REVITALISATION WORKS (I.E. RIVER TRAINING, DIVERSION WORKS) FOR SAN TIN EASTERN MAIN DRAINAGE CHANNEL ARE LOCATED LESS THAN 300M FROM CONSERVATION AREA[3]
DP7[1]	PART I, P.1	A RESIDENTIAL OR RECREATIONAL DEVELOPMENT, OTHER THAN NEW TERRITORIES EXEMPTED HOUSES, WITHIN DEEP BAY BUFFER ZONE 2	RECREATIONAL DEVELOPMENT FOR PROPOSED SITES O.1.1, O.1.2, AND O.1.3 (AS OPEN SPACE) ENCROACH INTO DEEP BAY BUFFER ZONE 2

NOTE: 1 SUBJECT TO AN ENVIRONMENTAL PERMIT APPLICATION FOR BOTH CONSTRUCTION AND OPERATION PHASES OF THE DP UNDER THIS EIA STUDY.
2 SUBJECT TO SEPARATE EIA STUDY, AS REQUIRED.
3 THE FUTURE ZONINGS OF THE CONCERNED 'CONSERVATION AREA' ARE SUBJECT TO CHANGE DUE TO LAND USE PROPOSALS AS REFLECTED IN THE REVISED RODP.



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PROJECT
項目
FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

CLIENT
業主
土木工程拓展署 Civil Engineering and Development Department
規劃署 Planning Department

CONSULTANT
工程顧問公司
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核

STATUS
階段

SCALE 比例: A3 1 : 20000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60670882
AGREEMENT NO. 協議編號: CE 20/2021

SHEET TITLE
圖紙名稱
LOCATION OF DESIGNATED PROJECTS

SHEET NUMBER
圖紙編號
60670882/A34/FIGURE 1.2

Plot File by: WunhingZeng@2023/12/15
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_352.dgn

Appendix H – Overviews of the 3D Model Covering Whole Computational Domain

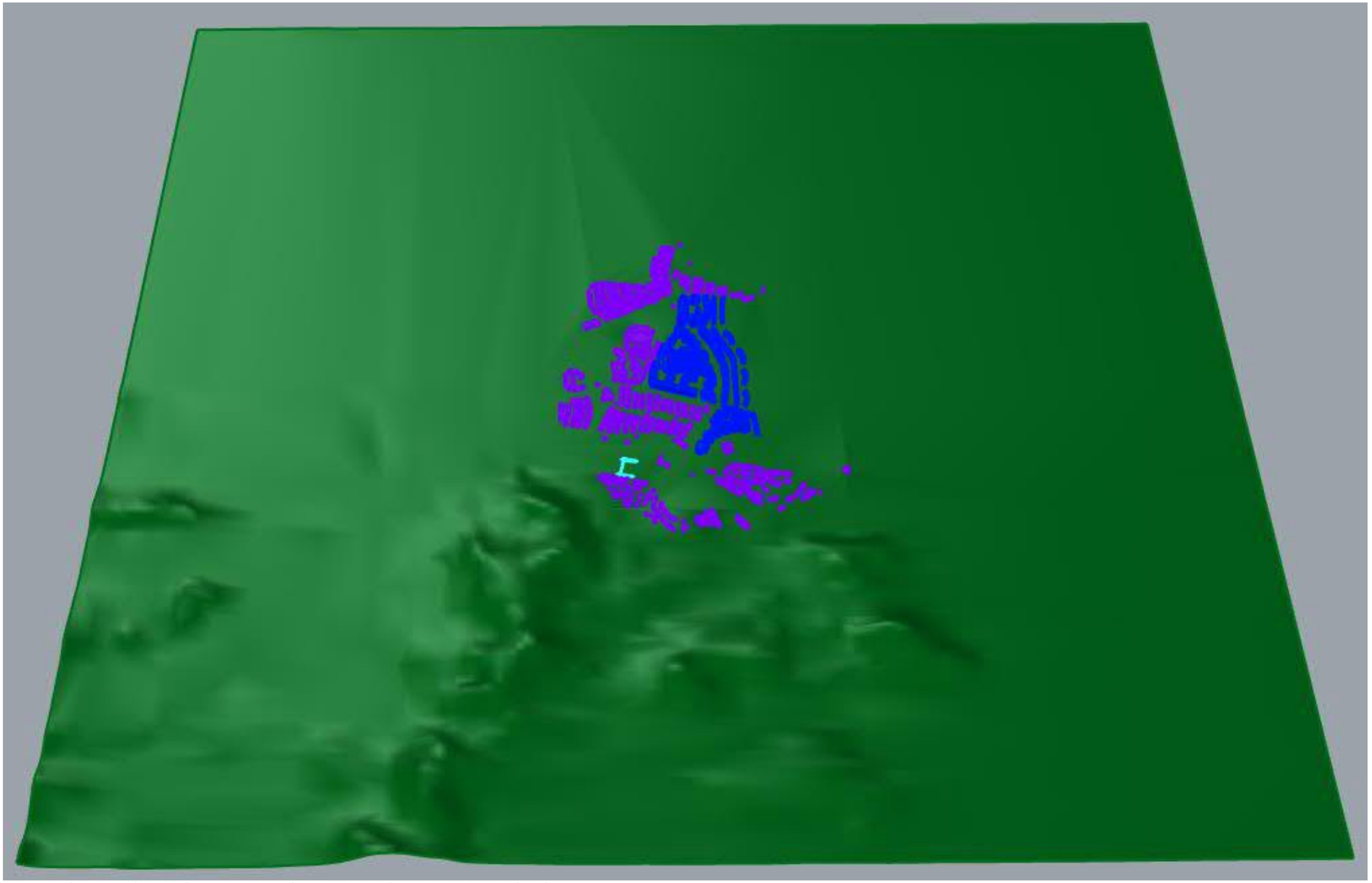


Figure 1a: Overview of the 3D Simulation Model Covering Whole Computation Domain (East)



Figure 1b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (East)

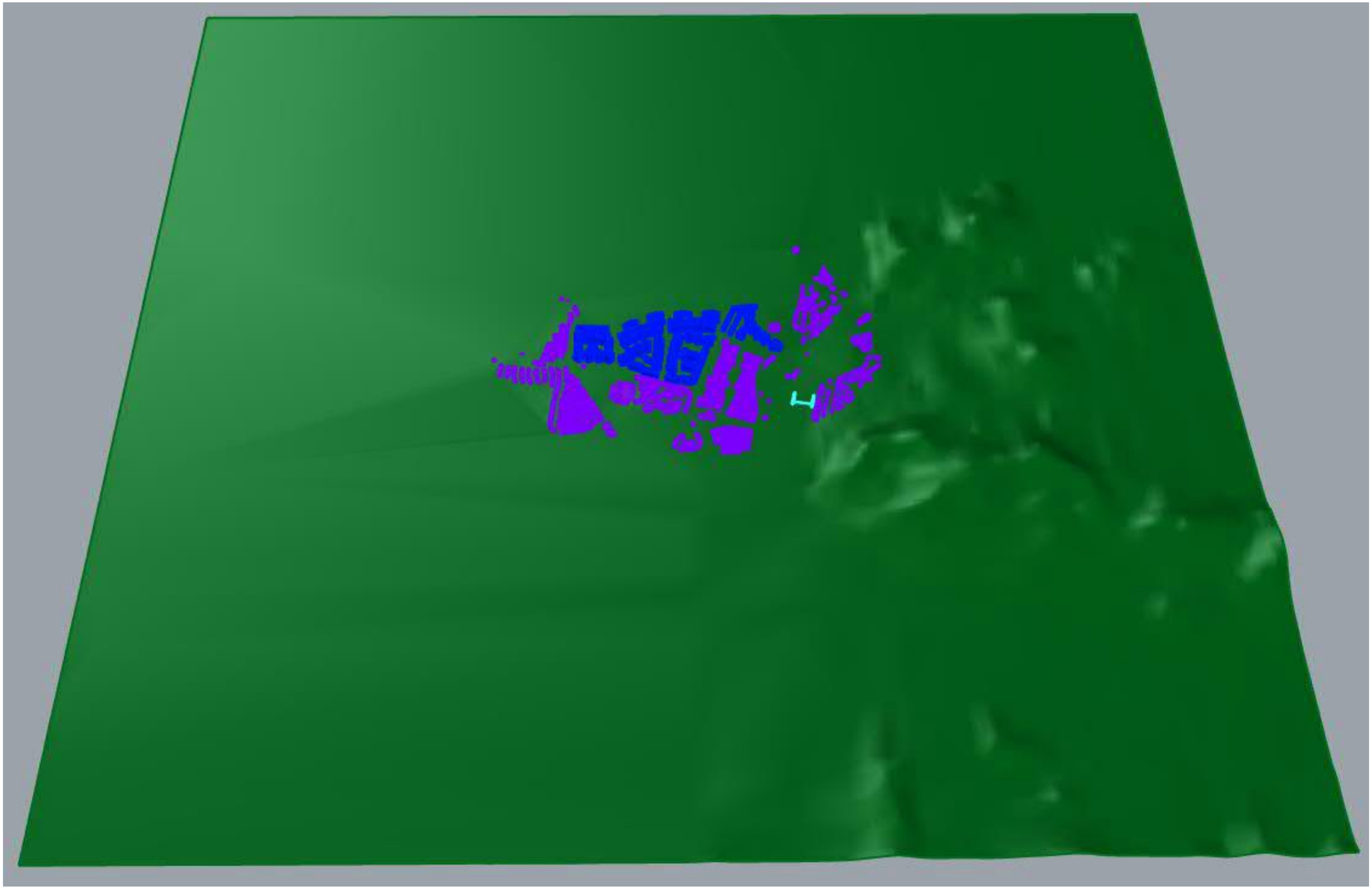


Figure 2a: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)



Figure 2b: Overview of the 3D Simulation Model Covering Whole Computation Domain (South)

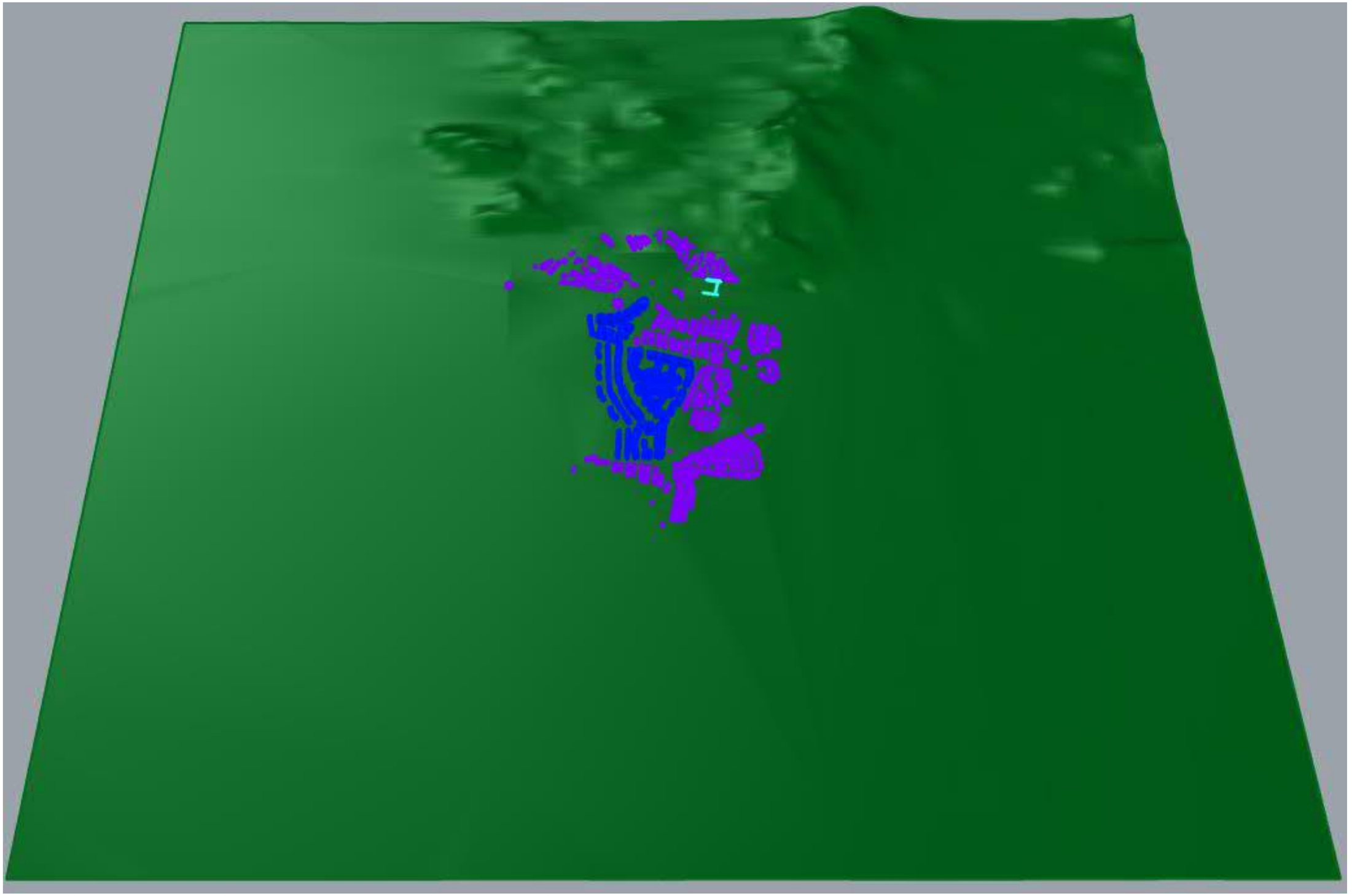


Figure 3a: Overview of the 3D Simulation Model Covering Whole Computation Domain (West)

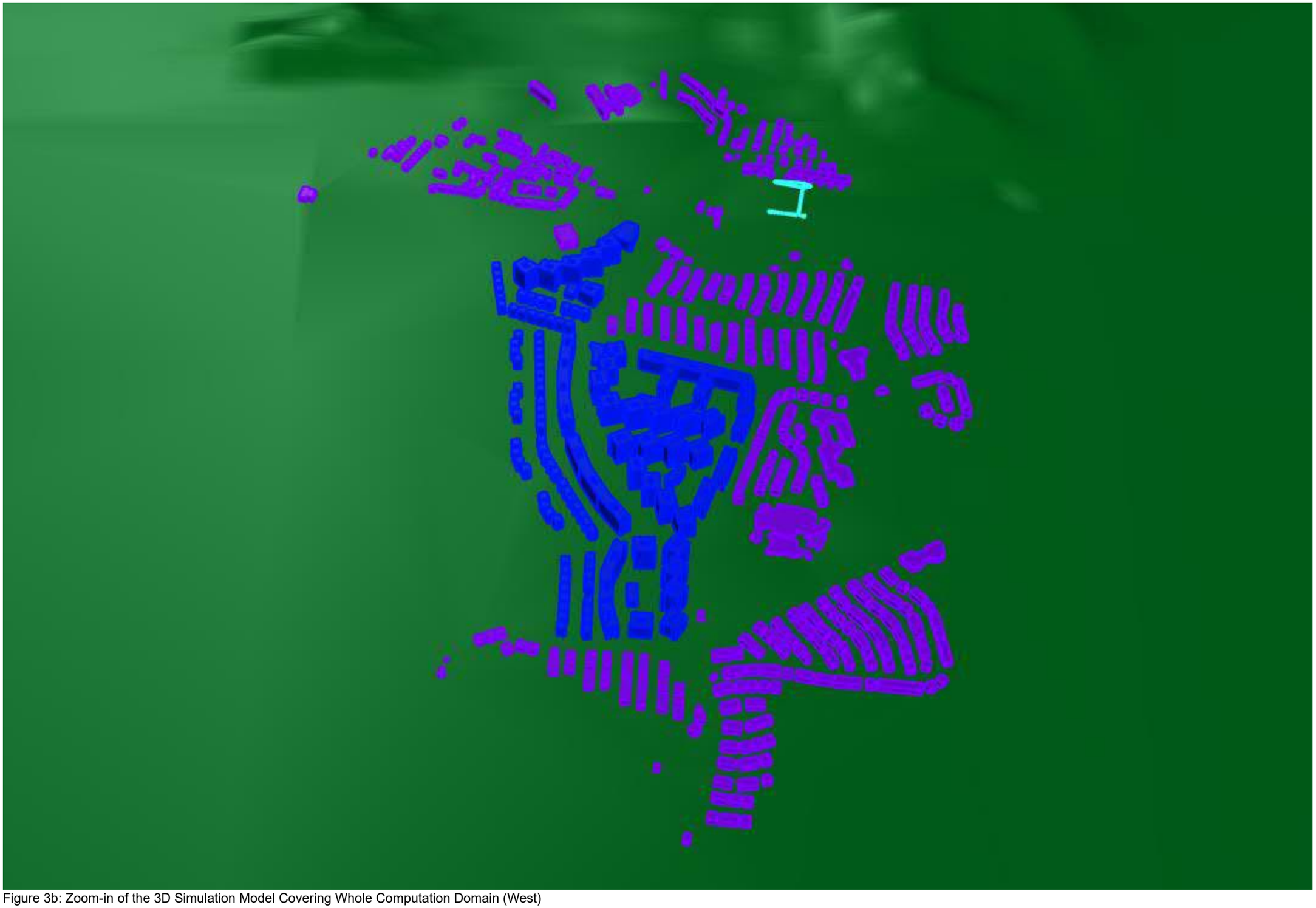


Figure 3b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (West)

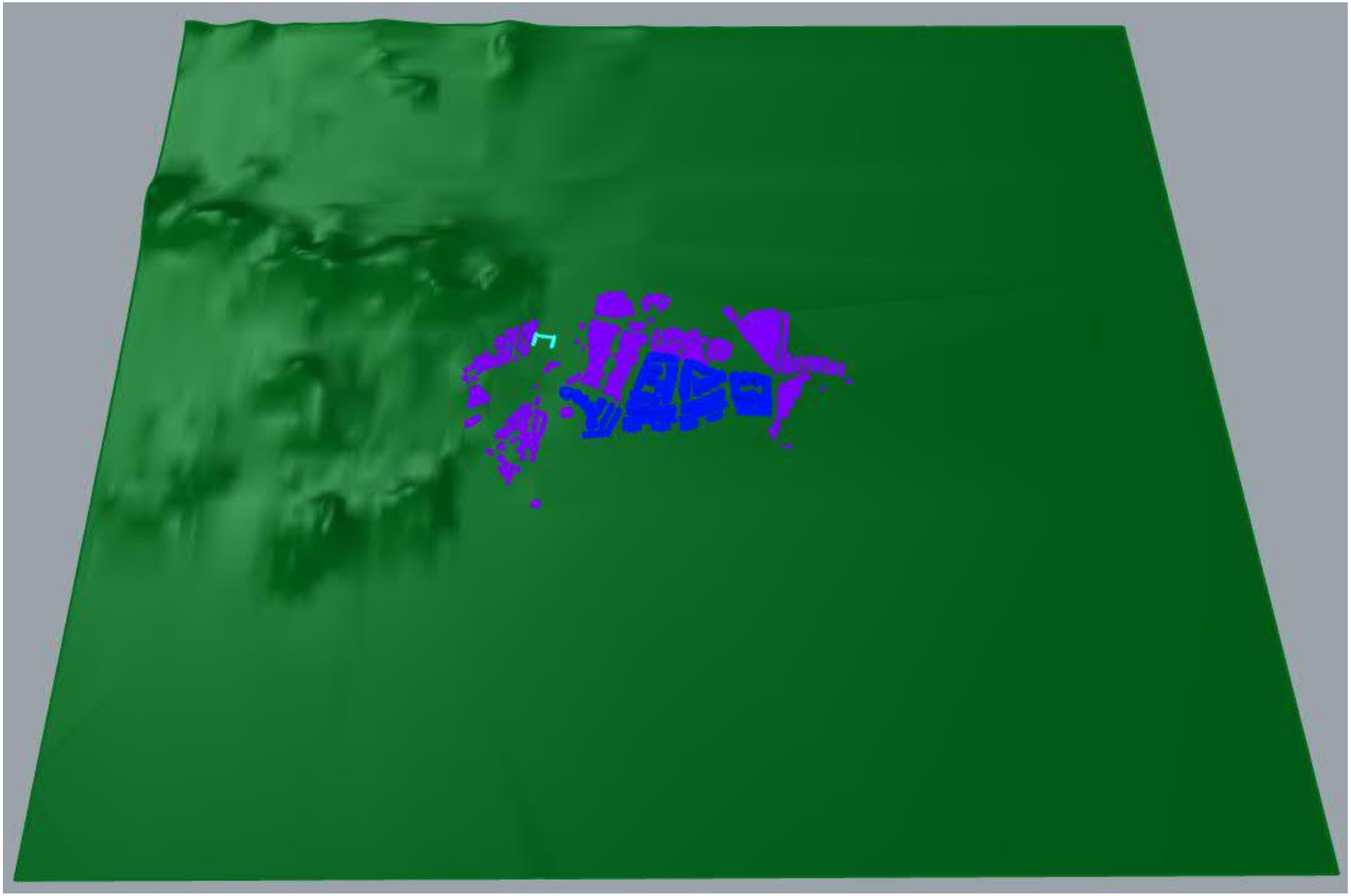


Figure 4a: Overview of the 3D Simulation Model Covering Whole Computation Domain (North)

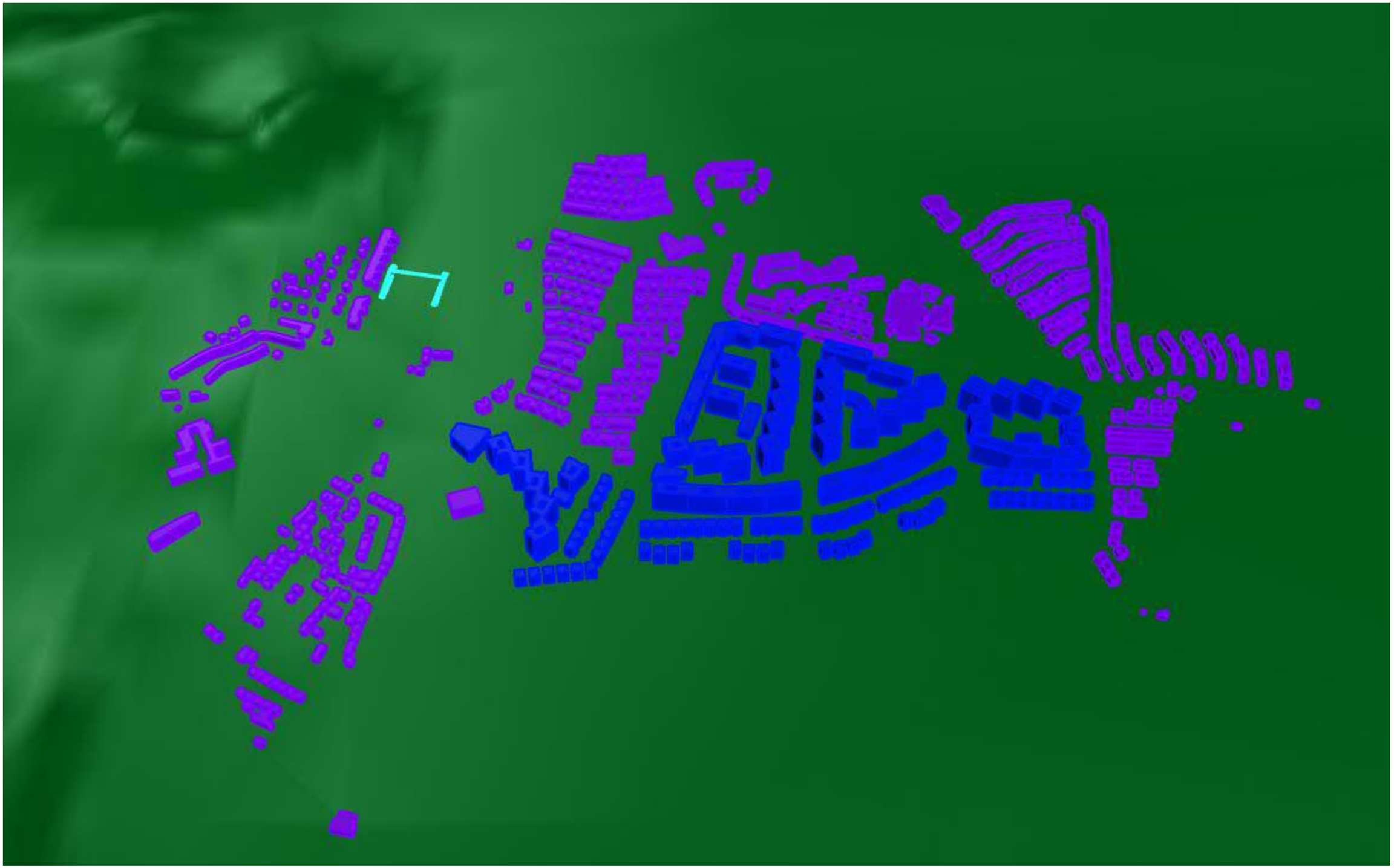
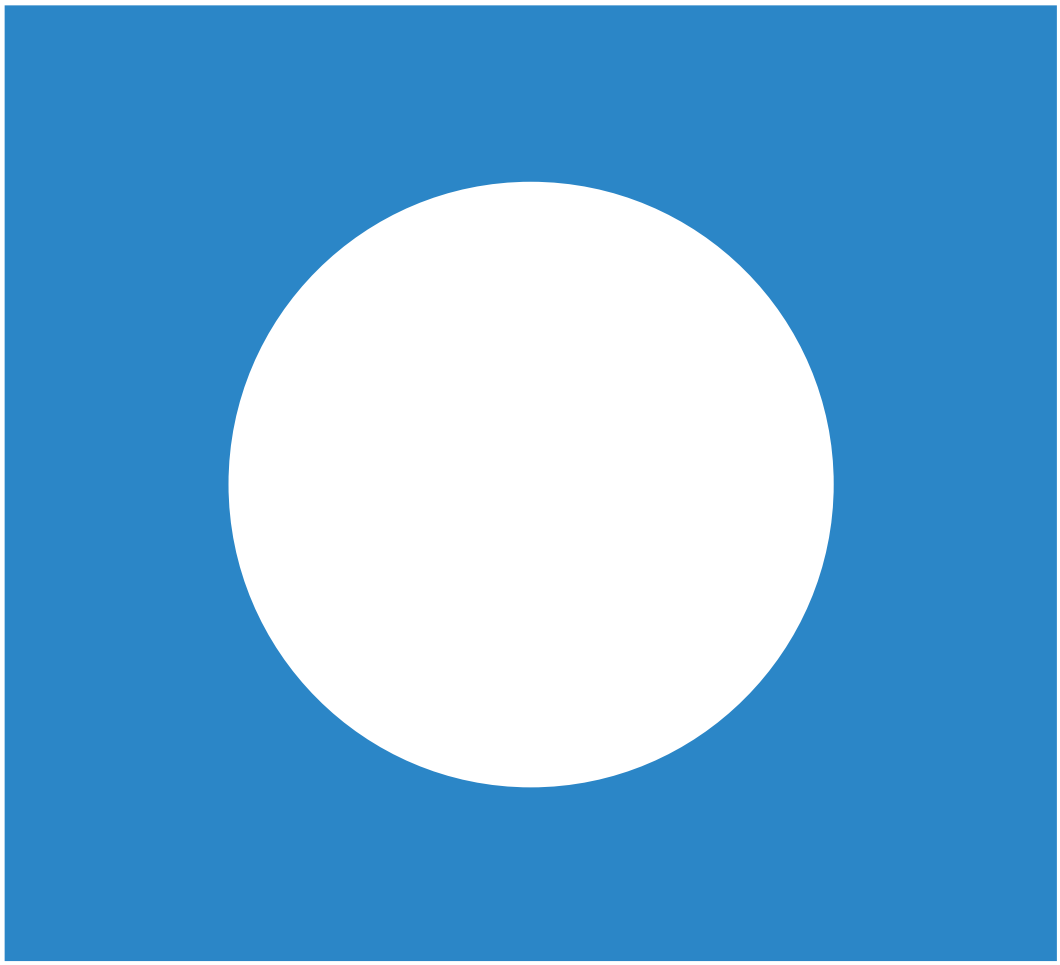


Figure 4b: Zoom-in of the 3D Simulation Model Covering Whole Computation Domain (North)



WATER SUPPLY IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

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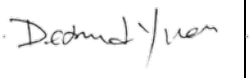
Quality Management

Issue/revision	0	1	2	3
Remarks				
Date	16 January 2025	22 May 2025	25 July 2025	16 September 2025
Prepared by	Jocelyn Shao	Jocelyn Shao	Kristhalia Hadi	Kristhalia Hadi
Signature				
Checked by	Connie Chan	Connie Chan	Desmond Yuen	Desmond Yuen
Signature				
Authorised by	Connie Chan	Connie Chan	Desmond Yuen	Desmond Yuen
Signature				
Project number				
Report number	0	1	2	3

Signatures

Prepared by



Kristhalia Hadi
Assistant Consultant

Reviewed by



Desmond Yuen

Associate

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1 INTRODUCTION

1.1 BACKGROUND

1.1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Water Supply Impact Assessment (WSIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the water demand due to the proposed comprehensive residential development.

1.1.2 This application is made under Section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in Figure 1.

1.2 DESCRIPTION OF PROPOSED DEVELOPMENT

1.2.1 The proposed development consists of a mix of 3 stories detached and semi-detached house and 6, 8 and 10 storey residential tower. 48716 m^2 of land are reserved as open greenery area.

1.2.2 The development consists of 128 units as houses and 3434 units in residential blocks, totalling 3562 housing unit with a plot ratio of 1.28 and an average unit gross floor area of 74.7 m^2.

1.2.3 The master layout plan is attached in **Appendix A**.

1.2.4 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff.

1.3 OBJECTIVES

1.3.1 The objective for this study is set out to be as follows:

(1) Estimating water demand arising from proposed development

(2) Estimating water intakes to the existing/planned development

(3) Evaluating water supply impacts to other existing development

(4) Proposing water supply main layout to mitigate negative impacts to existing developments

1.4 DESIGN GUIDELINE

1.4.1 To conduct this study, we have obtained and adopted the following information:

- Existing water main records provided by WSD
- Capacity, Top water level, and Invert water level of Ngau Tam Mei Fresh Water Preliminary Service Reservoir
- Master Layout Plan of the proposed development
- WSD's Departmental Instruction 1309 (D.I. 1309)
- Manual of Mainlaying Practice
- 2021 Population Census

1.4.2 The following approach were adopted in carrying out this WSIA

(1) Evaluate existing and planned works within the study area

(2) Assess water demand from proposed development

(3) Assess water demand from existing and planned development

(4) Evaluate impact on existing water main

(5) Recommend and propose water supply scheme with a hydraulic analysis

(6) Examine the short- and long-term impacts on existing water mains and interfacing projects

1.5 INTERFACING PROJECTS

1.5.1 Notable interfacing project includes:

- CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction

2 EXISTING AND PLANNED WORK

2.1 EXISTING WATER WORKS AND SERVICE RESERVOIRS

2.1.1 Ngau Tam Mei area surrounding the application site is served by Ngau Tam Mei Water Treatment Works. The treated water from Ngau Tam Mei is stored in Ngau Tam Mei Primary Service Reservoir.

2.1.2 **Table 2-1** summarise the capacity, top water level and invert level of the Ngau Tam Mei Primary Service Reservoir.

Table 2-1 Parameter of Ngau Tam Mei Primary Service Reservoir

Reservoir	Capacity (m^3)	Top Water Level (APD)	Invert Level (APD)
Ngau Tam Mei Primary Service Reservoir	40750	104.1	94.15

2.1.3 There is no saltwater supply nor reclaimed water supply to the area, therefore, fresh water is used for flushing.

2.2 EXISTING WATER MAINS

2.2.1 With reference to Main Record Plans (MRPs) from WSD, the application site is served by a DN150 and a DN200 pipe. Both pipes are a tee-off from a DN200 ductile iron pipe running along Castle Peak Road-Mai Po section.

2.2.2 A DN600 pipe runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The DN600 pipe gets fresh water from a DN700 pipe along Castle Peak Road – Tam Mi section.

2.2.3 The DN700 pipe gets water from DN1400 which runs from east to west along Ching Yau Road, starting from Ngau Tam Mei Primary Service Reservoir and ending at San Tin Highway.

2.3 EXISTING DEVELOPMENT

2.3.1 After evaluating aerial photo and water main records of the application site, the list of developments identified is shown in **Table 2-2.**

Table 2-2 List of Building Group Identified and Parameters

Building Group	Number of units	Population (person)
Wah On Villa	119	334
Ian Court	105	294
San Wai Tsuen	30	84
Kadoorie Villas	75	210
Faye Villa	39	110
Chuk Yuen Tsuen	438	1227
Tai Yuen Villa	159	446
Yau Tam Mei Tsuen	31	87
Yau Mei San Tsuen	18	51
Green Crest	81	227
Wai Tsai Tsuen	127	356
The Vineyard	214	600
The Vineyard Phase 2	30	84
YL 0172 (Palm Springs)	980	4677
YL 0162 (Casa Paradizo + The Vineyard + Rolling Hills + The Step)	1370	3836
Maple Gardens	160	448
Crescendo	67	188
Scenic Heights	33	93
Mai Po San Tsuen	338	947
Tsing Lung Tsuen	155	434
Fan Tin Tsuen	403	1129
San Lung Tsuen	79	222
On Lung Tsuen	63	177
Tai Fu Tai Garden	34	96
Sunny Hills	18	51
Wing Ping Tsuen	757	2120
Tung Chan Wai	152	426
Yan Shau Wai	356	997
Hang Fook Gardens	87	244

2.3.2 Number of units were obtained by counting houses on aerial photo and data from real estate database. Populations were found from population census 2021.

2.3.3 The population of building group YL 0172 and YL 0162 is extracted from the population census in 2021. Building group YL 0173 is not included as it covered settlements that are not served by the same existing water mains as application site.

2.4 PLANNED DEVELOPMENT

2.4.1 After reviewing the gazettes from Planning Department, 4 planned and approved developments were identified, the name, application number and parameters are listed in **Table 2-3.**

2.4.2 Application Y/YL-MP/10 covers various lots between Kam Pok Road and Ha Chuk Yuen Road and east of Ha Chuk Yuen Road. The latest Broad Development Parameters from Town Planning Board shows that the development consisted of 2322 units.

2.4.3 Application A/YL-MP/341 covers various lots in Yau Pok Road. The latest Broad Development Parameters from Town Planning Board shows that the development consisted of 2150 units.

2.4.4 Application A/YL-MP/287 covers various lots on Kam Pok Road and Ha San Wai Road. The most recent Board Development Parameter show that application A/YL-MP/287 will be a Residential (Group D) development consisting of 65 houses.

2.4.5 Application Y/YL-NTM/9 covers lot 4823 in D.D. 104, located north of Casa Paradizo. The most recent Board Development Parameter show that the zoning has been changed from Residential (Group C) to Government, Institution or Community. The lot will consist of a RCHE with 142 beds.

Table 2-3 List of planned development identified and parameters

Landuse	Application Number	Number of units	Population (person)
Residential Development (Group C)	Y/YL-MP/10	2322	6270
Residential Development (Group C)	A/YL-MP/341	2150	5500
Residential Development (Group D)	A/YL-MP/287	65	182
RCHE	Y/YL-NTM/9	142	142

2.4.6 The location of the existing and planned developments is shown in **Appendix B.**

2.5 PLANNED WATER WORK AND WATER MAIN

2.5.1 North to application site, CEDD have commissioned CE 15/2023 (CE) First Phase Development of the New Territories North – San Tin/Lok Ma Chau Development Node – Package 1 – Design and Construction. The project will involve re-routing water main in the area and constructing a new water treatment work and service reservoir.

2.5.2 The drafted preliminary diversion plan of CE 15/2023 was obtained from the project consultant. It shows that the application site itself does not fall into the project scope,

but there would be potential interface if proposed water main extends to the section of San Tam Road under San Tin Highway. The DN600 pipe on San Tam Road, north of application site will be proposed for rerouting as part of the development plan in CE 15/2023.

3 WATER SUPPLY IMPACT ASSESSMENT

3.1 WATER DEMAND FROM PROPOSED DEVELOPMENT

3.1.1 As quoted in Section 1, the proposed development would be R3 type residential development with 3562 units, consisting of 3434 residential blocks and 128 houses. The development is estimated to house 9615 people in residential blocks and 359 people in houses, totalling 9974 people, by assuming an average of 2.8 people occupying each unit. The total landscaping area is 48716 $m^{2.}$

3.1.2 With reference to D.I. 1309 and comments from WSD, the fresh water demand for the proposed 6-10 storey residential blocks and the proposed new private houses are assumed to be 0.300 m^3 and 0.390 m^3 per person per day respectively, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day. Irrigation water demand is assumed to be 0.007 m^3 per m^2 per day.

3.1.3 The development will also include a 100-bed RCHE. The 100-bed RCHE is considered as private houses where each unit houses 1 person. Freshwater demand is assumed to be 0.230 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day.

3.1.4 Overall, the freshwater demand from the application site is estimated to be 3791.8 m^3 per day and the mean flushing demand is 1047.8 m^3 per day.

3.2 WATER DEMAND FROM EXISTING DEVELOPMENTS

3.2.1 As presented in Section 2.3, the existing developments can be divided into 29 building groups. Based on **Table 2-2**, the population can be estimated from number of units using the average occupier per unit from population census 2021. For Yuen Long district the factor is 2.8 person per household.

3.2.2 Most developments in the area are 3 storey houses with low plot ratio, hence they are considered R3 residential development with fresh water demand of 0.300 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day

3.2.3 Some settlements, such as Mai Po San Tsuen and San Wai Tsuen, around application site are recognised as modern villages. For such site, the freshwater demand is assumed to be 0.230 m^3 per person per day, with a service trade allowance of 0.040 m^3 per person per day. The flushing water demand is 0.104 m^3 per person per day.

3.2.4 Based on the information above, the freshwater and flushing water demand can be calculated for each building by multiplying the building population by the unit demand factor. Overall, the freshwater demand from the existing developments of 29 buildings

are summed up to be 6257.09 m^3 per day and the mean flushing demand is 2100.28 m^3 per day.

3.2.5 The calculations and table summarising the demand arising from different demand type can be found in **Table** 3-1.

Table 3-1 Table of Water Demands Adopted for the Assessment

Demand Type	Water Type	Unit Demand	Unit
Residential (R3)	Fresh	0.300	m^3 per person per day
	Flushing	0.104	m^3 per person per day
New Private Houses	Fresh	0.390	m^3 per person per day
	Flushing	0.104	m^3 per person per day
RCHE	Fresh	0.230	m^3 per person per day
	Flushing	0.104	m^3 per person per day
Villages (Modern)	Fresh	0.230	m^3 per person per day
	Flushing	0.104	m^3 per person per day
Service Trade	Fresh	0.040	m^3 per person per day
Irrigation	Fresh	0.007	m^3 per m^2 per day

3.3 IMPACT ON EXISTING WATER WORK

3.3.1 The freshwater peak demand factor is assumed to be 3 and the flushing water peak demand factor were assumed to be 2. According to the Manual of Mainlaying Practice, the maximum flow velocity in water mains is 3 m/s. While the recommended flow velocity limit for different pipe size ranges is given in the table below, which is followed to determine the suitable pipe sizes for the fresh water network.

Table 3-2 Recommended Flow Velocity Limit

Pipe size range (mm)	Recommended flow velocity limit under peak flow condition
>DN700	≤ 3 m/s
DN700-DN525	≤ 2.5 m/s
DN450-DN375	≤ 2 m/s
DN300-DN200	≤ 1.5 m/s

3.3.2 Based on the calculation shown in **Appendix C**, the proposed development has a mean daily freshwater demand of 4118.4 m^3/day and flushing water demand of 1257.8 m^3/day. The total peak water demand is 14167.3 m^3/day after applying the peak demand factor. The maximum allowable flowrate for the DN150 and DN200 pipe leading to the site is 6059.9 m^3/day and 3230.7 m^3/day respectively. The existing pipes are not sufficient to meet the peak water demand of the application site.

4 PROPOSED WATER MAIN SCHEME

4.1 OVERVIEW

4.1.1 As mentioned in **Section 2.2**, there is a DN600 pipe running along San Tam Road on the other side of San Tin Highway. The DN600 pipe would have the flow velocity 1.28 m/s and flowrate of 0.35 m^3/s supplying to only existing and planned development. According to Appendix B, the flow velocity in the DN600 pipe will be increased to 1.86 m/s with a flowrate of 0.50 m^3/s when the proposed development is considered.

4.1.2 It is therefore proposed to construct a new tee-off from the DN600 pipe, named 600DI89 on MRP. Two options are presented and evaluated in this WSIA. The drawings of the proposed pipe layout can be found in **Appendix D**.

4.1.3 Only elevation heads and frictional head are considered in the hydraulic calculations. Elevation head is considered as the sole driving force from primary reservoir and the main head loss is due to friction. Velocity and angled head loss are considered minor compared to frictional head loss. Minor losses are estimated as 10% of the frictional head loss.

4.1.4 Hazen-William's equation is used to calculate frictional head loss, and Hazen-Willams Coefficient is taken as 120 for fresh water main with diameter equal to or larger than 600mm, and 110 for fresh water main with diameter smaller than 600mm. Pipes where water demand cannot be estimated are assumed to have a flow velocity of 2.5 m/s for a conservative approach.

4.2 PREFERRED OPTION – CONSTRUCTION AT EXISTING SUBWAY AT SAN TAM ROAD

4.2.1 The preferred option would be to tee-off from the DN600 pipe further north at existing San Tam Road Subway under San Tin Highway. This option would avoid construction work under San Tin Highway and mitigate all potential structural and safety issues associate with the works at San Tin Highway.

4.2.2 Proposed tee-off pipe will be 400 mm in nominal diameter based on the calculation in **Appendix C**, and the length were estimated to be 573 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have an even lower elevation.

4.2.3 Calculation have shown that with a head loss of 41.3 meter from existing water mains and 5.3 meter head loss from proposed water main, the residual head in the pipe will be 51.6 meter at the boundary of the application site.

4.2.4 Based on WSD's circular letter No. 1/2007, the minimum acceptable residual pressure in water mains is 20 m . This option meets the minimum requirements and are therefore hydraulically feasible.

4.2.5 However, the proposed connection point is located on a proposed pipe under CE15/2023 managed by AECOM-Halcrow Joint Venture. The joint venture should be consulted on construction schedule and feasibility of the connection may varies with time. In the case that the proposed tee-off is not feasible, the backup option should be considered.

4.3 BACKUP OPTION – CONSTRUCTION UNDER SAN TIN HIGHWAY

4.3.1 The backup option would be to directly tee-off from the DN600 pipe across San Tin Highway. Construction would preferably be through micro-tunnelling to avoid interrupting traffic on San Tin Highway.

4.3.2 Proposed tee-off pipe will be 300 mm at minimum in nominal diameter, and the length were estimated to be 166 meters. For conservative estimation, it is assumed to have the elevation of 6.2 mPD, which is the elevation of ground level recorded near the application site. It is expected that the pipe will be underground and therefore have a lower elevation.

4.3.3 Calculation have shown that with a head loss of 40.7 meter from existing water mains and 4.7 meter head loss from proposed water main, the residual head in the pipe will be 52.3 meter at the boundary of the application site.

4.3.4 Digging underneath the San Tin Highway will requires an excavation permit from Highway department. If the option is to be adapted, the applicant shall register on XPMS as soon as possible and liaison with Highway department for permission.

5 CONCLUSION AND WAY FORWARD

5.1.1 It could be concluded that the existing water supply mains around the proposed development is not sufficient for the water demand, and hence a new water main scheme is needed.

5.1.2 It would be feasible to tee-off from the existing DN600 pipe (600DI89) which runs along San Tam Road on the other side of San Tin Highway opposite to the application site. The preferred scheme would be to tee-off further north on San Tam Road to prevent construction work under the highway. The residual head would be 51.6 meter, which meets the minimum residual pressure requirement from WSD.

5.1.3 Another feasible scheme is to tee-off directly across San Tin Highway, this is not preferred as construction work on San Tin highway may be uncertain. The residual head is estimated to be 52.3 meter, which would also meet the minimum residual pressure requirement from WSD.

5.1.4 The applicant will discuss the preferred option with AECOM for interface with CE 15/2023 and adopt the backup option if the preferred option becomes unavailable.

Appendices

Appendix A

MLP of Proposed Development

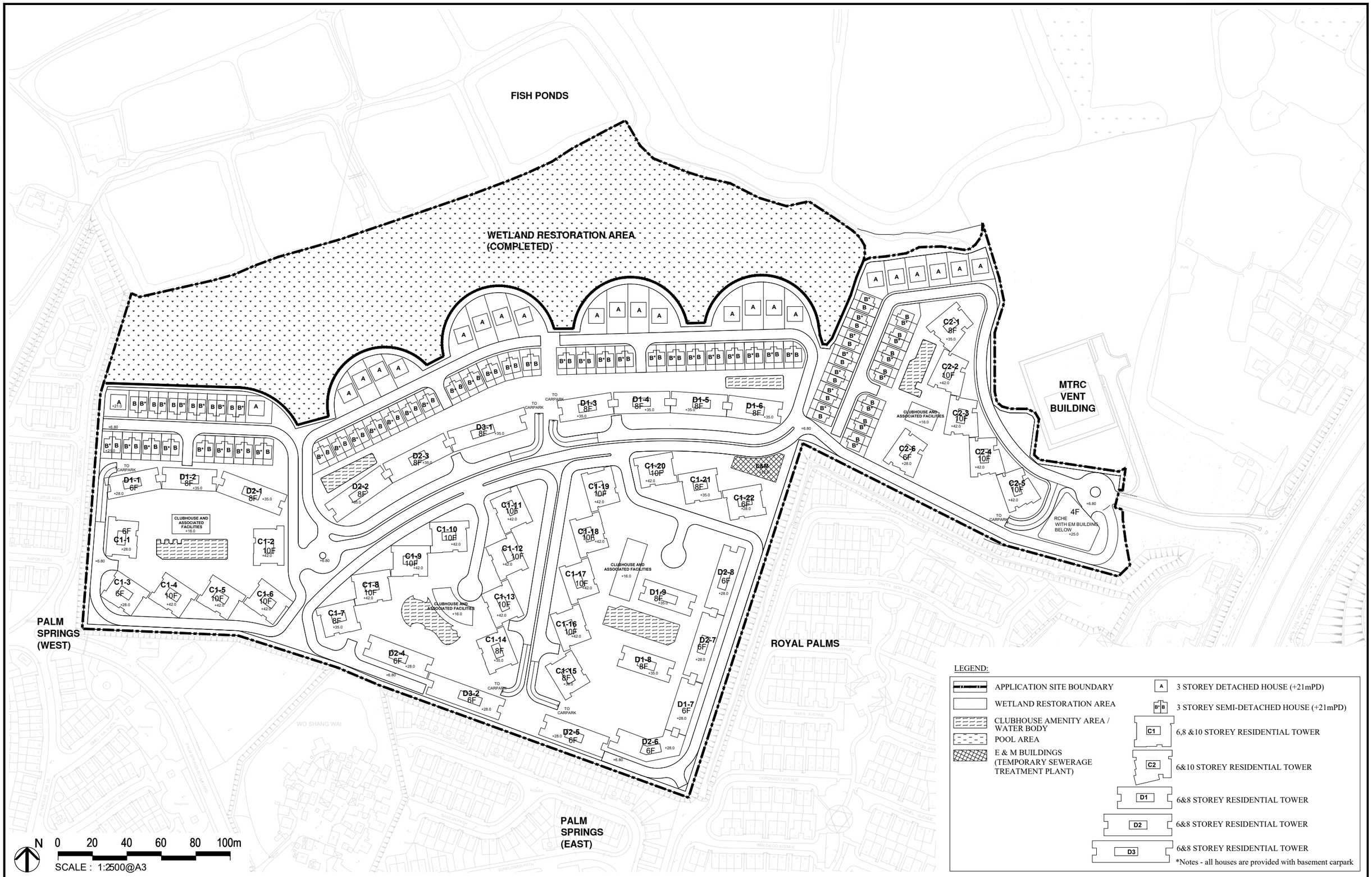

Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

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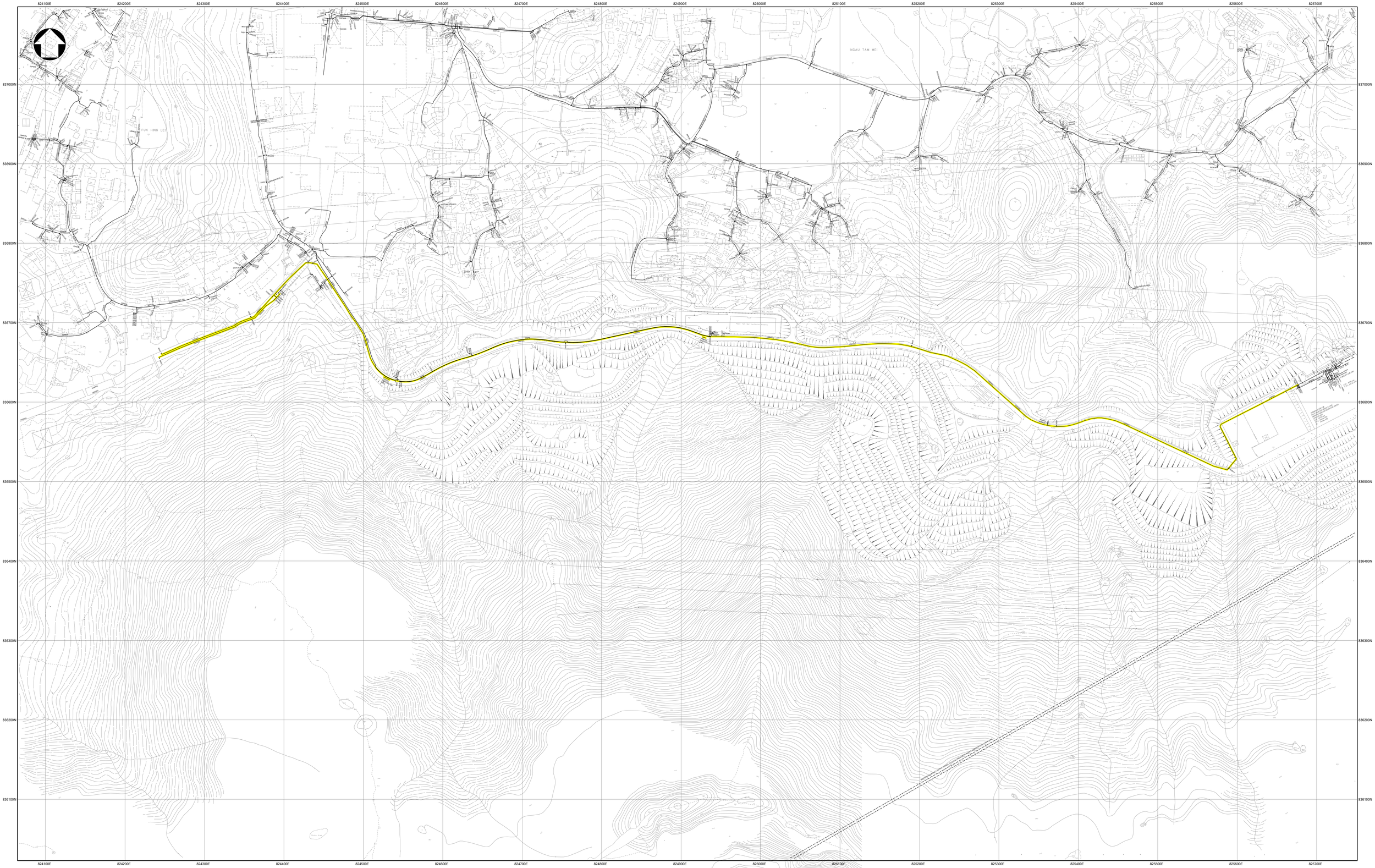
DWG. No. : 3809-003

Appendix B

MRP with development site labelled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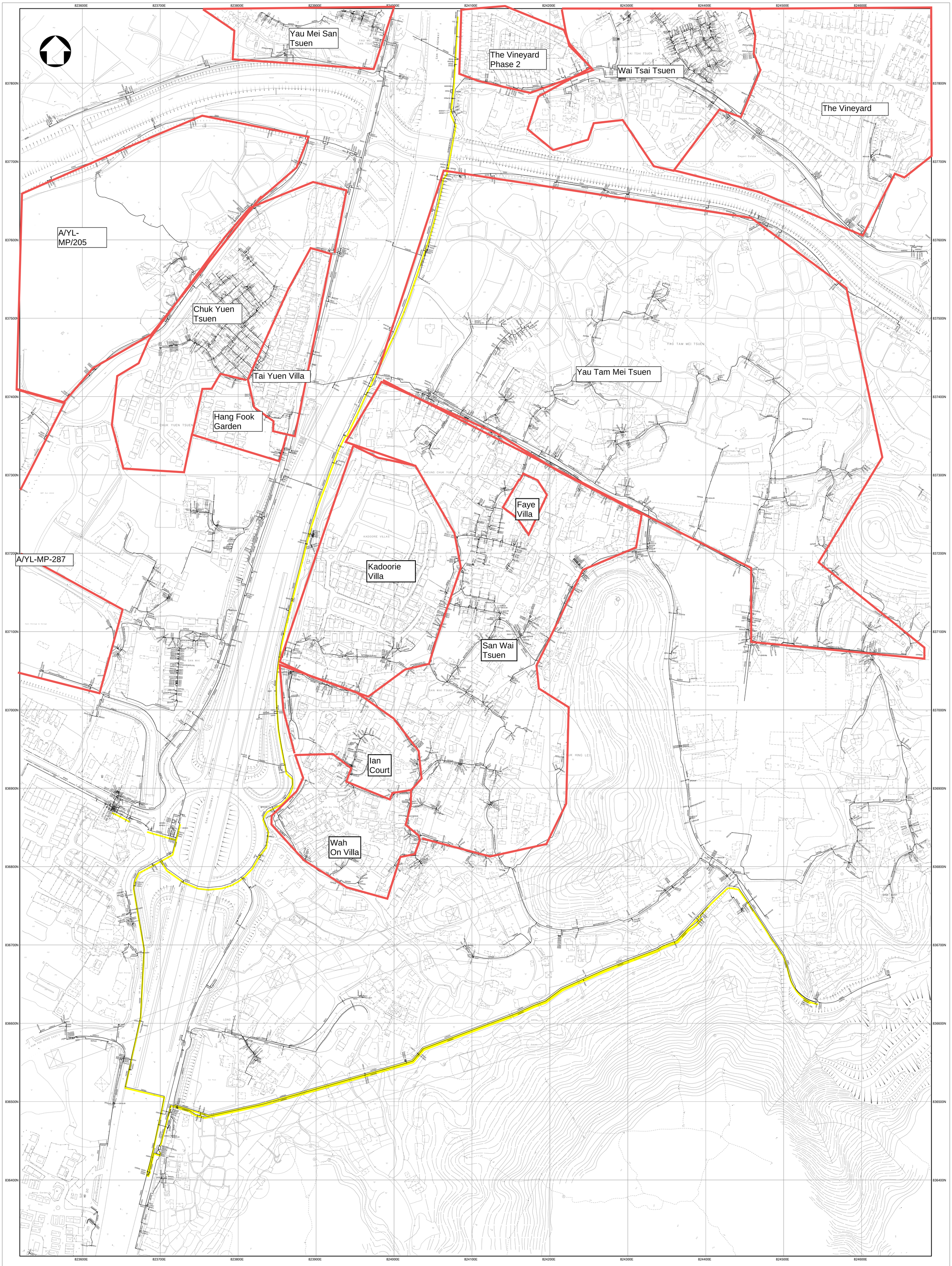

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2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
10. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/2-SE-16B, 16D, 17A, 17C, 21B, 21D, 22A & 22C

FILE REF: Part 2

REF. CODE: 45W24M	SHEET 1 OF 1	SCALE 1:1500

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Mai Po
San Tsuen

The STEP

Scenic
Heights

Rolling
Hills

Cresendo

Maple
Gardens

Y/YL-NTM/9

Palm Spring

Casa Paradizo

Yau Mei San
Tsuen

Green Crest

The Vineyard
Phase 2

Wai Tsai Tsuen

The Vineyard

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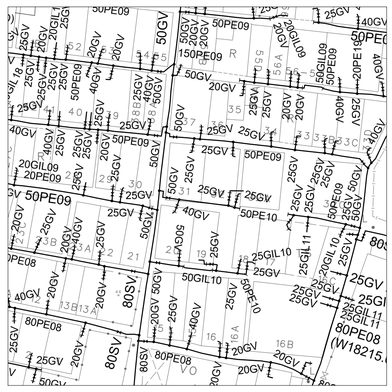	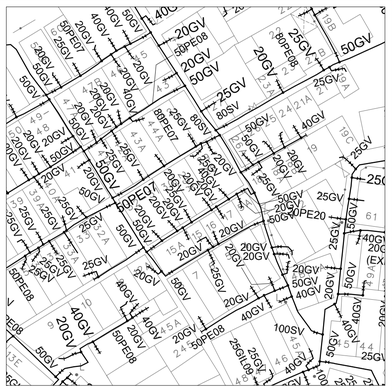	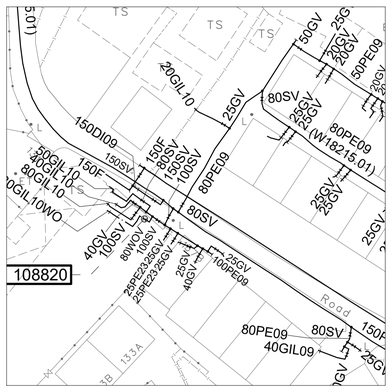			

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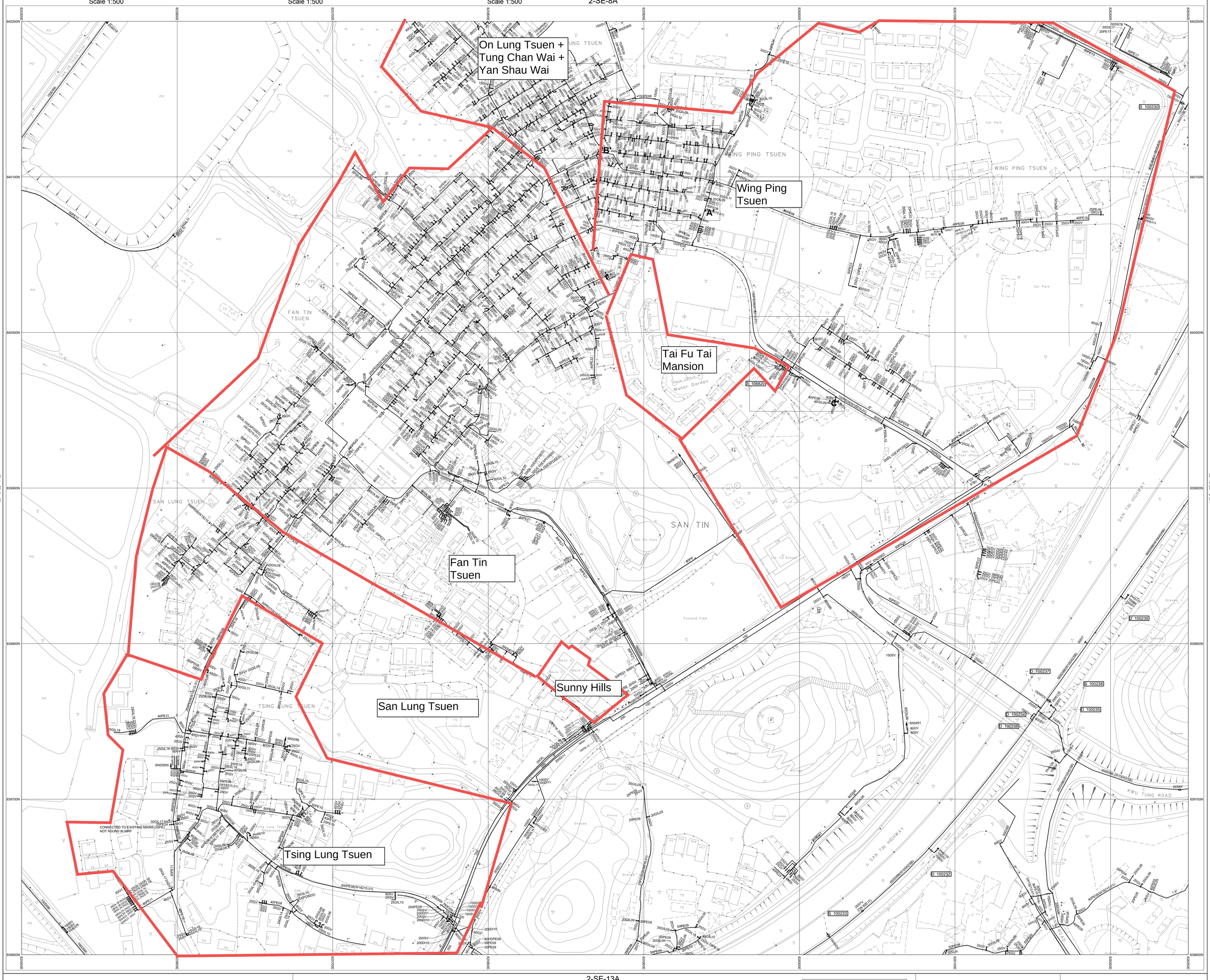

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NOTES:

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2. DIMENSIONS OF MAINS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.

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METRES 20 10 0 20 40 60 80 100 METRES

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FRESH WATER MAINS RECORD PLAN

CASTLE PEAK ROAD, SAN TIN

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DATE REVISED : 04/03/2025

DRAWING NO.

W67880/ 2-SE-8C

SIGNED

K.C. KONG
CE/MNW

DATE: 15/12/1998

Water Supplies Department
HONG KONG

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Appendix C

Table of Calculation

						Fresh			Flushing	
	Building Group	**Landuse**	**Area (m2)**	**Number of units**	**Population (person)**	**Unit Demand Factor (m3/head/day)**	**Unit Demand Factor (m3/m2/day)**	**Mean Water Demand (m3/day)**	**Unit Demand Factor (m3/head/day)**	**Mean Flushing demand (m3/day)**
Existing Developments	Wah On Villa	Residental (R3)		119	334	0.34		113.56	0.104	34.736
	Ian Court	Residental (R3)		105	294	0.34		99.96	0.104	30.576
	San Wai Tsuen	Villages (Modern)		30	84	0.27		22.68	0.104	8.736
	Kadoorie Villas	Residental (R3)		75	210	0.34		71.4	0.104	21.84
	Faye Villa	Residental (R3)		39	110	0.34		37.4	0.104	11.44
	Chuk Yuen Tsuen	Villages (Modern)		438	1227	0.27		331.29	0.104	127.608
	Tai Yuen Villa	Villages (Modern)		159	446	0.27		120.42	0.104	46.384
	Yau Tam Mei Tsuen	Villages (Modern)		31	87	0.27		23.49	0.104	9.048
	Yau Mei San Tsuen	Villages (Modern)		18	51	0.27		13.77	0.104	5.304
	Green Crest	Residental (R3)		81	227	0.34		77.18	0.104	23.608
	Wai Tsai Tsuen	Villages (Modern)		127	356	0.27		96.12	0.104	37.024
	The Vineyard	Residental (R3)		214	600	0.34		204	0.104	62.4
	The Vineyard Phase 2	Residental (R3)		30	84	0.34		28.56	0.104	8.736
	YL 0172 (Palm Springs)	Residental (R3)		980	4677	0.34		1590.18	0.104	486.408
	YL 0162 (Casa Paradizo + The Vineyard + Rolling Hills + The Step)	Residental (R3)		1370	3836	0.34		1304.24	0.104	398.944
	Maple Gardens	Residental (R3)		160	448	0.34		152.32	0.104	46.592
	Crescendo	Residental (R3)		67	188	0.34		63.92	0.104	19.552
	Scenic Heights	Residental (R3)		33	93	0.34		31.62	0.104	9.672
	Mai Po San Tsuen	Villages (Modern)		338	947	0.27		255.69	0.104	98.488
	Tsing Lung Tsuen	Villages (Modern)		155	434	0.27		117.18	0.104	45.136
	Fan Tin Tsuen	Villages (Modern)		403	1129	0.27		304.83	0.104	117.416
	San Lung Tsuen	Villages (Modern)		79	222	0.27		59.94	0.104	23.088
	On Lung Tsuen	Villages (Modern)		63	177	0.27		47.79	0.104	18.408
	Tai Fu Tai Garden	Residental (R3)		34	96	0.34		32.64	0.104	9.984
	Sunny Hills	Residental (R3)		18	51	0.34		17.34	0.104	5.304
	Wing Ping Tsuen	Villages (Modern)		757	2120	0.27		572.4	0.104	220.48
	Tung Chan Wai	Villages (Modern)		152	426	0.27		115.02	0.104	44.304
	Yan Shau Wai	Villages (Modern)		356	997	0.27		269.19	0.104	103.688
	Hang Fook Gardens	Residental (R3)		87	244	0.34		82.96	0.104	25.376
Total					**20195**			**6257.09**		**2100.28**
Planned Developments	Lots 3152, 3153 RP, 3156 S.B and 4805 in D.D. 104 and Adjoining Government Land, Kam Pok Road, Yuen Long (Y/YL-MP/10)	Residential (R3)		2322	6270	0.34		2131.8	0.104	652.08
	Various Lots in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long (A/YL-MP/341)	Residential (R3)		2150	5500	0.34		1870	0.104	572
	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long (A/YL-MP/287)	Houses		65	182	0.43		78.26	0.104	18.928
	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long (Y/YL-NTM/9)	RCHE		142	142	0.27		38.34	0.104	14.768
Total					**12094**			**4118.4**		**1257.776**
Proposed Development		Residential Tower		3434	9616	0.34		3269.44	0.104	1000.064
		Houses		128	359	0.43		154.37	0.104	37.336
		RCHE		100	100	0.27		27	0.104	10.4
		Landscaping	48716				0.007	341.012		
Total					**10075**			**3791.822**		**1047.8**
Grand Total					**42364**			**14167.312**		**4405.856**

Remark:

Unit demand factor from DI 1309 or agreed with WSD

Unit demand factor for Fresh Water = Fresh water demand factor + Service trades

Records for populations taken from 2021 population census

Census found from: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.census2021.gov.hk%2Fdoc%2FHMA_BG_21C.xlsx&wdOrigin=BROWSELINK

Population data for village type settlement are estimated by counting house seens in aerial photo and assuming 2.7 person per house

2.8 person per house is assumed based on the data for Yuen Long District in the 2021 population census

Portion	Nominal Diameter (mm)	Internal Diameter (mm)	Length (m)	Material	Hazen-Williams Coefficient	Total Fresh water demand	Total Flushing water demand	Fresh water peak factor	Flushing water peak factor	Peak Demand Flow(m3/day)	Peak flowrate(m3/s)	Area (m2)	Velocity (m/s)	Head loss per length	Head Loss (m)	Minor Head Loss (m)	Total Head Loss (m)	Note
1400S01	1400	1379	2255.3	S	120							1.5	3.00	0.005	11.4	1.1	12.5	Assumed velocity of 2.5 m/s for conservative estimation
1400S98	1400	1379	53.8	S	120							1.5	3.00	0.005	0.3	0.0	0.3	Assumed velocity of 2.5 m/s for conservative estimation
1200S98	1200	1182	11.3	S	120							1.1	3.00	0.006	0.1	0.0	0.1	Assumed velocity of 2.5 m/s for conservative estimation
700S00	700	682	29.4	S	120							0.4	2.50	0.008	0.2	0.0	0.3	Assumed velocity of 2.5 m/s for conservative estimation
700S91	700	682	155.3	S	120							0.4	2.50	0.008	1.3	0.1	1.4	Assumed velocity of 2.5 m/s for conservative estimation
700S88	700	682	311.4	S	120							0.4	2.50	0.008	2.6	0.3	2.8	Assumed velocity of 2.5 m/s for conservative estimation
600S90	600	586	207.8	S	120							0.3	2.50	0.010	2.0	0.2	2.2	Assumed velocity of 2.5 m/s for conservative estimation
600S89	600	586	341.7	S	120							0.3	2.50	0.010	3.3	0.3	3.7	Assumed velocity of 2.5 m/s for conservative estimation
600DI90	600	586	1493.0	DI	120	14167.3	4405.9	3	2	51313.6	0.59	0.3	2.20	0.008	11.5	1.2	12.7	Considering all existing and planned development
									Backup Option			0						
DN300	300	285	166.0	DI	110	3791.8	1047.8	3	2	13471.1	0.2	0.1	2.44	0.026	4.2	0.4	4.7	Supply to only proposed development
									Preferred Option									
600DI90	600	586	173.6	DI	120	14167.3	4405.9	3	2	51313.6	0.6	0.27	2.20	0.01	1.34	0.1	1.5	
DN400	400	382	573.0	DI	110	3791.8	1047.8	3	2	13471.1	0.2	0.1	1.36	0.006	3.5	0.4	3.9	Supply to only proposed development

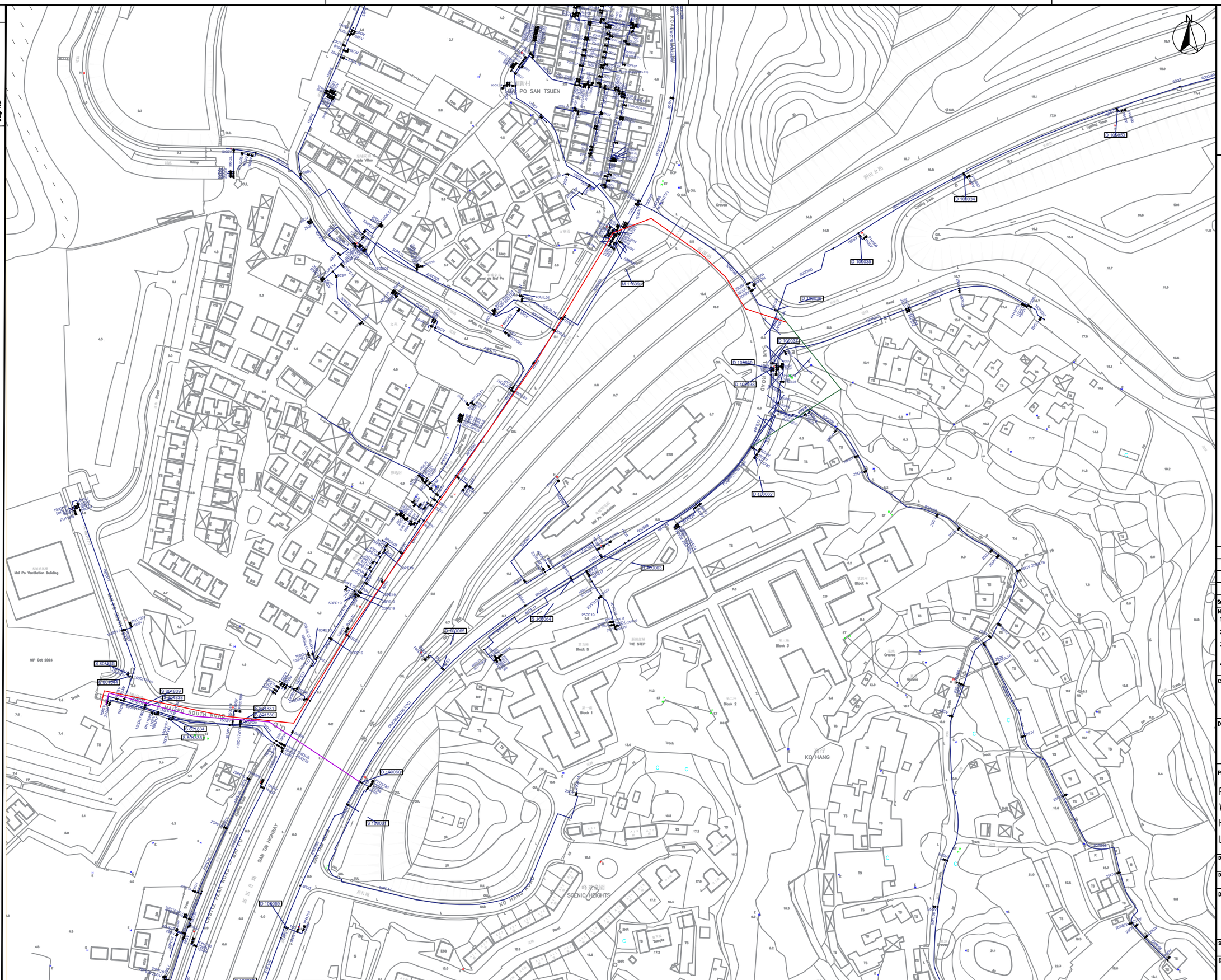
Notes:
Hazen-Williams Coefficient taken as 110 when diameter < 600, 120 when diameter > 600
According to main laying practice, the maximim velocity allowed is 3 m/s
Velocity head loss, angled headloss and headloss at connections are considered minor
Minor headloss accounted by a 1.1 factor on frictional headloss

Estimate Residual Head			
Head to Ngau Tam Mei Fresh Water Preliminary Service Reservoir	=	99.1	mPD
Ground Level at extremity of proposed system	=	6.2	mPD
Friction Head Loss from Existing and Proposed Main **Option 1**	=	40.7	m
Residual Head at Extremity	=	**52.3**	m
Friction Head Loss from Existing and Proposed Main **Option 2**	=	41.3	m
Residual Head at Extremity	=	**51.6**	m

Appendix D

Proposed Water Supply Scheme

Dwg. No.



C:\Users\HKJS750985\Downloads\Prelim-WSW pipe drawing 1.dwg

LEGEND

- Option 1
- Option 2
- Water Main to be diverted in CE15
- Water Main to be abolished in CE15

Suffix	Date	Revision	Drawn	Checked
–	–	–	–	–

NOTES:

1. Use written dimensions or grid lines. Measurements to existing work to be checked on site.
2. This drawing is to be read in conjunction with the Specification & Conditions of Contract.
3. This drawing & design are copyright and no portion may be reproduced without the written permission of WSP(Asia)Ltd. Consulting Engineers.
4. All Pipe Sizes refers to inner diameter in millimeters.

CLIENT

Profit Point Enterprise Ltd

DESIGN CONSULTANT

wsp

PROJECT

PROPOSED DEVELOPMENT AT
WO SHANG WAI
HONG KONG
LOTs 77 AND 50 S.A in DD101

DESIGNED BY	DATE	CHECKED BY	DATE
–	JAN 2025	CC	JAN 2025
DRAWN BY	DATE	APPROVED BY	DATE
JS	JAN 2025	–	–

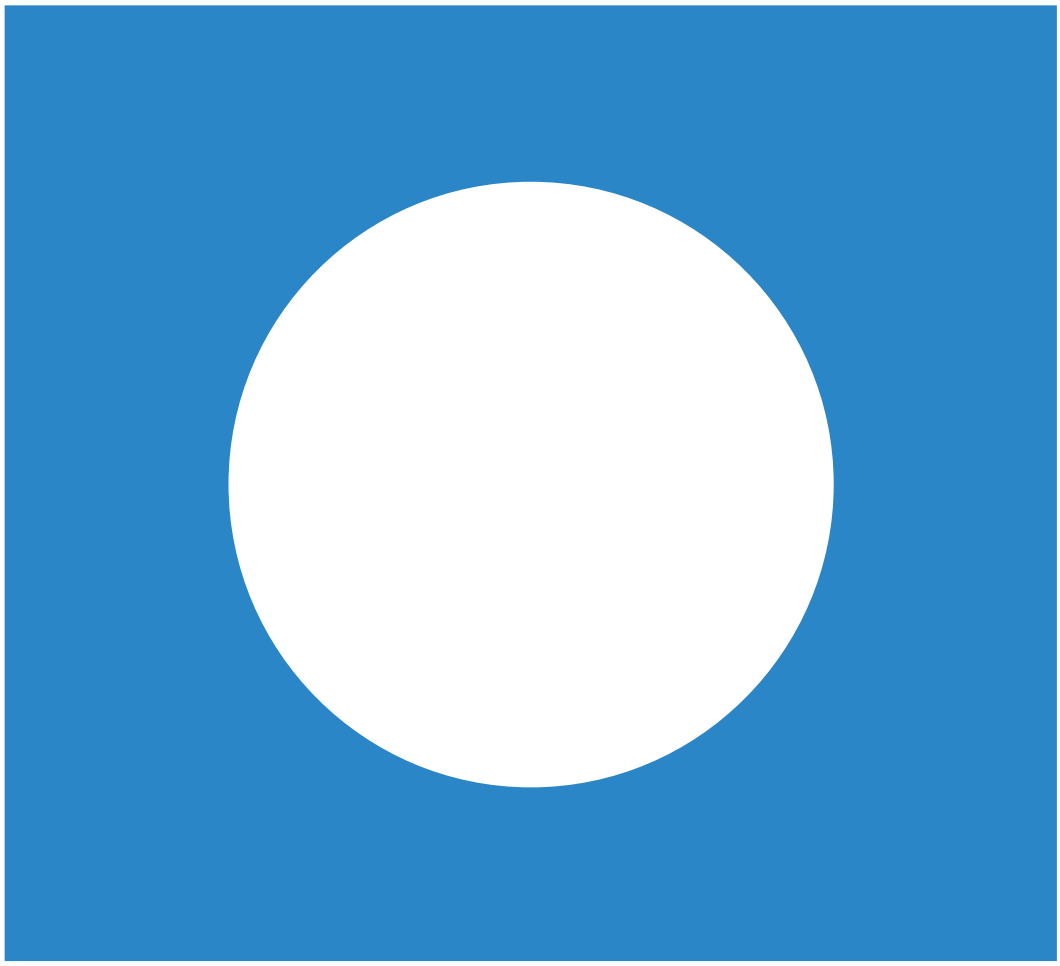
DRAWING TITLE

PROPOSED WATER SUPPLY SCHEME
(Sheet 1)

SCALE	STATUS	FILE NAME
1:2000		

DRAWING NO.	REV.
–	

MOTT MACDONALD



To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.F)

September 2025

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To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Environmental Assessment (Rev.F)

September 2025

Mott MacDonald Hong Kong Limited
registered in Hong Kong no. 236497

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D	May 2025	Various	J Chan	E Ching	
E	Jul 2025	Various	J Chan	E Ching	
F	Sep 2025	Various	J Chan	E Ching	

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Appendix 2.6 Proposed Use for Project NSRs (RCHE)

Background

This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area. This proposed comprehensive residential development comprises of club house, landscaped open spaces, car parks, residential care homes for elderly (RCHE). The project layout is shown in **Figure 0.1** and the indicative development parameters for the future landuses of the Application Site is summarised in the table below.

The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast. The wetland restoration area (WRA) portion of the site has been completed and operational since 2010. The residential portion of the site underwent initial site clearance and site formation in 2011-2013 and is currently pending construction.

Indicative Development Parameters

Application Site Area (Approx.)	**207, 408m^2**
Areas of the Site (Approx.)	
Wetland	47,400m^2
Communal Open Space	21,203m^2
Communal Landscape and Communal Perimeter Landscape	38,761m^2
Private Garden	15,444m^2
Domestic Components	
Plot Ratio (Approx.) Domestic Plot Ratio (Approx.) Non-Domestic Plot Ratio (Approx.)	1.3 1.28 0.02
Total GFA (Approx.) Maximum Domestic GFA (Approx.) Maximum Non-Domestic GFA (Approx.)	269,879 m^2 266,079m^2 3,800m^2
Site Coverage (not more than)	25%
Total Number of Units	3,562
Average Unit Size (Approx.)	74.7m^2
Ancillary Recreational Facilities (Approx.)	11,581 m^2
Estimated Population	9,974*
Completion Year	2031

Remarks:
* Based on person per plat ration of 2.8

Mott MacDonald Hong Kong Limited (MMHK) was commissioned by Profit Point Enterprises Ltd to conduct an Environmental Assessment (EA) to assess the potential environmental impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development portion. The Application Site is subject to the Environmental Impact Assessment Ordinance (EIAO) for which previous approvals were obtained including:

i. Environmental Impact Assessment (Register No.: AEIAR-120/2008) for the development at the site approved on 31 July 2008;
ii. Environmental Permit (No. EP-311/2008) for the construction and operation of the development issued on 9 September 2008, the latest revision being 19 December 2017 (EP-311/2008/E); and
iii. Variations to the Environmental Permit reflecting the approved development schemes have been approved, the latest one being 19 December 2017 (No. VEP-538/2017).

As the proposed development is covered under an EIA report approved (AEIAR-120/2008) and an Environmental Permit issued (EP-311/2008/E) under the EIAO, the Applicant should review the EIAO implications of the proposed development at later stage and confirm with the EPD. The Applicant should also observe and ensure the proposed development will comply with all statutory requirements under the EIAO.

Since the EA is focus on the proposed changes in the layout of the residential development portion, while no enlargement of the Project boundary. And also, the Project Site has been fenced off by the Project Proponent since the EIA approved and no change of land use being made. Therefore, no potential land contamination would be induced after the approved EIA, and land contamination section is not included in this ER.

Aside from the latest revise the layout and form of the housing developments in the Application Site, two options are also being considered for offsite sewerage conveyance to handle the sewage generated from the Development during the operational phase. The two options are (1) construction of a sewerage pipeline to the new San Tin Lok Ma Chau Effluent Polishing Plant and adopting a temporary on-site sewage treatment plant (STP) until the San Tin Lok Ma Chau Effluent Polishing Plant is commissioned; and (2) construction of a sewerage pipeline to connect to the existing Nam San Wai Sewage Pumping station for discharge to Yuen Long Sewage Treatment Plant.

Should this application be approved by TPB, the feasibility of these two sewerage conveyance options will be reviewed. The potential environmental impacts and EIAO implications arising from the proposed option along with the revised development layout will be reviewed at later stage and confirm with the EPD to ensure the proposed development complies with all statutory requirements under the EIAO.

1 Air Quality Impact

1.1 Introduction

This section assesses the potential air quality impacts upon and arising from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

1.2 Legislation, Standards, Guidelines and Criteria

The following legislation and regulations provide the standards and guidelines for evaluation of air quality impacts and the type of works that are subject to air pollution control:

- Air Pollution Control Ordinance;
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulation;
- Recommended Pollution Control Clauses for Construction Contracts;
- Environmental Impact Assessment Ordinance and Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM); and
- Hong Kong Planning Standards and Guidelines (HKPSG).

Air Pollution Control Ordinance

The principal legislation for the management of air quality is the APCO. The APCO specifies Air Quality Objectives (AQOs) which stipulate the statutory limits of air pollutants and the maximum allowable numbers of exceedances over specific periods. Updated AQOs which came into effect on 11 April 2025 are listed in **Table 1.1** below.

Table 1.1: Updated Air Quality Objectives

Pollutant	Averaging time	Concentration (μg/m^3)	Number of exceedances allowed
Respirable Suspended Particulates (PM_{10})	24-hour	75	9
	Annual	30	Not applicable
Fine Suspended Particulates ($PM_{2.5}$)	24-hour	37.5	18
	Annual	15	Not applicable
Nitrogen Dioxide (NO_2)	1-hour	200	18
	24-hour	120	9
	Annual	40	Not applicable
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	40	3
Ozone (O_3)	8-hour	160	9
	Peak season	100	Not applicable
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
	24-hour	4,000	0
Lead (Pb)	Annual	0.5	Not applicable

Notes:
[i]. All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
[ii]. Respirable suspended particulates (PM_{10}) mean suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
[iii]. Fine suspended particulates ($PM_{2.5}$) mean suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

Air Pollution Control (Construction Dust) Regulation

The Air Pollution Control (Construction Dust) Regulation enacted under the APCO defines notifiable and regulatory works activities that are subject to construction dust control. Notifiable works are site formation, reclamation, demolition of a building, construction of foundation and superstructure for a building, and road construction work. Regulatory works are renovation of building, road opening or resurfacing work, slope stabilisation work, and any work involving stockpiling, loading and unloading of dusty material, transfer of dusty material using belt conveyor system, etc.

Notifiable works require that advance notice of activities shall be given to EPD. The Air Pollution Control (Construction Dust) Regulation also requires the works contractor to ensure that both notifiable works and regulatory works are conducted in accordance with the Schedule of Regulation, which provides air quality control measures.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation controls the emissions from non-road vehicle and regulated machines to be used in construction sites. The regulated machines must comply with the emission standards of Stage IIIA of the European Union (EU) or equivalent, while non-road vehicles must comply with the prevailing emission standards for newly registered road vehicles, which is Euro V. Upon confirmation of their compliance with the emission requirement, EPD will issue them with an approval label.

According to the regulation, mobile machine and equipment (regulated machines) means any mobile machine or transportable industrial equipment that is powered by an internal combustion engine with a rated engine power output that is greater than 19 kW but less than or equal to 560 kW. Non-road Mobile Machinery (NRMM) is intended to be used in a private road that is within an area wholly or mainly used for the carrying on of construction work/industry. The regulated machines include crawler cranes, excavators, etc., while non-road vehicles include private cars, goods vehicles, etc. Therefore, this regulation is applicable to the NRMM to be deployed for construction activities of the Project.

Air Pollution Control (Fuel Restriction) Regulation

The Air Pollution Control (Fuel Restriction) Regulation specifies the legal control on the type of fuels to be allowed for use and the sulphur contents of the fuels. The fuels to be used should comply the following respective requirements:

- Gaseous fuel; and
- Liquid fuel with a sulphur content not exceeding 0.001% by weight and a viscosity not more than 6centistokes at 40°C, such as Ultra Low Sulphur Diesel ("ULSD")

Recommended Pollution Control Clauses (RPCC) for Construction Contracts

The RPCC for construction contracts provide generally good engineering practices to minimise inconvenience and environmental nuisance to nearby sensitive receivers during the construction phase of the development. Some modifications may be required to suit different site conditions.

Technical Memorandum on Environmental Impact Assessment Process

The criteria and guidelines for evaluating air quality impacts are laid out in Section 1 of Annex 4 and Annex 12 respectively of the EIAO-TM. Section 1 of Annex 4 stipulates the criteria for evaluating air quality impacts. This includes meeting the Air Quality Objectives (AQOs) and other standards established under the APCO, and the 5-second average odour concentration of 5 odour units (ou/m^3). Annex 12 provides the guidelines for conducting air quality assessments under the Environmental Impact Assessment (EIA) process, including determination of Air Sensitive Receivers (ASRs), assessment methodology as well as impact prediction and assessment.

Hong Kong Planning Standards and Guidelines

According to Table 3.1 in Chapter 9 of the Hong Kong Planning Standards and Guidelines (HKPSG), guidelines on the buffer distances for air sensitive uses from vehicular emissions and industrial emissions have been recommended. The type of pollution source, associated parameters and their respective minimum buffer distances for open space sites are given in **Table 1.2**.

Table 1.2: Guidelines on Usage of Open Space Site

Pollutant Source	Parameter	Buffer Distance (m)	Permitted Uses
Road and Highways	*Type of Road:*		
	Trunk Road and Primary Distributor (PD)	>20	Active and passive recreational uses
		3-20	Passive recreational uses
		<3	Amenity areas
	District Distributor (DD)	>10	Active and passive recreational uses
		<10	Passive recreational uses
	Local Distributor (LD)	>5	Active and passive recreational uses
		<5	Passive recreational uses
	Under Flyovers	--	Passive recreational uses
Industrial Areas	*Difference in Height between Industrial Chimney Exit and the Site:*		
	<20m	>200	Active and passive recreational uses
		5-200	Passive recreational uses
	20-30m (*)	>100	Active and passive recreational uses
		5-100	Passive recreational uses
	30-40m	>50	Active and passive recreational uses
		5-50	Passive recreational uses
	>40m	>10	Active and passive recreational uses

Notes:
[i]. The buffer distance refers to the horizontal, shortest distance from the edge of road kerb or the position of existing chimneys, to the boundary of open space sites.
[ii]. In situations where the height of chimneys is not known, the set of guidelines marked with an asterisk are used for preliminary planning purposes and refined as and when more information is available.

1.3 Assessment Methodology

1.3.1 Construction Phase

Activities anticipated during the construction phase that could potentially give rise to fugitive dust emissions include site formation and construction of on-site infrastructure (roads/drains) and residential units. Other potential sources of air quality impacts may include exhaust emissions

from construction vehicles and machinery and odour generated from excavation of fishpond deposits.

The San Tin Technopole Phase 1 Stage 1 Works under the San Tin / Lok Ma Chau Development Node has been identified as a concurrent project within 500m assessment area of the Project, as identified during desktop review of approved EIAs and planning applications in the area.

1.3.2 Operational Phase

Potential air quality impacts during the operational phase could be attributed to vehicular emissions from existing road traffic and project induced traffic emissions, as well as odour from the existing sewage treatment plants (STP) in the vicinity. Odour may also be generated from the options being considered for handling of sewage generated from the Development, particularly the planned temporary on-site STP as part of one of the options for sewerage treatment. A site survey was conducted on 13 June 2024, during which no active chimney was identified within 200m from the Project site boundary.

1.4 Baseline Conditions / Sensitive Receivers

1.4.1 Baseline Conditions

Historical ambient air quality has been referenced from EPD's general air quality monitoring station (AQMS) located in Yuen Long, which is closest to the Project site. The recent five years' monitoring data (Year 2019 - 2023) recorded at the AQMS in Yuen Long is presented in **Table 1.3**.

Table 1.3: Historical Air Quality from EPD's General Monitoring Station at Yuen Long

Pollutant	Averaging Period	Concentration (µg/m³)						Corresponding AQOs (µg/m³)
		2019	2020	2021	2022	2023	5-year annual average	
Respirable Suspended Particulates (RSP or PM_{10})	24-hour - 10th highest	**83**	**77**	73	56	59	70	75
	Annual	**37**	30	30	25	26	30	30
Fine Suspended Particulates (FSP or $PM_{2.5}$)	24-hour - 19th highest	**38**	33	36	**38**	34	36	37.5
	Annual	**20**	**16**	**17**	**16**	**16**	**17**	15
Nitrogen Dioxide (NO_2)	1-hour - 19th highest	161	135	148	122	130	139	200
	24-hour - 10th highest	86	64	78	68	67	73	120
	Annual	**44**	32	40	37	37	38	40
Sulphur Dioxide (SO_2)	10-minute - 4th highest	42	26	24	21	20	27	500
	24-hour - 4th highest	11	10	14	7	10	10	40
Ozone (O_3)	8-hour - 10th highest	**200**	154	**178**	**194**	155	**176**	160
	Peak season	**102**	86	84	95	84	90	100
	1-hour	2,150	1,530	2,090	1,700	1,580	1,810	30,000

Carbon Monoxide (CO)	8-hour	1,903	1,279	1,591	1,519	1,273	1,513	10,000
	24-hour	1,630	1,182	1,183	1,159	1,047	1,240	4,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.1.
[ii]. Monitoring results that exceeded the AQO criteria are shown in **bold** characters.
[iii]. Lead is not measured at Yuen Long AQMS.

The predicted future background air pollutant concentrations within the Assessment Area are extracted from the relevant grids of the Pollutants in the Atmosphere and their Transport over Hong Kong (PATH) v.3.0 model for Year 2030, the nearest to the year of population intake of the Project (2031) and are summarised in **Table 1.4** below.

Table 1.4: Future Background Air Quality from PATH for Year 2030

Pollutant	Averaging Period	Concentration (µg/m^3)		Corresponding AQO (µg/m^3)
		(28,51)	(28,52)	
RSP / PM_{10}	24-hour – 10th Highest	54	54	75
	Annual	21	21	30
FSP / $PM_{2.5}$	24-hour – 19th Highest	32	32	37.5
	Annual	13	13	15
NO_2	1-hour – 19th Highest	74	78	200
	24-hour – 10th Highest *	25	26	120
	Annual	15	15	40
SO_2	10-min – 4th Highest	24	24	500
	24-hour – 4th Highest	7	7	40
Ozone (O_3)	8-hour – 10th highest	**186**	**182**	160
	Peak Season *	**122**	**119**	100
Carbon Monoxide (CO)	1-hour	526	526	30,000
	8-hour	495	496	10,000
	24-hour *	458	462	4,000

Notes:
[i]. Data extracted from EPD's Smart Air Modelling Platform (SAMP) v2.1.
[ii]. Monitoring results that exceeded the AQO criteria are shown in **bold** characters.

As shown in **Table 1.4**, the future background levels of pollutants (except for ozone) would be below their corresponding AQOs in 2030. The improvement in future ambient air quality can be attributed to the government's commitment to implement various planned emission reduction measures, as published on EPD's website.

1.4.2 Air Sensitive Receivers

Representative ASRs within 500m of the Project site boundary have been identified according to the criteria set out in the EIAO-TM through site inspections and a review of land use plans. ASRs and their horizontal distance from the Project site boundary have been identified and are summarized in **Table 1.5**. Locations of the ASRs are shown in **Figure 1.1**.

Table 1.5: Locations of Representative Air Sensitive Receivers

ID	Receiver Description	Usage	Construction Phase	Operation Phase	Shortest Horizontal Distance from Project Site Boundary (m)
ASR1	Royal Palms	Residential	✓	✓	23
ASR2a	Palm Springs	Residential	✓	✓	21
ASR2b			✓	✓	16
ASR3	Wo Shang Wai Village	Residential	✓	✓	51
ASR4	Village House of Mai Po San Tsuen	Residential	✓	✓	58
ASR5	Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential	×	✓	--

1.5 Evaluation of Air Quality Impact

1.5.1 Construction Phase

The entire site will be divided into six portions, corresponding to six phases of residential development. Construction will be carried out in phases, starting from the northwestern portion and progressing towards the northeastern portion, followed by the southern portion. The construction of the Project will commence in 2027 and the planned population intake year for all six phases of the residential development is 2031.

Fugitive dust could be generated during the construction of the Project as a result of construction activities like material handling, excavation, vehicles movement and erosion of unpaved area and stockpiles. No percussive piling works would be conducted. The estimated total amount of construction and demolition (C&D) materials to be disposed off-site for the construction period is about 461,900 m^3, of which 360,800 m^3 would be inert C&D materials while 101,100 m^3 would be non-inert C&D materials. For details, please refer to **Section 4**.

Dust generation could be controlled by providing covers to dusty materials in order to prevent erosion, and dust could be suppressed by regular site watering. The highest number of dump trucks is expected to be around 158 per day. The speed of the trucks within site will be controlled to 10 kph to control air quality impact and for safe movement around the site. In addition, site hoarding shall be provided at the Project site boundary as a control measure. Appropriate air quality control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation under the APCO will be implemented.

The Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation came into effect to control the emissions from diesel powered engines and limit the amount of diesel-powered mechanical equipment to be used on-site during the construction phase.

The number of diesel-powered machinery to be used at the site is subject to site conditions and detailed construction methods. It is noted however that the works will be phased and there would be no population intake within any of the six phases of the residential development until the construction works of all phases are completed. According to the Air Pollution Control (Fuel Restriction) Regulations, liquid fuel with a sulphur content of less than 0.001% by weight should be used. Under the effects of the two regulations, emissions of PM and gaseous pollutants from the operation of on-site diesel-powered mechanical equipment would be controlled.

No concrete batching plants will be provided on-site. Concrete will be brought into the site in "ready-mixed" state or in pre-cast sections. Given the relatively flat site, no rock crushing will be necessary.

Apart from the implementation of control measures, an EM&A programme will be undertaken to monitor the air quality impacts associated with construction to ensure no adverse construction air quality impacts on the adjacent ASRs and to verify the effectiveness of the control measures. In conclusion, adverse air quality impact during the construction stage is not anticipated given the proper control measures recommended in **Section 1.6.1** and the EM&A programme.

Since the proposed Project site was derived from fishponds, pond deposits underlay a majority of the Project site. Pond deposits are a mixture of organic material and may release odour if excavated. In order to minimise the odour nuisance to surrounding environment, the following control measures are recommended:

- all malodorous excavated material should be placed as far as possible from any ASRs;
- the malodourous materials will be immediately contained in airtight and watertight containers on-site and transported off-site by trucks for disposal at a strategic landfill within one day. Sufficient number of containers will be provided;
- During transportation, odorous materials on the trucks should be properly covered by tarpaulin sheets;
- Limited number of ponds shall be excavated at a time, in line with the phased construction works; and
- Frequent site inspections shall be conducted to monitor odour impact.

With proper planning and measures in place, potential adverse odour impact is not anticipated. In case of future complaint against pond excavation work or if odour is detected during site inspections, the applicant shall be responsible for investigating the odour issue and taking remedial actions, as appropriate.

Based on the latest information available, the construction works for the San Tin Technopole Phase 1 Stage 1 Works - Site Formation and Engineering Infrastructure Project commenced in December 2024 and are scheduled to be completed in 2028. The San Tin Technopole Project site boundary is located approximately 175m away from Project. Control measures and good site practices will be implemented by both parties to minimize construction air quality impacts and close liaison will be maintained to avoid heavy/ dusty construction activities being carried out simultaneously, as far as practicable. Dust monitoring work will also be implemented by the proposed Project and the concurrent project during the construction stage to ensure there is no adverse air quality impact.

1.5.2 Operational Phase

Impacts arising from the operation of this Project could primarily attribute to vehicular emissions that may affect the proposed development itself and identified ASRs off-site. Vehicular emission impacts from the major roads, San Tin Highway and Castle Peak Road - Mai Po are considered insignificant, as the nearest air sensitive receivers of the proposed development are more than 107m from these major roads. Based on the Annual Traffic Census 2023, the road type of San Tin Highway and Castle Peak Road - Mai Po are expressway (EX) and rural road (RR), respectively. A 20m buffer distance should be applied for EX and a 10m buffer distance should be applied for RR type roads. Hence, the buffer distance requirements for San Tin Highway and Castle Peak Road - Mai Po can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. As per the information provided by the Project's Traffic Consultant and agreed upon by the Transport Department (TD), the road leading to the project site (i.e., Mai Po South Road) is classified as a feeder road, which is similar in definition to a local distributor (LD) under the road types listed in the HKPSG. A 5m buffer distance should be applied for LD and hence the buffer distance requirement for Mai Po South Road can be fulfilled according to Table 3.1 of Chapter 9 of HKPSG. The email correspondence between the Project's Traffic Consultant and the TD is presented in **Appendix 1.1**. The corresponding buffer zones for each road type are shown in **Figure 1.2** and

presented in **Table 1.6**. There exist a number of private roads surrounding the proposed development. As a conservative approach, a buffer distance of 10m corresponding to district distributors (DD) was applied and found to be satisfied from these roads. The buffer zones for these roads are also shown in **Figure 1.2**. No air-sensitive uses of the proposed development including openable window, fresh air intake and recreational use in the open space shall be located within the buffer zones. All internal roads within the proposed Development are private roads, classified as emergency vehicular access (EVA) roads and therefore buffer distance requirements do not apply on these roads.

Table 1.6: Buffer Distances between the Proposed Residential Development and Nearby Roads

Road	Type of Road	Recommended Buffer Distance (m)	Minimum Separation Distance from Air Sensitive Use (m)	Fulfils Buffer Distance Requirement?
San Tin Highway	Expressway	20	107	Yes
Castle Peak Road - Mai Po	Rural Road	10	112	Yes
Mai Po South Road	Feeder Road[i]	5	24	Yes
Camelina Path	Private Road[ii]	10	15	Yes
Palm Springs Boulevard	Private Road[ii]	10	28	Yes
Narcissus Path	Private Road[ii]	10	31	Yes
Coronado Avenue	Private Road[ii]	10	35	Yes
Napa Avenue	Private Road[ii]	10	41	Yes
Ventura Avenue	Private Road[ii]	10	34	Yes

Notes:
[i]. Feeder Road is comparable to Local Distributor by definition
[ii]. The buffer distance of 10m corresponding to District Distributors was applied to Private Roads, as a conservative approach.

The HKPSG buffer distance requirement is met from all the surrounding roads for the proposed development subject to no proposed air sensitive uses being located within the buffer zones. By incorporating the recommended buffer zones into the design of the proposed development, adverse impact from vehicular emission to planned ASRs is not anticipated. Moreover, based on the traffic forecast of Mai Po South Road (the road leading to the Project site) provided by the Project's Traffic Consultant, more than 90% of vehicles inside the Project site during peak hours will be private cars. The rest of the vehicle types will be light goods vehicles and only a small number of heavy vehicles, such as refuse collection vehicles, would also appear within the Project site. In addition, Mai Po South Road is designated as a private road, mainly serving as an access road for the proposed development. No public transport service (including public transport interchange (PTI) and transport lay-by) will be provided within the proposed development.

A proposed car park will be located at the basement of the residential development and basement of the RCHE building. Reference shall be made to ProPECC PN 2/96 "*Control of Air Pollution in Car Parks*" for its design and operation. There will be 1,514 residential car parking spaces, 200 for visitors, 6 accessible parking spaces, 42 motorcycle parking spaces, 764 bicycle parking spaces and only 47 loading/ unloading bays, which may be used for passenger boarding / alighting, goods vehicles, etc., and 6 car park spaces for the RCHE building (i.e. 3 for private car, 1 loading bay for light good vehicles, 1 ambulance lay-by, 1 for taxi/private car for pick up/drop-off). The location of the ventilation exhausts of the basement car park will be determined in the

detail design stage. These will be designed to be located facing away from any nearby ASRs as far as practicable.

All sewage generated from the Development will either be conveyed to San Tin / Lok Ma Chau Effluent Polishing Plant (STLMC EPP) through the public sewer that will be constructed under the San Tin/ Lok Ma Chau Development Node or to the existing Nam San Wai Sewage Pumping station (SPS) for discharge to the Yuen Long STP. The option for sewage treatment will be confirmed during a later detailed design stage. The potential odour impact will hence be further reviewed and assessed when the option for sewage treatment is confirmed and more details become available at a later detailed design stage.

For the first option, a temporary on-site STP with a capacity of about 4,000 m^3/day will be provided until the STLMC EPP is ready to accept the generated sewage. No permanent on-site STP is proposed for the Development. The temporary on-site STP will provide tertiary level treatment; it will be fully enclosed and maintained at negative pressure. It will be designed with its inlet chamber and wet well located underground and enclosed by airtight cover. The exhaust will be facing away from the nearest sensitive receivers as far as practicable. It will be equipped with a high efficiency odour removal system of at least 95% (and 99.5% for hydrogen sulphide for the treatment of exhaust before discharge to the atmosphere). The temporary on-site STP will be abandoned after the STLMC EPP commences to be used to collect sewage generated from the proposed Development and it will no longer be in use. The approved EIA for the Expansion of Sha Tau Kok Sewage Treatment Works (STKSTW) (EIA Register No.: AEIAR – 207/2017) is referenced. It has a proposed capacity of 5,000m^3/day by Phase 1 and 10,000m^3/day by Phase 2 of its development. The sewage treatment technology and odour control measures of STKSTW are similar to those proposed for the on-site STP, as summarized below.

- Enclosure of the major process equipment inside a building structure;
- Utilization of a Membrane Bioreactor (MBR) system equipped with a deodorizer (with 99.5% H_2S removal efficiency) to treat odorous emissions;
- Regular maintenance of the deodorizer to ensure that the odour removal efficiency remains at or above the design requirement; and
- Locating the exhaust of the deodorization facilities as far away as possible from any nearby ASRs.

The odour impact assessment of the approved EIA for STKSTW predicted 5-second odour concentrations at its closest ASR (20m away from the STW) of 0.03OU to 0.13OU at assessment heights of 1.5m to 10.5m above ground, which are well below the odour criterion of 5OU. The exhaust of the proposed temporary on-site STP will also be placed more than 20m from the nearest air sensitive uses and facing away from them, as far as practicable. An indicative location of the STP exhaust is shown in **Figure 1.1**. Adverse odour impact from the temporary STP is therefore not anticipated.

In relation to the second option for sewage treatment, odour nuisance is also not anticipated during sewerage conveyance as this will be transferred via an enclosed sewerage pipeline to the existing Nam San Wai Sewage Pumping station for discharge to Yuen Long Sewage Treatment Plant.

The planned STLMC EPP and food waste pre-treatment facilities (FWPF) is located just over 480m away from the nearest air-sensitive use of the proposed development, as indicated in **Figure 1.1**. Contour plots of predicted maximum 5-second average cumulative odour concentrations at various assessment heights between 1.5mAG and 20mAG, as presented in the approved EIA for San Tin / Lok Ma Chau Development Node (AEIAR-261/2024), indicated exceedances of odour impact away from proposed Development. Exceedance zones were identified over the STLMC EPP and FWPF's at 10mAG, 15mAG and 20mAG. The shortest separation distances between the exceedance zones and the nearest air-sensitive use of the

proposed development are approximately 514m, 535m and 552m at 10mAG, 15mAG and 20mAG, respectively, which are all over 500m. No air sensitive uses were expected within these exceedance zones. Therefore, odour impact from the STLMC EPP and FWPF is not anticipated.

Within the 500m Assessment Area, two existing private STPs located more than 200m from the Project site, as shown in **Figure 1.1**, serve the Palm Springs and Royal Palms residential developments. The population sizes of both Palm Springs and Royal Palms are about 3,300 and 1,700, respectively. According to the previously approved Section 16 submissions, no sewage odour was detected when conducting site surveys at the Project site over 15 months from April 2005 to June 2006, and on 21 July 2023. A recent site survey was conducted on 13 June 2024 during which no odour was also detected around the Project site boundary of the proposed development and the site boundaries of both existing STPs.

1.6 Mitigation Measures

1.6.1 Construction Phase

It is recommended to include good site practice in the contract clauses to control cumulative construction air quality impact, and to implement a dust monitoring and audit programme to ensure proper implementation of the identified mitigation measures. All the relevant control measures stipulated in the Air Pollution Control (Construction Dust) Regulation would be fully implemented. Mitigation measures include:

- use of effective dust screens, sheeting or netting to be provided to enclose dry scaffolding which may be provided from the ground floor level of the building or if a canopy is provided at the first floor level, from the first floor level, up to the highest level of the scaffolding where scaffolding is erected around the perimeter of a building under construction;
- dump trucks for material transport should be totally enclosed using impervious sheeting;
- any excavated dusty materials or stockpile of dusty materials should be covered entirely by impervious sheeting or sprayed with water so as to maintain the entire surface wet, and recovered or backfilled or reinstated within 24 hours of the excavation or unloading;
- dusty materials remaining after a stockpile is removed should be wetted with water;
- the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with e.g., concrete, bituminous materials, hardcore or similar;
- the portion of road leading only to a construction site that is within 30m of a designated vehicle entrance or exit should be kept clear of dusty materials;
- stockpile of dusty materials to be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides; or sprayed with water so as to maintain the entire surface wet;
- all dusty materials to be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet;
- vehicle speed to be limited to 10 kph except on completed access roads;
- every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction site;
- the load of dusty materials carried by vehicles leaving the construction site should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicles;
- the working area of excavation should be sprayed with water immediately before, during and immediately after (as necessary) the operations so as to maintain the entire surface wet;
- deploy electrified NRMMs as far as practicable;

- use of exempted NRMMs should be avoided;
- regular maintenance of construction equipment deployed on-site should be conducted;
- all malodorous excavated material should be placed as far as possible from any ASRs;
- the stockpiled malodorous materials should be kept in airtight and watertight container on site and transported off site within 24 hours, for which sufficient number of containers shall be provided;
- during transportation, these odorous materials on the trucks should be properly covered by tarpaulin sheets;
- Limited number of ponds shall be excavated at a time, in line with the phased construction works; and
- Frequent site inspections shall be conducted to monitor odour impact.

1.6.2 Operational Phase

As adverse air quality impact during the operational phase is not anticipated, no specific mitigation measures are required.

1.7 Evaluation of Residual Impact

No adverse residual impact is anticipated for the construction and operational phases of the Project.

1.8 Environmental Monitoring and Audit

Although the proposed Project is not expected to generate excessive dust levels, an environmental monitoring and audit program is recommended to ensure compliance with air quality criteria and the proper implementation of mitigation measures.

1.9 Conclusion

Through proper implementation of control measures, construction dust and gaseous emissions can be controlled and hence no adverse construction air quality impacts are anticipated.

During the operational stage, no adverse air quality impact is anticipated.

2 Noise Impact

2.1 Introduction

This section reviews the noise impact assessment findings from the previously approved Section 16 submission (Application No.: A/YL-MP/344) and identifies any changes or additional noise impacts that may arise due to the proposed changes to the layout of the residential portion. At a later stage, a Noise Impact Assessment report will be conducted during future s.16 planning application to review, explore, demonstrate and implement appropriate noise mitigation measures for full compliance with the relevant noise criteria and requirements under ProPECC PNs, HKPSG and NCO in both construction and operation phases of the proposed developments.

2.2 Legislation, Standards, Guidelines and Criteria

2.2.1 Construction Phase

ProPECC PN1/24 offers guidance on the existing control on noise from construction activities under the Noise Control Ordinance (NCO) and Environmental Impact Assessment Ordinance (EIAO). It also outlines the requirements and recommendations on the practices for minimizing construction noise. The noise generated by construction activities for the project during non-restricted hours (7 a.m. to 7 p.m. on any day that is not a Sunday or general holiday) should be minimized to the greatest extent practicable. Additionally, the construction noise at the facade of the respective noise-sensitive receivers should not exceed the following noise levels.

Table 2.1: Relevant Noise Standard for Daytime Construction Activities

Noise Sensitive Receivers	Leq(30min) dB(A)
All domestic premises	75
Educational institutions (including kindergartens and nurseries	70 (65 during examinations)

Notes:
[i] The above noise standards apply to uses, why rely on opened windows for ventilation
[ii] The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

2.2.2 Operational Phase

Road Traffic Noise Criteria

With reference to the guideline in Table 4.1 of Chapter 9 of the HKPSG, the summary of relevant noise criteria regarding road traffic noise is given in **Table 2.2** below.

Table 2.2: Relevant Road Traffic Noise Standard for Planning Purposes

Uses	Road Traffic Noise, L10 (1 Hour), dB(A)
All domestic premises, including temporary housing accommodation, hotels and hostels, offices	70
Educational institutions including kindergarten, child care centres and all other where unaided voice communication is required	65
Places of public worship and courts of law	65
Hospitals, clinics, convalescences and residential care home for the elderly	55

Table 2.2: Relevant Road Traffic Noise Standard for Planning Purposes

-	Diagnostic rooms
-	Wards

Notes:
[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade
[iii] Based on latest information, there will be no diagnostic rooms or wards included in the RCHE under the proposed development area. Therefore, the stricter noise criterion for road traffic noise of L_{10}55dB(A) will not be adopted.

Fixed Noise Assessment Criteria

As stated by Section 4.2.13 of Chapter 9 of the HKPSG, noise assessments for fixed noise sources would normally be conducted in accordance with the Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM) under the Noise Control Ordinance (NCO). The IND-TM lays down statutory Acceptable Noise Levels (ANLs). The level of the intruding noise at the facade of the nearest sensitive use should be at least 5 dB(A) below the appropriate ANL shown in Table 3 of the IND-TM or, in the case of the background being 5 dB(A) lower than the ANL, should not be higher than the background. In accordance with IND-TIM, the ANLs for the Noise Sensitive Receivers (NSRs) are determined with consideration of the Area Sensitivity Rating (ASR). The ASR depends on the type of area and the degree of impact that Influencing Factors (IF) have on the NSRs. **Table 2.3** Shows the considerations for determining the appropriate ASR for different NSRs.

Table 2.3: Area Sensitivity Ratings

Type of Area Containing NSR	Degree to which NSR is affected by IF		
	Not Affected[(c)]	Indirectly Affected[(d)]	Directly Affected[(e)]
(i) Rural area, including country parks[(a)] or village type developments	A	B	B
(ii) Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
(iii) Urban area[(b)]	B	C	C
(iv) Area other than those above	B	B	C

Definitions:
a) "Country park" means an area that is designated as a country park pursuant to section 14 of the Country Parks Ordinance.
b) "Urban area" means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.
c) "Not Affected" means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR.
d) "Indirectly Affected" means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR.
e) "Directly Affected" means that the NSR is at such a location that noise generated by the IF is readily noticeable at the NSR and is a dominant feature of the noise climate of the NSR.

The appropriate ANL, in dB(A), for a given NSR may be determined from **Table 2.4** having regard to the appropriate ASR and the time period under consideration.

Table 2.4: Acceptable Noise Levels (ANLs)

Time Period		Area Sensitivity Rating		
		A	B	C
Day	(0700 to 1900 hours)	60	65	70
Evening	(1900 to 2300 hours)			
Night	(2300 to 0700 hours)	50	55	60

Notes:

[i] The above standards apply to uses which rely on opened windows for ventilation.
[ii] The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

The proposed development in Wo Shang Wai is situated adjacent to low density residential areas, which include low-rise private residential units such as Royal Palms and Palm Spring. The proposed development consists of numbers of 6 to 10 storey mid-rise residential towers and 3 storey houses in this S12A planning application. Therefore, when determining the type of area containing NSR, the Site is considered to be located in low density residential area consisting of low-rise or isolated high-rise development in accordance with IND-TM. In addition, the type of area containing NSR is not considered to be urban areas because the Site is not within the area of San Tin / Lok Ma Chau Development Node.

For the degree to which NSR is affected by IF, San Tin Highway (STH) is considered to be an IF since STH is an expressway that has Annual Average Daily Traffic (AADT) greater than 30,000. According to **Table 2.3**, the ASR of the NSR shall be classified as "B" for the assessment point directly or indirectly affected by the IF. The ASR of the NSR shall be classified as "A" for the assessment point not affected by the IF.

In accordance with Table 4.1 of chapter 9 of HKPSG, the noise standards of planned fixed noise sources should be 5 dB(A) below the appropriate the ANL shown in IND-TM or the prevailing background, whichever is lower.

2.3 Identification of Potential Noise Impacts

The Assessment Area for the noise impact assessment has included all areas within 300m from the boundary of the Project site boundary as shown in **Figure 2.1**. Major land use within the Assessment Area includes residential developments such as Royal Palms, Palm Springs, Mai Po San Tsuen and Wo Shang Wai village, and roads such as Castle Peak Road, San Tin Highway and San Tam Road.

The potential noise impacts associated with the construction and operational phases of the proposed development are identified and described in this section.

2.3.1 Construction Phase

Potential construction noise impact would be associated with the uses of Powered Mechanical Equipment (PME) for various construction activities of the Project. The construction activities mainly divided into 3 main categories sequentially - (1) Site Clearance, (2) Substructure Works and (3) Superstructure Works.

The construction activities for the proposed development are divided into 6 Phases. It is assumed that all the Phases (Phase 1 to Phase 6) would be under construction at the same time in the assessment and the haul road would be equally distributed for each phase as shown in **Figure 2.2.**

Non-percussive piling shall be used for the foundation works at the subject development site. No noisy operations are expected during the 'finishing' activity of each phase as such activities are mostly confined to the inside of the already constructed houses. The above statement is the same as previously approved Section 16 submission.

2.3.1.1 Cumulative Impact from Concurrent Project

Based on the tentative construction programme, the construction of the Project will commence in 2027 and the planned population intake year for all six phases of the residential development is 2031. The construction of the Project could be carried out concurrently with the San Tin/ Lok Ma Chau Development Node (Register No.: EIA-302/2023). Location of the concurrent project is

shown in **Figure 2.1**. Based on the latest information, the construction works started in 2024. The maximum sound power levels of work front falling into 300m assessment area are extracted from the EIA for quantitative assessment.

The potential noise impact during the construction phase of the development was assessed quantitatively as detailed in **Section 2.6.1**.

2.3.2 Operational Phase

2.3.2.1 Road Traffic Noise

Road traffic on nearby road network is the dominant noise source within the Assessment Area. There is potential road traffic noise impact on the proposed development.

2.3.2.2 Fixed Noise Sources

Existing Fixed Noise Sources

Based on the approved EIA report (Ref. no. AEIAR-217/2018A), STP in Royal Palms and the Mai Po Ventilation Building of the XRL near the site entrance were identified within the Assessment Area. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. Furthermore, no additional planned fixed plant has been identified since the previously approved Section 16 submission.

Planned Fixed Noise Sources

E&M buildings and one permanent on-site sewage treatment plant were proposed in the previous Section 16 submission which the plants within the buildings will be entirely enclosed and confined, hence, no adverse noise impact was concluded. According to the tentative layout, E&M buildings will be provided on-site. Given that the E&M buildings will be entirely enclosed and confined, no adverse fixed noise impact from the planned fixed noise sources is expected.

The operation noise impact assessment was detailed in **Section 2.6.2**.

2.4 Determination of Noise Sensitive Receivers

NSRs have been identified within the Assessment Area. These NSRs included all existing NSRs as well as planned/committed noise sensitive developments and uses earmarked on the relevant Outline Zoning Plans and development layout plans.

According to Planning Department's record, no planning application or rezoning application for residential development or other noise sensitive uses is identified in the nearby Other Specified Uses (OU) and Village (V) zones. The adjacent OU zone is being used for the Mai Po Ventilation Building of XRL Project.

Any future planned residential uses of these sites require the approval from Town Planning Board and application for such uses likely have to go through the EIA process. Therefore, there are currently no known planned sensitive uses in the OU. As New Territories Exempted Houses in V zone are always permitted, representative noise sensitive receiver at the V zone in the vicinity of the proposed development is included in this assessment.

The uses and designation of the noise sensitive receivers within the Assessment Area are shown in **Table 2.5**. The assessment points for construction noise impact assessment are shown in **Figure 2.2** and summarised in **Table 2.6**.

During the operation phase of the development, NSRs will be subject to the noise impact from road traffic and fixed plant sources. As determined in the approved EIA of the proposed development (Register No. AEIAR-120/2008), the NSRs mostly affected by road traffic noise are those located close to the site access road connecting San Tin Highway. For the fixed plant noise impact, the most affected NSRs are those located nearby the XRL ventilation building (i.e. major fixed noise source). The assessment points identified for operation phase assessment are shown in **Figure 2.3a** and **Figure 2.3b** and summarised in **Table 2.7** and **Table 2.8**, respectively.

Table 2.5: Noise Sensitive Receivers Identified within the Assessment Area

Designation	Uses
Proposed Comprehensive Development at Wo Shang Wai (Project Site)	Residential
Palm Springs	Residential
Royal Palms	Residential
Wo Shang Wai Village	Residential
Mai Po San Tsuen	Residential
Scenic Heights	Residential
St Lorraine English Kindergarten	Educational

Table 2.6: Horizontal Distances between the Representative NSRs and the Notional Source Position of Each Phase for Construction Phase

NSR ID	Uses	Locations / Descriptions	No. of storeys	Horizontal distance between NSRs and the notional source position of each phase, m ^					
				1	2	3	4	5	6
NSR1	Residential	House No. 5, Cherry Path, Palm Springs	3	84	220	389	577	287	414
NSR2	Residential	House No. 5, Camelia Path, Palm Springs	3	73	223	402	591	262	404
NSR3	Residential	House No. 1, Pinaceae Drive	3	85	259	439	626	218	386
NSR4	Residential	House No. 17, Wo Shang Wai Village	3	154	211	329	456	89	190
NSR5	Residential	House No. 1, Narcissus Path, Royal Palms	3	133	187	289	418	54	150
NSR6	Residential	House No. 25, Narcissus Path, Royal Palms	3	184	217	278	375	65	67
NSR7	Educational	St Lorraine English Kindergarten	3	278	321	381	457	173	167
NSR8	Residential	House No. 61, Narcissus Path, Royal Palms	3	282	294	292	335	162	66
NSR9	Residential	House No. 1, Marin Avenue, Royal Palms	3	301	269	175	173	216	69
NSR10	Residential	House No. 1, Ventura Avenue, Royal Palms	3	294	243	93	82	239	82
NSR11	Residential	House No. 202, Mai Po San Tsuen	3	577	519	340	167	518	368
NSR12	Residential	House No. 330, Mai Po San Tsuen	3	548	498	304	148	510	366
NSR13	Residential	Block A1, Scenic Heights	3	721	669	513	311	637	491

Note: (^) – For Phase 1, the horizontal distance between the NSRs and (i) the notional source position, or (ii) the notional source position of Phase 1 development area at the west of the site, whichever is the shortest, was adopted as conservative approach.

Table 2.7: Representative NSRs for Operation Phase (Road Traffic Noise)

NSR ID	Description	Uses	No. of storeys
TN1	3-Storey House	Residential	3
TN2	Tower C2-1	Residential	8
TN3	Tower C2-1	Residential	8
TN4	Tower C2-1	Residential	8
TN5	Tower C2-2	Residential	10
TN6	Tower C2-2	Residential	10
TN7	Tower C2-2	Residential	10
TN8	Tower C2-3	Residential	10
TN9	Tower C2-3	Residential	10
TN10	Tower C2-3	Residential	10
TN11	Tower C2-4	Residential	10
TN12	Tower C2-4	Residential	10
TN13	Tower C2-4	Residential	10
TN14	Tower C2-5	Residential	10
TN15	Tower C2-5	Residential	10
TN16	Tower C2-5	Residential	10
TN17	Tower C2-5	Residential	10
TN18	Tower C2-5	Residential	10
TN19	Tower C1-22	Residential	6
TN20	Tower D2-8	Residential	6
TN21	Tower D2-7	Residential	6
TN22	Tower D1-7	Residential	6
TN23	Tower D2-6	Residential	6
TN24	Tower C2-6	Residential	6
TN25	Tower C2-6	Residential	6
TN26	RCHE with EM Building below	Social Welfare & EM	4
TN27	RCHE with EM Building below	Social Welfare & EM	4
TN28	RCHE with EM Building below	Social Welfare & EM	4
TN29	RCHE with EM Building below	Social Welfare & EM	4
TN30	RCHE with EM Building below	Social Welfare & EM	4
TN31	RCHE with EM Building below	Social Welfare & EM	4
TN32	RCHE with EM Building below	Social Welfare & EM	4
TN33	RCHE with EM Building below	Social Welfare & EM	4

Table 2.8: Representative NSRs for Operation Phase (Fixed Plant Noise)

NSR ID	Description	Uses	No. of storeys	ASR*
FN1	Tower C2-5	Residential	10	B
FN2	Tower C2-5	Residential	10	
FN3	Tower C2-4	Residential	10	
FN4	Tower C2-3	Residential	10	
FN5	Tower C2-2	Residential	10	

NSR ID	Description	Uses	No. of storeys	ASR*
FN6	Tower C2-1	Residential	8	
FN7	3-Storey House	Residential	3	
FN8	RCHE with EM Building below	Social Welfare & EM	4	
FN9	RCHE with EM Building below	Social Welfare & EM	4	

Note: (*) – the representative NSRs for fixed plant noise are directly or indirectly affected by IF. Therefore, the ASR for NSRs is "B", and the noise criteria are 65dB(A) in day and evening time and 55dB(A) in nighttime.

2.5 Assessment Methodology

2.5.1 Construction Phase

Construction noise levels are predicted at the identified NSRs for both the foundation and superstructure work stages in order to assess the project feasibility during the planning stage and to identify if there are any potential constraints on the works programme or the use of construction equipment.

The methodology for the construction noise assessment other than percussive piling is based on the procedures set out in the GW-TM, as summarised below:

- To identify the affected NSRs within the Study Area;
- To identify the phasing of construction work and, locations and required number of construction plant items;
- To obtain the sound power levels in dB(A) of the construction equipment from the GW-TM;
- To determine the distance from the effective noise source location (or "notional source position") to the NSRs and distance attenuation (from geometric spreading and other absorption effects where appropriate), barrier corrections and reflection corrections at the NSR as prescribed in the GW-TM;
- To calculate the Corrected Noise Level (CNL) which will be generated by the construction works at the NSRs; and
- To propose direct mitigation measures, if necessary, to minimise the impact by the construction work in order to comply with the stipulated noise limits.

Construction Phases

Construction of the Project will commence in 2027 with the residential development ready for occupation in 2031. The entire site will be divided into 6 portions i.e., 6 residential development phases. It is assumed that construction works will be carried out at the same time as conservative approach. All the phases will be completed before the population intake.

Non-restriction Hours

No evening or night time (7pm to 7am the next day) construction work is anticipated. Therefore, potential construction noise impacts during restricted hours were not assessed. The potential noise impacts on the nearby NSRs arising from the construction works during non-restricted hours (7am to 7pm) were assessed. Notwithstanding the above, for any construction works to be carried out during the restricted hours, the Contractor will be required to submit CNP application to Noise Control Authority and has the responsibility to ensure compliance with the condition of CNP, if need.

Construction Plant Inventory

A typical plant inventory for the major construction works provided by the project team was shown in **Appendix 2.2.**

Whilst it is possible that the future appointed Contractor may propose a different plant inventory, this assessment has been undertaken on the anticipated plant to allow early identification of any potential noise problem and to ensure there are practicable and sufficient noise mitigation measures that can be implemented to alleviate adverse noise impacts during the planning stage. The Contractor will be required to provide an updated Construction Noise Mitigation Plan (CNMP) with details of the updated plant inventory and mitigation measures to achieve acceptable noise levels on the nearby NSRs.

2.5.2 Operational Phase

Road Traffic Noise

The road traffic noise level at the identified noise sensitive receivers were predicted based on the maximum projection of road traffic flow within 15 years upon the last phase occupation of the proposed residential development which is 2046. The traffic flow project in year 2046 as shown in **Table 2.9** is adopted.

Table 2.9: Traffic Flow Forecast of Road Networks (Year 2046) (1)

Index No.	Road Name	Direction	Road Speed (km/hr)	AM Peak		PM Peak	
				Total Flows(2) (Veh/hr)	HV% (3)	Total Flows(2) (Veh/hr)	HV% (3)
1	Mai Po South Road	EB	50	350	13%	200	16%
		WB	50	250	16%	250	14%
2	Castle Peak Road – Mai Po	2-way	50	550	25%	550	33%
3	San Tin Highway	NB	100	5450	39%	4800	38%
4	San Tin Highway	SB	100	4650	36%	4850	28%
5	San Tam Road	2-way	50	450	35%	400	28%
6	San Tam Road	2-way	50	450	32%	450	31%
7	San Tam Road	2-way	50	500	27%	500	22%
8	Ko Hang Road	2-way	50	50	30%	50	27%
9	Maple Po Gardens 1st St	2-way	50	100	16%	100	9%
10	Maple Po Gardens 1st St	2-way	50	100	16%	100	4%
11	Maple Po Gardens 5th St	2-way	50	50	11%	50	18%
12	Castle Peak Road – Mai Po	2-way	50	700	24%	650	32%
13	Mai Po Road	2-way	50	100	35%	50	28%
14	Royal Palms Boulevard	2-way	50	400	15%	450	11%

Notes:
1. The forecast data is provided by the traffic consultant;
2. Traffic flows are rounded up to the nearest 50 veh/hr;

3. Heavy vehicles include all category of motor vehicles except private car, taxi and motorcycle;
4. AM Peak is selected for assessment as worst-case scenario.

The road traffic noise calculation procedures prescribed in the "Calculation of Road Traffic Noise (1988)" (CRTN) published by the Department of Transport, UK have been adopted in this assessment. The traffic noise modelling was carried out using proprietary traffic noise model software “RoadNoise”, which implements the CRTN procedures. **Figure 2.4** shows the computer plot of the input features in the noise model.

Fixed Noise

With reference to the previously approved Section 16 submission, the existing STP at Royal Palms and Mai Po Ventilation Building were identified as the potential fixed noise sources. According to the latest site surveys conducted on 6 and 7 November 2024, a total of five fixed noise sources were identified, including Mai Po Substation and Mai Po Floodwater Pumping Station, STP in Palm Springs, STP in Royal Palms and Mai Po Ventilation Building. The information of the site visits is recorded in **Appendix 2.1**. As for the planned fixed noise sources (e.g., E&M Buildings) under the Project, it is similar to those previously approved in the Section 16 submission. Details of all the identified existing and planned fixed noise sources are presented below –

i. Existing Sewage Treatment Plant at Royal Palms

Within the Assessment Area, there is an existing STP at the entrance of Royal Palms at the northeast corner of the Project site. The STP at Royal Palms is located 184m from the Project site boundary. The location of the STP is shown in **Figure 2.3b**. With reference to the previously approved Section 16 submission, the noise level at 3m from the said plant is 56dB(A). The plant operates 24 hours a day and it is assumed that the operating noise is steady throughout the day.

The worst-case fixed plant noise level at the Project site was predicted using standard acoustics principles and practices. The predicted noise level at the Project Boundary is 20 dB(A) [56 - 20*log (184/3)] without background noise level superimposed which is far below the noise criteria for day and evening time (i.e., 65dB(A)) and night time (i.e., 55dB(A)). As such, it is anticipated that there will be no significant noise impact from this fixed plant.

ii. Existing Mai Po Ventilation Building (MPVB)

The noise data of the MPVB has been updated (compared to previously approved Section 16 submission) based on the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (XRL), the calculated SWLs of the MPVB ventilation openings have been adopted for assessment. The location of the louvres on the MPVB is shown in **Figure 2.3b**. Pages extracted from the Commissioning Test Report regarding the SWLs and louvre location of the MPVB are included in **Appendix 2.3**.

iii. Existing Mai Po Substation

Within the Assessment Area, there is a substation adjacent to the transitional Housing – The STEP, as shown in **Figure 2.3b**. The Mai Po Substation is located 322m from the Project site boundary, and they are separated by the San Tin Highway. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing Mai Po Substation will be insignificant.

iv. Existing Sewage Treatment Plant at Palm Springs

Within the Assessment Area, there is an existing STP at the western boundary of Palm Springs, as shown in **Figure 2.3b**. The STP at Palm Springs is located 239m from the Project site boundary. Based on the site observation, no noticeable noise was identified. Given the

considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the existing STP at Palm Springs will be insignificant.

v. Existing Mai Po Floodwater Pumping Station

Within the Assessment Area, there is an existing floodwater pumping station adjacent to Mai Po San Tsuen, as shown in **Figure 2.3b**. The Mai Po Floodwater Pumping Station is located approximately 267m from the Project site boundary. Based on the site observation, equipment that generates noise appeared to be enclosed in a building structure. No noticeable noise was observed. Given the considerable separation distance and the site observation made, it is anticipated that the fixed noise impact from the Mai Po Floodwater Pumping Station will be insignificant.

vi. Planned E&M Buildings (from Project)

With reference to the current MLP, there will be E&M buildings, as shown in **Figure 2.3b**. The E&M buildings will be small in scale and the plants within the building will be entirely enclosed and confined. Hence, the noise impact from this fixed plant is anticipated as insignificant and will not be considered in this assessment. The developer would ensure that the planned fixed noise source meeting the planning requirement for the planned fixed noise source, i.e. 5dB(A) below the acceptable noise level (ANL) or the prevailing background noise level, whichever is lower. Depending on the location of the planned fixed noise source, the representative NSR as well as the respective ANL may be different.

2.6 Prediction and Evaluation of Noise Impact

2.6.1 Construction Phase

Construction Noise

With the adoption of the approved mitigation measure (i.e. noise barrier) during the construction phase in the latest EP (EP-311/2008/E) as shown in **Figure 2.5** and adopting of QPME / Quiet Construction Method as shown in **Table 2.11**, the maximum predicted construction noise levels at the identified NSRs are summarised in **Table 2.10**. The cross-section drawings between the existing temporary noise barriers for construction phase and selected NSRs have been provided in **Figure 2.7** and **Figure 2.8**. A detailed noise calculation is provided in **Appendix 2.4**.

Table 2.10: Maximum Predicted Construction Noise Levels at Representative NSRs

NSR	Maximum Predicted Construction Noise Level, dB(A)	Daytime Construction Noise Criteria, dB(A)
NSR 1	63	75
NSR 2	64	75
NSR 3	63	75
NSR 4	64	75
NSR 5	67	75
NSR 6	67	75
NSR 7	60	70 (65 for examination period)
NSR 8	65	75
NSR 9	65	75
NSR 10	67	75
NSR 11	70	75
NSR 12	71	75

NSR	Maximum Predicted Construction Noise Level, dB(A)	Daytime Construction Noise Criteria, dB(A)
NSR 13	66	75

Table 2.11: QPME / Quiet Construction Method for Construction Phase

QPME / Quiet Construction Method	Description	SWL, dB(A)
Hydraulic Crusher	Replace traditional excavated-mounted breaker	94
Excavator, wheeled/tracked	Replace Regular PME [QPME ID: EPD-12299]	92
Bulldozer, tracked	Replace Regular PME [QPME ID: EPD-12694]	108
Crane, mobile	Replace Regular PME [QPME ID: EPD-12240]	101

The maximum predicted construction noise levels at the representative NSRs range from $L_{eq(30mins)}$ 54 dB(A) to 69 dB(A). The assessment results indicate that construction noise levels at all identified NSRs are expected to comply with the construction noise criteria for domestic premises and educational institution. Therefore, no additional mitigation measures due to the design changes are required.

2.6.2 Operational Phase

Road Traffic Noise

Table 2.12 summarises the predicted noise levels at the representative NSRs, and noise exceedance was observed. Mitigation measure is required to alleviate the predicted road traffic noise impact.

Table 2.12: Predicted Road Traffic Noise Levels at Representative NSRs (Base Case)

NSR ID	Uses	Max. Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN1	Residential	69	70	N
TN2	Residential	70	70	N
TN3	Residential	70	70	N
TN4	Residential	70	70	N
TN5	Residential	**71**	70	Y
TN6	Residential	**71**	70	Y
TN7	Residential	70	70	N
TN8	Residential	70	70	N
TN9	Residential	**71**	70	Y
TN10	Residential	70	70	N
TN11	Residential	70	70	N
TN12	Residential	**72**	70	Y
TN13	Residential	69	70	N
TN14	Residential	69	70	N
TN15	Residential	**73**	70	Y
TN16	Residential	**75**	70	Y

NSR ID	Uses	Max. Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN17	Residential	67	70	N
TN18	Residential	**74**	70	Y
TN19	Residential	50	70	N
TN20	Residential	49	70	N
TN21	Residential	56	70	N
TN22	Residential	58	70	N
TN23	Residential	55	70	N
TN24	Residential	66	70	N
TN25	Residential	67	70	N
TN26	Social Welfare & EM	**75**	70	Y
TN27	Social Welfare & EM	**75**	70	Y
TN28	Social Welfare & EM	**77**	70	Y
TN29	Social Welfare & EM	**76**	70	Y
TN30	Social Welfare & EM	**73**	70	Y
TN31	Social Welfare & EM	**72**	70	Y
TN32	Social Welfare & EM	61	70	N
TN33	Social Welfare & EM	61	70	N

Note:
[i]. **Bold** figures denote exceedance of relevant noise criteria.

Fixed Noise Sources

The potential fixed plant noise impact at the representative NSRs is assessed and the results are shown in **Table 2.13**. The detailed noise calculation is given in **Appendix 2.5**.

Table 2.13: Predicted Fixed Noise Level at Representative NSRs

NSR ID	Predicted Noise Level, dB(A)			
	Daytime	Daytime Criterion	Night-time	Night-time Criterion
FN1	39	65	39	55
FN2	41	65	41	55
FN3	41	65	41	55
FN4	40	65	39	55
FN5	39	65	38	55
FN6	37	65	36	55
FN7	35	65	34	55
FN8	39	65	39	55
FN9	39	65	39	55

Note:
[i]. **Bold** figures denote exceedance of relevant noise criteria.

No exceedances in fixed plant noise impact are predicted; therefore, no mitigation measures are necessary.

2.7 Mitigation Measures

2.7.1 Construction Phase

Construction noise assessment results show that, with the uses of QPME and noise barriers as recommended in the approved EIA of this Project, the maximum construction noise levels at all of the representative NSRs are predicted to comply with the construction noise criterion of $L_{eq(30mins)}$ 75dB(A) for domestic premises and 70 dB(A) for educational institution as stipulated in the EIAO–TM.

In addition to the measures recommended in the approved EIA of this Project, practical mitigation measures should be implemented to further alleviate the potential noise impact. It is expected that with suitable on-site supervision in limiting the number of powered mechanical equipment and good site practices, the construction noise impact can be further reduced. The following mitigation measures are recommended to further alleviate the construction noise impact:-

- Scheduling of work - The Contractor will be required to determine the number and type of construction equipment taking into account the use of quiet plant while devising a feasible work programme.
- Sitting of facilities - This includes avoiding simultaneous operation of noisy equipment; retaining existing features that can act as a noise barrier until the last phase; and erecting, as early as possible, any new structures which will have the effect of screening noise sources. Such screens can reduce noise levels by 15dB(A) or more. Noisy equipment should always be sited as far as possible from noise sensitive receivers. Consideration should also be given to the use of structures such as site offices and stores as noise barriers.
- Use of quiet Powered Mechanical Equipment (QPME) - The contractor should be requested, as far as possible, to use quiet PME, which has a lower SWL compared to one specified in GW–TM. This is one of the most effective measures to reduce noise emission at source and is increasingly practicable because of the availability of quiet equipment in the market.

Good site practices and noise management can further reduce the noise impact of the construction sites' activities on nearby NSRs. The following measures should be followed during each phase of construction:

- Only well-maintained plant should be operated on-site, and the plant should be serviced regularly during the construction programme;
- Machines and plant that may be intermittent in use should be shut down between work periods or should be throttled back to a minimum;
- Plant known to emit noise strongly in one direction, should, where possible, be oriented so that the noise is directed away from nearby NSRs;
- Silencers or mufflers on construction equipment should be utilised and should be properly maintained during the construction period;
- Mobile plant should be sited as far away from NSRs as possible;
- Material stockpiles and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; and
- The Contractor shall at all times comply with all current statutory environmental legislation.

To ensure the proper implementation of mitigation measures, a Construction Noise Management Plan (CNMP) should be prepared and submitted. The future contractor will be required through contract specifications to provide and implement sufficient direct mitigation measures with reference to the recommendations in the approved EIA and this EA or the future detailed design to achieve acceptable noise levels on the nearby NSRs. The CNMP shall identify the inventory of noise sources and assess the effectiveness and practically of all mitigation measures to minimize the construction noise impact. The CNMP should further explore and maximize the use of quiet

construction methods / equipment as far as practicable. The CNMP should also confirm and summarise the mitigation measures to be implemented for the Project. The CNMP shall be submitted three months prior to the issue of tender for the construction of the Project and shall be included in the construction tender document.

2.7.2 Operational Phase

Road Traffic Noise

Table 2.12 indicates that exceedance of the relevant noise criteria is predicted at the noise sensitive facades in TN5, TN6, TN9, TN12, TN15, TN16, TN18, and TN26 - TN31. Hence mitigation measure is necessary to minimise the noise impact.

With reference to "Practice Note for the Planning of Residential Developments Against Road Traffic Noise (ProPECC PN 4/23)", acoustic window (AW) and enhanced acoustic balcony (EAB) are proven to be capable of reducing the noise inside the flats by at least 6 dB(A)[1], even in different configurations and dimensions to suit the individual needs, and at the same time allowing adequate natural ventilation.

The maximum traffic noise exceedance for the sensitive facades at residential buildings is 5 dB(A). Since AW can generally provide a notional noise reduction of about 6dB(A), it is recommended that those blocks (i.e. Tower C2-2, Tower C2-3, Tower C2-4, Tower C2-5) with exceedance up to 5 dB(A) will be provided with acoustic windows at the affected facades (i.e. facades in the vicinity of TN5, TN6, TN9, TN12, TN15, TN16 and TN18), as indicated in **Figure 2.6.**

For the RCHE, the predicted unmitigated noise level at the sensitive facades is up to 76 dB(A). Fixed glazing will be proposed for sensitive facades with noise level high than 70 dB(A). With reference to the noise level, uses were proposed for each NSRs and presented in **Appendix 2.6.**

With the implementation of the acoustic windows at the affected façades, the predicted road traffic noise levels at the representative NSRs are summarised in **Table 2.14** below, which are all in compliance with the noise criterion.

With reference to the latest EP under Wo Shang Wai (Figure 7 of EP-311/2008/E), the mitigation measures included a noise barrier integrated with E&M Building of total 5.5.m high and a 1m extend exterior wall. Given that the layout has been changed, the 1m extend exterior wall and E&M Building of total 5.5.m high would not be applied in this assessment.

Table 2.14: Predicted Road Traffic Noise Levels at NSRs with Exceedance in Base Case for the Residential Buildings (Mitigated)

NSR ID	Mitigation Measures	Predicted Noise Levels, $L_{10(1hour)}$, dB(A)	Noise Criteria, $L_{10(1hour)}$, dB(A)	Noise Exceedance? [Y/N]
TN5	Residential	≤70	70	N
TN6	Residential	≤70	70	N
TN9	Residential	≤70	70	N
TN12	Residential	≤70	70	N
TN15	Residential	≤70	70	N
TN16	Residential	≤70	70	N
TN18	Residential	≤70	70	N

[1] Based on the Practice Note on Application of Innovative Noise Mitigation Designs in Planning Private Residential Developments against Road Traffic Noise Impact and the findings from noise impact assessment reports prepared for private residential developments in the past.

Fixed Noise Sources

According to **Table 2.13**, all NSRs comply with the relevant noise criteria. Therefore, no mitigation measures are necessary.

According to the latest EP under Wo Shang Wai (Figure 6 of EP-311/2008/E), the mitigation measures included 9.5m and 6.5m high noise barriers. Based on the above calculation (i.e. with adopting the latest noise data of MPVB from the Commissioning Test Report under EP-349/2009/N), both 9.5m and 6.5m high noise barriers mentioned in the VEP are not necessary in this assessment.

2.8 Conclusion

2.8.1 Construction Phase

With the implementation of noise mitigation measures during the construction phase, noise levels at the NSRs will comply with the noise criteria. Therefore, no residual noise impact is anticipated.

2.8.2 Operational Phase

For mitigating the potential traffic noise impact, it is recommended to adopt acoustic windows at the affected façades of the noise sensitive receivers. Relevant details of the glass panes for all windows (and any doors leading outdoors) in all noise sensitive rooms within the development will be advised in the NIA report submitted at a later stage of the project. Since the design parameters are not available at this stage, the noise impact of the planned fixed noise sources will be reviewed when they become available. With this recommended measure in place, no adverse road traffic noise impacts are anticipated.

For fixed plant noise impact during the operational phase, no potential noise impacts are anticipated from the fixed noise source of XRL MPVB.

3 Water Quality Impact

3.1 Introduction

This section assesses the potential water quality impacts resulting from the construction and operation of the Project, specifically due to the proposed changes in the layout of the residential development.

3.2 Legislation, Standards, Guidelines and Criteria

Water quality impacts have been assessed with reference to the relevant environmental legislation and standards, which are the same as those adopted in the previously approved Section 16 submission. The following relevant pieces of legislation and associated guidance are applicable to the evaluation of water quality impacts associated with the Project.

- Water Pollution Control Ordinance (WPCO) (Cap. 358);
- Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (WPCO, Cap. 358, S.21);
- Town Planning Board Guidelines No. 12C;
- Environmental Impact Assessment Ordinance (Cap. 499., S.16), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annexes 6 and 14;
- Marine Water Quality in Hong Kong in 2023;
- River Water Quality in Hong Kong in 2023;
- Hong Kong Planning Standard and Guidelines (Chapter 9);
- Practice Note for Professional Persons ProPECC PN 1/23 "Drainage Plan subject to Comment by the Environmental Protection Department, Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulations 40(1), 40(2), 41(1) and 90;
- Practice Note for Professional Persons ProPECC PN 2/24 "Construction Site Drainage"; and
- Environmental, Transport and Works Bureau Technical Circular (Works) No.5/2005" Protection of natural streams/rivers from adverse impacts arising from construction works, ETWB TC (Works) No. 5/2005.

3.3 Existing Environment and Sensitive Receivers

Existing Environment

Baseline conditions of the Project site was identified as part of the previously approved Section 16 submission, which remain unchanged. The direction of water flow in the water ditches and drainage channels are basically from south to north diverting to the Shenzhen River in the Deep Bay Water Control Zone (WCZ). The Water Quality Objectives for Deep Bay WCZ are listed in **Table 3.1**.

Table 3.1: Summary of Water Quality Objectives for Deep Bay WCZ

Parameter	Objectives	Part(s) of Zone
Aesthetic Appearance	Waste discharges shall cause no objectionable odours or discolouration of the water.	Whole zone
	Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	
	Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	

Parameter	Objectives	Part(s) of Zone
	There should be no recognisable sewage-derived debris.	
	Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	
	Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.	
Bacteria	The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in one calendar year.	Secondary Contact Recreation Subzone and Mariculture Subzone
	The level of Escherichia coli should be zero per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	The level of Escherichia coli should not exceed 1 000 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
	The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive in one calendar year. Samples should be taken at least 3 times in a calendar month at intervals of between 3 and 14 days.	Yung Long Bathing Beach Subzone
Colour	Waste discharges shall not cause the colour of water to exceed 30 Hazen units.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the colour of water to exceed 50 Hazen units.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Dissolved Oxygen	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Inner Marine Subzone excepting Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to fall below 4 milligrams per litre for 90% of the sampling occasions during the year; values should be calculated as water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 milligrams per litre within 2 metres of the seabed for 90% of the sampling occasions during the year.	Outer Marine Subzone excepting Mariculture Subzone
	The dissolved oxygen level should not be less than 5 milligrams per litre for 90% of the sampling occasions during the year; values should be taken at 1 metre below surface.	Mariculture Subzone
	Waste discharges shall not cause the level of dissolved oxygen to be less than 4 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone, Water Gathering Ground Subzones and other inland waters of the Zone
pH	The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 units.	Marine waters excepting Yung Long Bathing Beach Subzone
	Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones

Parameter	Objectives	Part(s) of Zone
	The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
	The pH of the water should be within the range of 6.0–9.0 units for 95% of samples. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 units.	Yung Long Bathing Beach Subzone
Temperature	Waste discharges shall not cause the natural daily temperature range to change by more than 2.0°C.	Whole zone
Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.	Whole zone
Suspended Solids	Waste discharges shall neither cause the natural ambient level to be raised by 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
	Waste discharges shall not cause the annual median of suspended solids to exceed 20 milligrams per litre.	Yuen Long & Kam Tin (Upper and Lower) Subzones, Beas Subzone, Ganges Subzone, Indus Subzone, Water Gathering Ground Subzones and other inland waters
Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 milligram per litre, calculated as the annual average (arithmetic mean).	Whole zone
Nutrients	(a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Inner and Outer Marine Subzones
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.7 milligram per litre, expressed as annual mean.	Inner Marine Subzone
	Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.5 milligram per litre, expressed as annual water column average (arithmetic mean of at least 2 measurements at 1 metre below surface and 1 metre above seabed).	Outer Marine Subzone
Five-Day Biochemical Oxygen Demand	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Chemical Oxygen Demand	Waste discharges shall not cause the chemical oxygen demand to exceed 15 milligrams per litre.	Yuen Long & Kam Tin (Upper) Subzone, Beas Subzone, Indus Subzone, Ganges Subzone and Water Gathering Ground Subzones
	Waste discharges shall not cause the chemical oxygen demand to exceed 30 milligrams per litre.	Yuen Long & Kam Tin (Lower) Subzone and other inland waters
Toxins	Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone
	Waste discharges shall not cause a risk to any beneficial uses of the aquatic environment.	Whole Zone
Phenol	Phenols shall not be present in such quantities as to produce a specific odour, or in concentration greater than 0.05 milligrams per litre as C_6H_5OH.	Yung Long Bathing Beach Subzone

Parameter	Objectives	Part(s) of Zone
Turbidity	Waste discharges shall not reduce light transmission substantially from the normal level.	Yung Long Bathing Beach Subzone

Source: Statement of Water Quality Objectives (Deep Bay Water Control Zone). Water Pollution Control Ordinance (Cap. 358R), 1997.

The existing water pollution sources include the runoff from adjacent agricultural activities, effluent from fish-cum-duck activities at the northern boundary of the Project site and the disposal of domestic sewage from the adjacent developments. The routine marine water quality monitoring data collected by EPD in 2023 has been reviewed for the monitoring stations (DM1 and DM2) at Deep Bay WCZ. The location of the representative marine water quality monitoring stations are shown in **Figure 3.1**. The summary of water quality for Inner Deep Bay WCZ in 2023 is presented in **Table 3.2**. The overall WQO compliance rate for the Inner Deep Bay WCZ was 53% in 2023, as compared with a ten-year average of 47% in 2009-2018. Overall, with the measures under the Deep Bay Water Pollution Control Joint Implementation Programme taken progressively by the governments of Hong Kong and Shenzhen, there have been significant water quality improvements in Deep Bay. In particular, there has been full compliance of the NH_3-N WQO in the past seven years. Although Deep Bay, as compared with other WCZs, shows higher nutrient levels with annual depth-averaged TIN levels exceeding the respective TIN WQOs, a noticeable long-term decrease in TIN levels since mid-2000s has been seen.

Table 3.2: Summary of Marine Water Quality for the Inner Deep Bay WCZ in 2023

Parameters	DM1	DM2
Temperature (°C)	25.6 (19.0 – 31.7)	25.5 (19.0 – 31.4)
Salinity	18.6 (9.7 – 23.3)	20.5 (11.5 – 25.5)
Dissolved Oxygen (mg/L)	5.2 (3.7 – 7.7)	5.4 (3.7 – 7.6)
Dissolved Oxygen (% Saturation)	70 (54 – 112)	74 (55 – 111)
pH	7.4 (7.1 – 7.8)	7.4 (6.8 – 7.8)
Secchi Disc Depth (m)	1.2 (0.9 – 1.6)	1.1 (0.8 – 1.5)
Turbidity (NTU)	27.2 (6.0 – 52.2)	29.1 (7.2 – 55.7)
Suspended Solids (mg/L)	28.3 (15.0 -61.0)	35.5 (15.0 – 72.0)
BOD_5 (mg/L)	1.0 (0.5 – 1.8)	1.0 (0.1 – 2.5)
Ammonia Nitrogen (mg/L)	0.397 (0.170 -0.810)	0.282 (0.076 – 0.860)
Unionised Ammonia (mg/L)	0.006 (0.001 – 0.012)	0.004 (<0.001 – 0.016)
Nitrite Nitrogen (mg/L)	0.118 (0.043 – 0.350)	0.094 (0.035 – 0.280)
Nitrate Nitrogen (mg/L)	0.883 (0.580 – 1.300)	0.724 (0.250 – 1.100)
Total Inorganic Nitrogen (mg/L)	1.40 (0.83 – 1.82)	1.14 (0.60 – 2.04)
Total Kjeldahl Nitrogen (mg/L)	0.76 (0.40 – 0.98)	0.64 (0.31 – 1.00)
Total Nitrogen (mg/L)	1.76 (1.24 – 2.20)	1.50 (0.97 – 2.18)
Orthophosphate Phosphorus (mg/L)	0.123 (0.069 – 0.170)	0.119 (0.049 – 0.320)

Parameters	DM1	DM2
Total Phosphorus (mg/L)	0.20 (0.14 – 0.27)	0.19 (0.14 – 0.35)
Silica (as SiO_2)(mg/L)	5.38 (1.90 – 10.00)	4.43 (1.00 – 11.00)
Chlorophyl l-a (µg/L)	3.5 (1.7 – 6.0)	5.5 (1.4 – 13.0)
E.coli (cfu/100mL)	310 (24 - 3,300)	380 (21 – 80,000)
Faecal Coliforms (cfu/100mL)	640 (44 – 10,000)	730 (40 – 220,000)

Source: Marine Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual arithmetic means of depth-average results, except for *E.coli* and faecal coliforms which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.

The routine river water quality monitoring data collected by EPD in 2023 has been reviewed for the nearest monitoring location to Wo Shang Wai at Fairview Park Nullah (FVR1). The location of the river water quality monitoring station is shown in **Figure 3.1**. This nullah is a short concrete channel within the Fairview Park residential development, which shares the same drainage basin as the southern part of the Project site. The summary of the River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023 is presented in **Table 3.3**. It is observed that compliance with river water quality objectives in the Fairview Park Nullah is improving from 47% in 2002 to 73% in 2023. The WQI grading remained "Fair' in 2023 (EPD, 2023).

Table 3.3: Summary of River Water Quality at Nearby Fairview Park Nullah in the Deep Bay Water Control Zones in 2023

Parameters	FVR1
Dissolved Oxygen (mg/L)	5.4 (3.7 – 11.7)
pH	7.4 (7.1 – 8.5)
Suspended Solids (mg/L)	11.5 (6.8 – 22.0)
BOD_5 (mg/L)	6.9 (3.0 – 13.0)
COD (mg/L)	30 (9 – 70)
Oil & Grease (mg /L)	<0.5 (<0.5 – <0.5)
E.coli (cfu/100mL)	25,146 (2,900 – 120,00)
Faecal Coliforms (cfu/100mL)	71,882 (14,000 – 440,000)
Ammonia-nitrogen (mg/L)	1.450 (0.450 – 2.800)
Nitrate-nitrogen (mg/L)	0.760 (0.340 – 1.200)
Total Kjeldahl Nitrogen (mg/L)	2.40 (0.92 – 4.00)
Orthophosphate Phosphorus (mg/L)	0.275 (0.095 – 0.530)
Total Phosphorus (mg/L)	0.45 (0.12 – 0.73)
Sulphide (mg/L)	<0.02 (<0.02 – 0.04)
Aluminium (µg/L)	<50 (<50 - <50)
Cadmium (µg/L)	<0.1 (<0.1 - <0.1)

Parameters	FVR1
Chromium (µg/L)	<1 (<1 – 1)
Copper (µg/L)	2 (<1 – 2)
Lead (µg/L)	<1 (<1 - <1)
Zinc (µg/L)	10 (<10 – 20)
Flow (m^3/s)	NM

Source: River Water Quality in Hong Kong in 2023 (EPD)
*Note:
[i]. Data presented are in annual medians of monthly samples, except those for *E.coli* which are in annual geometric means.
[ii]. Figures in brackets are annual ranges.
[iii]. NM indicates no measurement taken.

Water Sensitive Receivers (WSRs)

The existing or potential beneficial uses that are sensitive to water pollution include the fishponds in active use in the Conservation Area (CA) adjacent to the Project site and the drainage channel connecting to the water ditch at the northern boundary of the Project site. The Deep Bay Water Control Zone, the Ramsar Site and Mai Po Nature Reserve are the indirect sensitive receivers. The WSRs are listed in **Table 3.4** and locations are shown in **Figure 3.2**.

Table 3.4: Water Sensitive Receivers Identified within the Assessment Area

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR1	Fishponds near Tam Kon Chau Road	Fishpond	Active Fishponds	0m
WSR2	Pond near Wo Shang Wai Village	Pond	Individual pond, disconnected to river system	15m
WSR3	Ponds next to Palm Springs	Pond	Individual ponds, disconnected to river system	122m
WSR4	Ponds inside Palm Springs	Pond	Individual ponds, disconnected to river system	152m
WSR5	Pond near Palm Canyon Drive	Pond	Individual pond, disconnected to river system	295m
WSR6	Pond near Cypress Drive	Pond	Individual pond, disconnected to river system	474m
WSR7	Water Ditch around Tam Kon Chau Road	Water Ditch	Individual water ditch, disconnected to river system	0m
WSR8	Water Ditch near Camelia Path	Water Ditch	Water ditch downstream to Shan Pui River	137m
WSR9	Channels next to Palm Canyon Drive	Channel	Individual channels	45m
WSR10	Channel next to Castle Peak Road	Channel	Individual channel	330m

ID	WSR	Type	Description	Estimated distance from the Project Site (m)
WSR11	Channels next to Sam Tam Road	Channel	Individual channels	139m
WSR12	Channels around the pond near Cypress Drive	Channel	Individual channels	460m
WSR13	Channels around the ponds near Palm Springs	Channel	Individual channels	250m
WSR14	Channel next to Mai Po Floodwater Pumping Station	Channel	Individual channel	307m

3.4 Assessment Methodology

The findings from the previously approved Section 16 submission have been reviewed to identify any changes to the previous assessment due to the proposed change in layout of the residential portion, and any additional water quality impacts that need to be addressed. Where appropriate, additional mitigation measures are recommended to mitigation potential water quality impacts.

3.5 Evaluation of Water Quality Impact

3.5.1 Construction Phase

3.5.1.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during the construction phase:

- Diversion of existing water ditches and marsh;
- Draining of existing water ditches;
- Soil excavation and stockpiling;
- Chemical waste from plant and equipment; and
- Domestic effluent.

3.5.1.2 Evaluation of Impacts due to the Proposed Change in Residential Units

The proposed change in the layout of the development portion has not significantly changed the construction activities associated with the Project, with the previously identified water quality impacts reviewed below.

Diversion of Existing Water Ditches and Marsh

During construction phase, the existing water ditches and marsh within the Project Area will be filled in as part of site formation for the proposed Development, with the provision of temporary drainage channels to collect the runoff from the site area during construction phase. Good site practices outlined in ProPECC PN 2/24 and ETWB TC (Works) No. 5/2005 will be adopted to minimise runoff from construction works areas.

Draining of Existing Water Ditches

Draining of the existing water ditches within the Project Area will be carried out during site formation. The drained water should be passed through silt removal facilities before discharging offsite.

Soil Excavation and Stockpiling

Excavation works associated with establishment of the wetland restoration area has been completed. Excavation will be carried out within the proposed Development area for construction of basements. Runoff from open excavations and uncovered stockpiles could release sediment into the surrounding water ditches and channels, however this can be adequately managed through implementation of relevant runoff control measures outlined in ProPECC PN 2/24.

Chemical Waste from Plant and Equipment

On-site machinery and equipment may generate small amounts of waste oils or lubricants which can impact water quality if leaked or spilled. Relevant measures outlined in ProPECC PN 2/24 should be implemented to properly store and dispose of chemicals and chemical wastes.

Domestic Effluent

Domestic effluent generated on-site by the construction workforce will be contained via provision of chemical toilets.

3.5.2 Operational Phase

3.5.2.1 Review of Previously Identified Impacts

The previously approved Section 16 submission identified the following key potential impacts to water quality during operation phase:

- Wastewater pollution;
- Diversion of existing water ditches and marsh; and
- Changes in hydrology.

3.5.2.2 Evaluation of Impacts

For the previously identified potential impacts during the operation phase, the volume of sewage generated by the Project would change because of the proposed change in the layout of the residential development portion and an increase in the design population. Other previously identified impacts would not be affected. New potential impacts arising from the offsite sewerage conveyance options would be assessed in the updated EIA.

Wastewater Pollution

As mentioned in the previously approved Section 16 submission, a permanent on-site sewage treatment plant (STP) will be established. However, no permanent on-site STP will be constructed under the proposed layout in the current Section 12A application. Instead, all sewage generated by the project will be conveyed to the public sewers, either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the Yuen Long Sewage Treatment Plant (YLSTW), or via a new connection constructed as part of the San Tin / Lok Ma Chau Development Node and ultimately directed to the San Tin / Lok Ma Chau Effluent Polishing Plant (STLMC EPP).

The total population (resident and staff) is projected to be 9,973, and the average dry weather flow (ADWF) volume of sewage is 3,779.16 m^3/day.

For the option of discharging to the planned STLMC EPP, in the event that the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned. Effluent from the STP will be treated to meet the Group C Inland Waters' discharge standard under the Technical Memorandum for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters before discharge to Mai Po Tributary. A discharge

license under WPCO will be applied for the temporary on-site STP and any discharge shall comply with the terms and conditions of the discharge license.

Diversion of Existing Water Ditches and Marsh

As evaluated in the previously approved Section 16 submission, the existing water ditches and marsh within the Project site mainly act as discharge points for the surface runoff generated within the Project site to the Mai Po River in the north. They will be filled in order to facilitate the construction of the site formation for the proposed Development. An internal drainage network underneath the future road system within the proposed development will be provided to collect the surface runoff generated within the Project site. The proposed internal drainage network will have sufficient capacity to cater for the runoff generated from the proposed Development, to replace the existing water ditches and marsh. The proposed internal drainage network and box culvert are shown in **Figure 3.3**. No potential impacts are identified during the operation phase.

Change in Hydrology

The proposed development will generate additional surface runoff due to the construction of additional paved areas, roads and facilities associated with the residential development. The additional runoff will be discharged to Mai Po River in the north of the Project site via the internal drainage system under the future internal road network. In the previously approved Section 16 application, the estimated peak runoff generated is 14.26 m^3/s under a 50-year storm. Based on the flow data obtained in the latest Drainage Impact Assessment under this Section 12A application, the estimated peak runoff generated is 11.47 m^3/s under a 50-year storm. Since there is no increase in surface runoff, no adverse effect on the existing aquatic organisms or water quality in the drainage system is anticipated.

3.6 Mitigation Measures

3.6.1 Construction Phase

The previously approved Section 16 submission identified mitigation measures to be implemented to minimise potential water quality impacts due to construction activities of the Project. As there are no changes to the identified water quality impacts due to the proposed change in layout of residential portion, the previously identified good site practices and mitigation measures remain valid, and no changes to the previously identified mitigation measures for construction phase are required. Good site practices outlined in ProPECC PN 2/24 and ETWB TC (Works) No. 5/2005 should be adopted to minimise runoff from construction works areas. The following measures are recommended to minimise the impacts of construction on water quality.

- Temporary site drainage facilities and perimeter channels shall be designed and implemented by Contractor prior to commencement of construction to convey surface runoff to silt removal facilities. The design of the silt /sand removal traps and sediment basins shall follow the design in ProPECC PN 2/24;
- Runoff into the excavation areas during rainstorm events shall be minimised as far as practicable. Any wastewater pumped out of the excavation areas shall be treated to remove suspended solids prior to discharge;
- No discharge of silty water into the drainage channel within and in the vicinity of the site;
- Maintenance and inspection of the drainage system and sediment removal facilities should be carried out regularly to remove any sediment and blockages, especially when rainstorms are forecast;
- Stockpiles of construction materials should be properly covered and located away from any natural stream/river;
- Construction debris and spoil should be covered up and/or properly disposed of as soon as possible to avoid being washed into nearby steam/river by rain;

- Construction effluent, site run-off and sewage should be properly collected and/or treated. Wastewater from a construction site should be managed with the following approach in descending order: (1) minimisation of wastewater generation; (2) reuse and recycle; (3) treatment. Proper locations for discharge outlets of wastewater treatment facilities well away from the natural stream/river should be identified;
- Adequate lateral support may need to be erected in order to prevent soil/mud from slipping into the stream/river, but without unduly impeding the flow during heavy rain;
- Manholes (including those constructed as part of the Project) should be adequately covered and temporarily sealed at all times;
- Temporary access road should be protected by crushed stone or gravel;
- Intercepting channels should be provided to prevent storm runoff from washing across exposed soil surfaces;
- Trenches should be dug and backfilled in short sections. Measures should be taken to minimize the ingress of rainwater into trenches when rainstorms are likely;
- Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials;
- Suitable containers shall be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport;
- Chemical waste containers shall be labelled with appropriate warning signs in English and Chinese to avoid accidents. There shall also be clear instructions showing what action to take in the event of an accidental;
- Storage areas shall be selected at safe locations on site and adequate space shall be allocated to the storage area;
- Any construction plant which causes pollution to the water system due to leakage of oil or fuel shall be removed off-site immediately;
- Spillage or leakage of chemical waste to be controlled using suitable absorbent materials;
- Chemicals will always be stored on drip trays or in bunded areas where the volume is 110% of the stored volume;
- Regular clearance of domestic waste generated in the temporary sanitary facilities to avoid waste water spillage; and
- Temporary sanitary facilities to be provided for on-site workers during construction.

3.6.2 Operational Phase

Under this Section 12A application, no permanent on-site STP will be constructed, as proposed in the previously approved Section 16 submission. Instead, all sewage generated during the Project's operational phase will be conveyed either via a new connection to the existing Nam Sang Wai sewage pumping station that discharges to the YLSTW, or via a new connection to the public sewer to be constructed as part of the San Tin / Lok Ma Chau Development Node. In case the population intake for the Development occurs before the commissioning of the STLMC EPP, a temporary on-site STP with tertiary level treatment will be established during the interim period until the STLMC EPP is commissioned. A discharge license under WPCO will be applied for the temporary on-site STP and any discharge shall comply with the terms and conditions of the discharge license.

In addition, appropriate measures outlined in ProPECC PN 1/23 should be followed, whereby open areas subject to wind-blown rain and swimming pool main drains should be connected to storm water drains while covered areas receiving wastewater, swimming pool filtration backwash, covered carparks and domestic wastewater should be discharged to foul sewers.

With the implementation of the recommended mitigation measures, the chances of any direct discharge of untreated sewage effluent into surrounding rivers or ponds will be adequately minimised, and no adverse water quality impact is anticipated.

3.7 Cumulative Impact

San Tin / Lok Ma Chau Development Node was identified within the 500m assessment area of the Project. San Tin / Lok Ma Chau Development Node will be developed in phases. Based on available information, the San Tan Technopole Phase 1 Stage 1 Works - Site Formation and Engineering Infrastructure (STT Phase 1) Project commenced on 31 December 2024 and is scheduled for completion in 2028. Therefore, STT Phase 1 Project is considered a concurrent project with potential cumulative water quality impacts which are evaluated below. The location of the concurrent project is presented in **Figure 3.2**.

The STT Phase 1 Project includes site formation of land, ground investigation works, land decontamination works, archaeological survey, diversion of existing infrastructure, and construction of new roads and associated facilities such as drainage, sewerage, water mains, landscaping, and slope works. As specified in the approved EIA report (AEIAR-261-2024), mitigation measures will be implemented to control construction site runoff near any inland watercourses and sewage effluent from construction works. During the operational phase, all the sewage generated from STT Phase 1 Project will be discharged to the public sewerage system and diverted to San Tin Lok Ma Chau Effluent Polishing Plant for proper treatment and precautionary measures will also be implemented to minimise the risk of emergency bypass and leakage of sewage. Therefore, with proper implementation of the recommended mitigation measures, adverse cumulative water quality impacts are not expected.

3.8 Evaluation of Residual Impact

With the implementation of the recommended mitigation measures, no adverse water quality impacts are expected during the construction and operation phases, and no residual impact on water quality is anticipated.

3.9 Environmental Monitoring and Audit

A water quality monitoring and site auditing programme has been recommended in the previously approved Section 16 submission to ensure mitigation measures during the construction phase will be implemented. No changes to the water quality monitoring and site auditing programme are required.

The need for water quality monitoring at the residential portion during operational phase will be subject to whether a temporary on-site STP is implemented and the conditions of the discharge license.

3.10 Conclusion

The proposed change in the layout of the development portion has changed the construction activities associated with the Project, but there are no expected significant changes to the previously identified water quality impacts during the construction phase. Thus, through proper implementation of water pollution mitigation measures, no adverse impact is anticipated.

During the operation phase, all sewage generated by the project will be conveyed to the public sewers either via Nam Sang Wai sewage pumping station to YLSTW or via the planned STLMC EPP with temporary on-site STP to cater the population intake prior to STLMC EPP commissioning if necessary.

With the implementation of the appropriate mitigation measures during the construction and operation phases, no adverse water quality impact is anticipated.

4 Waste Management Implications

4.1 Introduction

This section identifies the potential waste attributing to the phase of construction and operation of the Project and evaluates the potential environmental impacts that may result from waste generated. Mitigation measures and good site practices on waste handling, storage and disposal, are suggested with reference to applicable waste legislation and management guidelines with a view to mitigate potential waste management impacts.

4.2 Legislation, Standards, Guidelines and Criteria

The following legislation which relates to the handling, storage and disposal of wastes in Hong Kong are relevant in the assessment of waste management implication:

- Waste Disposal Ordinance (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C);
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N);
- Land (Miscellaneous Provisions) Ordinance (Cap. 28);
- Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK); and
- Dumping at Sea Ordinance (Cap. 466)

Waste Disposal Ordinance (Cap. 354)

The Waste Disposal Ordinance (WDO) is the principal piece of legislation for management and control of waste disposal in Hong Kong. The WDO prohibits the unauthorised disposal of wastes. Construction waste is defined as any substance, matter or thing that is generated from construction work and abandoned, whether or not it has been processed or stockpiled before being abandoned, but does not include any sludge, screenings or matter removed in or generated from any desludging, desilting or dredging works. Under the WDO, waste can be disposed of only at designated waste disposal facilities licensed by the Environmental Protection Department (EPD).

Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C)

Under the WDO, the Chemical Waste (General) Regulation provides regulations for chemical waste control, and administers the possession, storage, collection, transport and disposal of chemical wastes.

According to the Waste Disposal (Chemical Waste) (General) Regulation, all producers of chemical waste must register with Environmental Protection Department (EPD) and treat their wastes, either utilising on-site plant licensed by EPD, or arranging for a licensed collector to transport the wastes to a licensed facility. The Regulation also prescribes the storage facilities to be provided on-site, including labelling and warning signs, and requires the preparation of written procedures and training to deal with emergencies such as spillages, leakages or accidents arising from the storage of chemical wastes.

The EPD has also issued a 'guideline' document, the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, which details how the Contractor should comply with the regulations on chemical wastes.

Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)

Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material. Construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material, whereas construction waste delivered to a public fill reception facility for disposal must consist entirely of inert material.

Land (Miscellaneous Provisions) Ordinance (Cap. 28)

The inert portion of Construction and Demolition (C&D) materials may be taken to Public Fill Reception Facilities (PFRFs) operated by the Civil Engineering and Development Department (CEDD). PFRFs usually form part of land reclamation schemes. The Land (Miscellaneous Provisions) Ordinance requires that dumping licenses be obtained by individuals or companies who deliver public fill to public filling areas. The CEDD issues the licences under delegated powers from the Director of Lands. C&D materials that are wholly inert, namely public fill, should not be disposed of to landfill, but taken to fill banks or public filling areas.

Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap. 132BK)

The Public Cleansing and Prevention of Nuisances Regulation provides control on illegal tipping of wastes on unauthorised (unlicensed) sites.

Dumping at Sea Ordinance (Cap. 466)

This Ordinance came into operation in April 1995 and empowers the Director of Environmental Protection (DEP) to control the disposal and incineration of substances and particles at sea for the protection of the marine environment. Under the Ordinance, a dumping permit from the DEP is required for the disposal of regulated substances within and outside the waters of Hong Kong. The permit contains terms and conditions which include the following specifications, but not limited to:

- Type and quantity of substances permitted to be dumped;
- Location of the disposal grounds;
- Requirement of equipment for monitoring the disposal operations; and
- Environmental monitoring requirements.

Marine disposal of any dredged/excavated sediment is subject to control under the Dumping at Sea Ordinance (DASO). Dredged/excavated sediment destined for marine disposal is classified based on its contaminant levels with reference to the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sedimen*t. The *Administrative Guidance* stipulated a set of sediment quality criteria or Chemical Exceedance Levels (CEL) for contaminants including metals, metalloid and organic pollutants.

ETWB TCW No. 19/2005 Environmental Management on Construction Sites

The ETWB TCW No. 19/2005 Environmental Management on Construction Sites introduces measures to enhance waste management on construction sites. The circular sets out the policies and procedures that require the contractors to prepare and implement an Environmental Management Plan (EMP), which includes the Waste Management Plan (WMP) to encourage on-site sorting of C&D materials and to minimise generation of C&D materials during the course of construction.

Other Relevant Environmental Guidelines

Other environmental relevant circulars/guidelines applicable to waste management practices for this Project include:

- WBTC No. 2/93, Public Dumps
- WBTC No 2/93B, Public Filling Facilities
- WBTC No. 16/96, Wet Soil in Public Dumps
- WBTC Nos. 4/98 and 4/98A, Use of Public Fill in Reclamation and Earth Filling Project
- WBTC No. 12/2000, Fill Management
- WBTC No. 19/2001, Metallic Site Hoardings and Signboards
- WBTC No. 12/2002, Specification Facilitating the Use of Recycled Aggregates
- DEVB TCW No. 06/2010, Trip-ticket System for Disposal of Construction and Demolition Material
- DEVB TCW No. 08/2010, Enhanced Specification for Site Cleanliness and Tidiness
- DEVB TCW No. 02/2011, Encouraging Use of Recycled and other Green Materials in Public Works Projects
- DEVB TCW No. 09/2011, Enhanced Control Measures for Management of Public Fill
- CEDD TC No. 11/2019, Management of Construction and Demolition Materials
- Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes

4.3 Assessment Methodology

The methods for assessing potential waste management impacts during construction and operation phases include the following:

- Identify the types and quantity of waste arising as a result of the phase of the construction and operation activities of the Project;
- Assess the potential environmental impacts associated with the waste generation, handling, storage, transport and disposal;
- Identify the opportunities for reducing waste generation, on-site or off-site reuse and recycling prior to considering the disposal options for each type of waste; and
- Identify the disposal options for each type of waste impact associated with the storage, collection, transfer, and disposal of waste.

4.4 Identification and Evaluation of Waste Management Implications

The waste implication during construction and operational phase due to the development of the Project has been assessed and presented in the following sub-sections.

4.4.1 Construction Phase

The main activities which would potentially result in the generation of waste include:

- Site formation and substructure works; and
- Construction of new buildings and infrastructures.

A variety of type of wastes would be generated during construction phase that can be divided into the following distinct categories based on their compositions:

- Construction and demolition (C&D) materials;
- Excavated sediment (including marine deposit and pond mud);
- Chemical waste; and
- General refuse.

Each type of the above waste arising is described in ensuing paragraphs, together with an evaluation of the potential environmental impacts associated with the waste generation, handling, storage, transport, and disposal.

4.4.1.1 C&D Materials

The estimated amount of C&D Materials to be generated during construction phase is summarized in **Table 4.1**.

Table 4.1: Estimated Amount of Different Types of Wastes to be Generated During the Construction Phase

Activities	Quantity of waste to be generated (m^3)		Inert C&D Material Reused On-Site (m^3)	Disposed Offsite (m^3)		Tentative Disposal Period
	Inert C&D Material [i] (m^3)	Non-inert C&D Material [ii] (m^3)		Inert	Non-inert	
Site clearance, site formation and construction of infrastructures	383,000	95,800	40,200	342,800	95,800	Year 2027 & 2028
Construction of new buildings	21,200	5,300	3,200	18,000	5,300	Year 2027 - 2031
Total	**404,200**	**101,100**	**43,400**	**360,800**	**101,100**	

Notes:
[i]. Inert C&D material: e.g. soil, sand, clay, crushed concrete, asphalt, bitumen, brick, tile
[ii]. Non-inert C&D material: e.g. bamboo, timber, paper, glass, steel, and plastic

C&D Materials from Site Clearance, Site Formation and Construction of Infrastructures

C&D materials, comprising both inert and non-inert portions, would be generated from site clearance of ground surface, as well as excavation works during site formation. It is estimated that around 478,800 m^3 of C&D material (inert portion of 383,000 m^3 and non-inert portion of 95,800 m^3) will be generated. The quantities of material generated is shown in **Table 4.1**.

Based on the best available design, it is estimated that around 40,200 m^3 of inert C&D materials will be reused on-site subjected to site constraints, while 342,800 m^3 of inert C&D materials are expected to be delivered to the public fill reception facility. The estimated amount of non-inert C&D materials is approximately 95,800 m^3, which will be disposed of at landfill.

C&D Materials from Construction of New Buildings

C&D materials would also be generated from the construction of new buildings. The inert portion of the C&D materials is referred to broken concrete, rock etc. to be delivered to the public fill reception facility and the non-inert portion including packing materials and general refuse is referred to construction waste and would be disposed of at landfill.

In accordance with the "Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)", a C&D materials generation rate of 0.1 m^3 per 1 m^2 of GFA is adopted. It is estimated that approximately total 26,500 m^3 of C&D materials would be generated from construction of the buildings of the Project.

The estimated amount of C&D materials to be generated during the construction of new buildings is summarized in **Table 4.2**.

Table 4.2: Summary of C&D Materials Volumes Generated During Construction of New Buildings

Total estimated GFA (m^2)	Total C&D material generated (m^3) [i]	Inert C&D material (m^3) [ii][iii]	Non-inert C&D material (m^3) [ii][iv]
265,800	26,500	21,200	5,300

Notes:
[i]. Reduction of Construction Waste Final Report, Hong Kong Polytechnic University (March 1993)
[ii]. Approximately ratio for (inert waste): (non-inert waste) is 8:2 "Monitoring of Solid Waste in Hong Kong, 1997" by EPD
[iii]. The inert waste mainly is Artificial Hard Material (AHM) which includes, but not limited to, broken concrete, asphalt, bitumen and granular materials, etc.
[iv]. "Non-inert C&D material" includes, but not limited to, bamboo, timber, paper and plastic, etc.

It is expected that approximately 21,200 m^3 inert C&D material would be generated, and around 3,200 m^3 of inert C&D materials will be reused on-site subjected to site constraints, while 18,000 m^3 of inert C&D materials are expected to be delivered to the public fill reception facility. 5,300 m^3 would be non-inert material to be disposed of at landfill.

All inert C&D materials will need to be carefully stockpiled if it cannot be reused or removed directly to avoid dust and other nuisance impacts. The Contractor should separate non-inert C&D materials from inert C&D materials on-site. All segregated recyclable materials (e.g., metal) should be collected by reputable recyclers. The remaining non-inert C&D materials should be disposed of at designated landfill by dump trucks.

4.4.1.2 Excavated Sediment

Based on the existing ground investigation (GI) information, land-based sediment (including marine deposit and pond mud) is anticipated within the proposed residential development. The major source of excavated sediment comes from basement construction of the proposed residential development.

To minimize the amount of excavated sediment, the extent of the residential development basement had been reviewed and the excavation level had been optimized, with the aim to minimize the disturbance of the existing sediment. Such that the design scheme presented in this report has been evaluated with optimized basement extent to minimize excavation of excavated sediment as far as possible.

The estimated quantities of sediment to be excavated from the Project construction are shown in **Table 4.3**.

Table 4.3: Estimated Amount of Excavated Sediment

Quantity of Excavated Sediment (m^3)	Quantity of Excavated Sediment to be Reused On-Site (m^3)	Quantity of Sediment to be Disposed Off-site or Re-use in Other Projects (m^3)
77,400	77,400	0

Note:
[i]. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/ Engineer.

Reuse of Excavated Sediment

Based on the best available design, all excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials or other on-site reuse options under the Project.

Prior to commencement of construction, sampling and testing for sediment will be conducted by the Contractor for the concerned excavation area in accordance with *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment*. Based on the testing results, the sediment would be categorized in accordance with the *Administrative Guidance*.

Subjected to the testing result, excavated sediment treatment will be undertaken prior to reuse. The treatment methodology, reuse mode, post-treatment testing requirements and acceptance criteria will be endorsed by the Architect/Engineer.

Offsite Disposal or Offsite Re-use of Excavated Sediment

Based on the best available design, all excavated sediment will be reused onsite and no offsite disposal will be required. However, as subjected to further studies in subsequent design stage, should surplus sediment be excavated and onsite reuse option be not feasible, the project proponent will explore sediment re-use opportunities of other projects in HK. Meanwhile, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance - Management Framework for Disposal of Dredged/ Excavated Sediment* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction in this area. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*.

Offsite disposal of sediment to the marine disposal facilities should be the last resort, and if required, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated materials based on their testing results in accordance with the *Administrative Guidance*.

The recommended mitigation measures for handling of excavated sediment are discussed in **Section 0**. No adverse waste management implications are anticipated if the recommended mitigation measures are implemented.

4.4.1.3 Chemical Waste

The maintenance and servicing of construction plant and equipment may generate some chemical wastes such as used solvents, cleaning fluids and waste lubricating oil. It is difficult to quantify the amount of chemical waste that will arise from the construction activities since it will be dependent on the Contractor's on-site maintenance requirements and the amount of plant utilised. However, it is anticipated that the quantity of chemical waste, such as waste lubricating oil and solvents produced from plant maintenance, will be small and in the order of few hundred litres per month. The amount of chemical waste to be generated will be quantified in the Waste Management Plan to be prepared by the Contractor for the site. For the disposal of chemical wastes, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

Chemical wastes arising during the construction phase may pose environmental, health and safety hazards if not stored and disposed of in an appropriate manner as stipulated in the Waste Disposal (Chemical Waste) (General) Regulation.

The potential hazards include:

- Toxic effects to workers;
- Adverse impacts on water quality from spills and associated adverse impacts on marine biota; and
- Fire hazards.

Materials classified as chemical wastes will require special handling and storage arrangements before removal for off-site disposal/treatment at the approved Chemical Waste Treatment Centre (CWTC) or licensed chemical waste treatment facilities. Wherever possible opportunities should be taken to reuse and recycle materials. Provided that the handling, storage and disposal of

chemical wastes are in accordance with these requirements, adverse environmental impacts are not expected.

4.4.1.4 General Refuse

The construction workforce will generate refuse comprising food scraps, waste paper aluminium cans and plastic bottles during construction period.

Release of general refuse into watercourses is not permitted as introduction of these wastes is likely to have detrimental effects on water quality in the area. Effective collection of site waste would be required to prevent waste materials being blown around by wind, flushed or leached into the stream environment, and odour nuisance. The site may also attract pests and vermin if the waste storage area is not well maintained and cleaned regularly.

The number of work force to be employed for the Project is not available at this stage, but it is anticipated to be not to be over 300 staff at one time. Based on the generation rate of 0.65kg/person/day, the total refuse generated per day would be less than 200 kg.

Recyclable materials (i.e., paper, plastic bottles and aluminium cans) will be separated for recycling in order to reduce the amount of general refuse to be disposed of at landfill. Adequate number of enclosed waste containers will be provided to avoid over-spillage of waste. Reputable waste collector should be employed to collect the general refuse for disposal at designated landfill sites on a regular basis.

Provided that the mitigation measures are adopted, the potential environmental impacts caused by the storage, handling transport and disposal of general refuse are expected to be minimal. Mitigation measures to minimise potential environmental impacts are recommended in **Section 4.5**.

With the implementation of good waste management practices at the site as detailed in **Section 4.5**, adverse environmental impacts are not expected to arise from the storage, handling and transportation of the general refuse from construction workforce.

4.4.1.5 Storage and Collection of Waste

Adoption of barging points and conveyor belt system for waste handling is not anticipated for the Project. Stockpiling areas would be set up on-site to handle waste generated during construction phase. Mitigation measures stipulated in **Section 4.5** will be implemented.

4.4.1.6 Transportation Arrangement for Waste Disposal During Construction Phase

Land transport should be used to deliver and dispose of the waste generated from the Project sites to the designated disposal outlets. It is expected that during the peak period of C&D material disposal, around 158 vehicle trips per day for transporting waste during the construction phase of the Project. The tentative transportation routings for the disposal of various types of wastes generated during the construction phase are shown in **Table 4.4**.

The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures (e.g. using water-tight containers and covered trucks), no adverse environmental impacts are expected due to the transportation of waste.

Table 4.4: Tentative Transportation Routings for Waste Disposal During the Construction Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing	Vehicle Trips Estimation[1] During Peak Period
Non-inert C&D Materials	North East New Territories (NENT) Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 22 Trips per day
Surplus Inert C&D Materials	Public fill reception facility in Tuen Mun Area 38 (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Lung Mun Road	Around 134 Trips per day
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway	Around 1 Trip per day
General Refuse	NENT Landfill (tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 1 Trip per day

Remarks:

1. Bulk factors of 1.7 for inert C&D materials, 1 for non-inert C&D materials and 311.73kg/m^3 bulk density for general refuse have been applied in vehicle trips estimation. Also, assumptions on truck capacity of 7m^3 per truck and 26 working days a month have been applied.

4.4.2 Operational Phase

In view of the uses in the operational phase of the Project, which includes residential establishment, generation of the following categories of waste are anticipated:

- General refuse; and
- Chemical waste.

4.4.2.1 General Refuse

Municipal Solid Waste (MSW) comprises of solid waste from households, commercial and industrial sources. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2023" by EPD, the MSW disposal rate was 1.44 kg/person/day in Year 2023, and the recovery rate for recycling was 33%. By calculation, the MSW generation rate, disposal rate and recycle rate were 2.15 kg/person/day, 1.44 kg/person/day and 0.71 kg/person/day in 2023 respectively.

The estimated MSW is summarised in **Table 4.5** based on planned populations.

Table 4.5: Estimated Quantities of MSW During the Operational Phase

Estimated MSW from Residential Population				
Residential Population	Generated (tpd)	Disposal (tpd)	Recycle (tpd)	Food Waste Disposal (tpd)
10,000	21.5	14.4	7.1	6.3

Notes:
[i]. Based on MSW generation, disposal and recycling rate in 2023.
[ii]. tpd = tonne per day.
[iii]. Non-Residential Population include employment population and visitors.
[iv]. With reference to the latest data from "Monitoring of Solid Waste in Hong Kong 2023" by EPD, the food waste composition of MSW disposed of was 29.3%.

General refuse would be temporarily stored in refuse collection room in each building at the ground floor for localized refuse collection and the waste would be transferred to a central collection point. Waste recycling facilities / containers are recommended to be included in the central collection point so that waste could be sorted to recover materials (such as paper and

cardboards, plastics, metals and glass etc.) as far as possible, before being collected by refuse transfer vehicles. Different containers should be provided for the storage of different recyclable materials. To avoid potential odour nuisance to the residents during transport of waste, enclosed waste collection vehicles should be used, and the collection route and time should be properly planned. At least daily collection should be arranged by the waste collector.

In order to facilitate recycling, a 4-bin recycling system for paper, metals, plastics and glass should be adopted together with a general refuse bin. They should be placed in prominent places to promote waste separation at source. All recyclable materials should be collected by recyclers.

To facilitate waste recovery of food waste, installation of food waste collection facilities such as food waste recycling machines for composting treatment, proper handling and delivery to Organic Resources Recovery Centre (ORRC) should be explored.

With the implementation of a proper waste handling system, environmental impacts associated with waste storage, collection and transportation are not anticipated.

4.4.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the site. It is anticipated that the total quantity of chemical waste such as acids, alkalis and organic solvent produced by maintenance activities would be insignificant with a few hundred litres per month.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

Registration as chemical waste producers with EPD should be made by the chemical waste producers prior to operation. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

With the implementation of mitigation measures described in **Section 4.5**, potential environmental impacts (including potential hazard, air and odour emissions, noise, wastewater discharge and public transport) are not expected.

4.4.2.3 Transportation Arrangement for Waste Disposal during Operation Phase

Land transport should be used to deliver and dispose of the waste generated from the Project site to the designated disposal outlets. It is expected that approximately 15 vehicle trips per day will be required to transport the generated waste during the operation phase. The tentative transportation routings for the disposal of various types of wastes generated during the operation phase are shown in **Table 4.6**. The transportation routings may change subject to the actual traffic conditions of the roads. Nevertheless, with the implementation of appropriate mitigation measures provided in **Section 4.5**, no adverse environmental impacts are expected due to the transportation of waste.

Table 4.6: Tentative Transportation Routings for Waste Disposal During the Operation Phase

Type of Waste	Disposal Outlet	Tentative Transportation Routing	Vehicle Trips Estimation[1]
Chemical Waste	Chemical Waste Treatment Centre	Via Castle Peak Road, New Territories Circular Road and Tsing Sha Highway	Around 1 Trips per day

General Refuse	NENT Landfill (Tentatively selected)	Via Castle Peak Road, New Territories Circular Road and Heung Yuen Wai Highway	Around 7 Trips per day
Food Waste	O·PARK1 (Tentatively selected)	Via Castle Peak Road, Tsing Long Highway, Tsing Ma Bridge and North Lantau Highway	Around 7 Trips per day

Remarks:

1. Bulk factor of 311.73kg/m^3 bulk density for general refuse have been applied in vehicle trips estimation. Also, assumptions on truck capacity of 7m^3 per truck.

4.5 Mitigation Measures

4.5.1 Construction Phase

The mitigation measures for construction phase are recommended based on the waste management hierarchy principles. Recommendations of good site practices, waste reduction measures as well as the waste transportation, storage and collection are described in following sub-sections.

4.5.1.1 Good Site Practices

Adverse impacts related to waste management are not expected to arise, provided that good site practices are strictly followed. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site and effective disposal to appropriate facilities;
- Training of site personnel in proper waste management and chemical handling procedures;
- Provision of sufficient waste disposal points and regular collection of waste for disposal;
- Minimisation of windblown litter and dust/odour during transportation of waste by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;
- A WMP should be prepared by the Contractor with reference to the requirements in PNAP No. 243 (ADV-19), should be submitted to the Architect/ Engineer for approval prior to the commencement of construction works; and
- A WMP, as part of EMP, should be submitted to the Architect/ Engineer for approval prior to the commencement of construction works; and
- Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the C&D materials is not anticipated.

In order to monitor the disposal of C&D material at landfills and public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements to be implemented by the Contractor. Warning signs should also be displayed to remind the designated disposal sites. Reference shall be made to DEVB TCW No. 6/2010 for details.

4.5.1.2 Waste Reduction Measures

Good management and control could prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sort non-inert C&D materials to recover any recyclable portions;
- Segregation and storage of different types of waste in different containers or skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Maximising the use of reusable steel formwork to reduce the amount of C&D material;
- Encourage collection of recyclable waste such as waste paper and aluminium cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force;
- Prior to disposal of non-inert C&D material, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- It is recommended that yard waste shall be separated from C&D material for recycling through delivered to Y-park so as to minimise the quantity of waste to be disposed at landfill site;
- Proper storage and site practices to minimise the potential for damage or contamination of inert C&D materials;
- Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling;
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; and
- Minimise over ordering of concrete, mortars and cement grout by doing careful check before ordering.

In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

4.5.1.3 General Refuse

General refuse should be stored in enclosed bins or compaction units separated from inert C&D materials. A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from C&D materials. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

4.5.1.4 Construction and Demolition Material

In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the inert C&D materials should be reused on-site as far as practicable. Any surplus inert C&D materials will be disposed of at the Government's public fill reception facilities for beneficial use by other projects in Hong Kong.

The Contractor shall record the amount of wastes generated, recycled, and disposed of (including the disposal sites). A trip ticket system (i.e., DEVB TC(W) No. 6/2010) shall be implemented for the disposal of C&D materials and/or C&D waste to any designated public filling facility and/or landfill respectively. To prohibit illegal dumping and landfilling of C&D materials, the dump trucks engaged on-site should be equipped with GPS or equivalent automatic system for real time tracking and monitoring of their travel routings and parking locations.

Non-inert C&D materials / C&D wastes should be reused and recycled on-site as far as possible before disposal at the designated landfill site. Suitable areas should be designated within the site for temporary stockpiling of C&D material and to facilitate the sorting process. Within stockpile areas, the following measures should be taken to control potential environmental impacts or nuisance:

- Covering material during heavy rainfall;
- Locating stockpiles to minimise potential air quality, water quality and visual impacts; and
- Minimising land intake of stockpile areas as far as possible.

4.5.1.5 Excavated Sediment

The sediment should be excavated, handled, transported, reused and/or disposed in a manner that would minimize adverse environmental impacts. All excavated sediment is proposed to be reused on-site, such as profiling and backfilling materials.

Requirements of the Air Pollution Ordinance (Construction Dust) Regulation, where relevant, shall be adhered to during excavation, transportation, reused and/or disposed of the excavated sediment.

In order to minimize the exposure to contaminated materials, workers shall, if necessary, wear appropriate personal protective equipment (PPE) when handling contaminated sediment. Adequate washing and cleaning facilities shall also be provided on-site.

Should offsite disposal or off-site re-use of surplus excavated sediment be required, the project proponent shall carry out the sampling and testing at the excavation area in accordance with the *Administrative Guidance* to determine the sediment quality. The project proponent shall prepare the Sediment Sampling and Testing Plan (SSTP) and submit to EPD for agreement. The testing results shall also be submitted to EPD for agreement prior to the commencement of construction. The sediment would be categorized by the testing results in accordance with the *Administrative Guidance*. For sediment to be disposed in marine disposal facilities, the disposal methods for the surplus excavated sediment will be decided by the classification for the excavated sediment based on their testing results in accordance with the *Administrative Guidance*. The Contractor, on the other hand, should be responsible for the application of the marine dumping permit under DASO from EPD for the sediment disposal.

Stockpiling of contaminated sediment should be avoided as far as possible. If temporary stockpiling of contaminated sediment is necessary, the concerned material should be covered by tarpaulin sheet and the area should be placed within earth bunds or sand bags to prevent leachate from entering the ground, nearby drains and surrounding water bodies. The stockpiles should be completely paved or covered by linings in order to avoid contamination to underlying soil or groundwater. Separate and clearly defined areas should be provided for stockpiling of contaminated and uncontaminated materials. Leachate, if any, should be collected and discharged according to the Water Pollution Control Ordinance (WPCO).

In order to minimize the potential odour / dust emissions during excavation and transportation of the excavated sediment, the concerned material shall be wetted during excavation / material handling and shall be properly covered by tarpaulin sheet.

4.5.1.6 Chemical Waste

The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.

In addition, the following measures shall be observed:

- The Contractor will be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the "Code of Practice on the Packaging Labelling and Storage of Chemical Wastes";
- Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately;

- Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc; and
- The Contractor should use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

4.5.2 Operational Phase

The following measures should be implemented for the development within the Project site to minimise the amount of waste to be disposed of at landfill and to maximise the recovery of material from the waste stream.

4.5.2.1 General Refuse

Recycling bins shall be placed in prominent locations to maximise the capture of recyclables from general refuse.

General refuse from residential buildings should be collected with lidded bins and delivered to a central collection point and stored in enclosed containers to prevent windblown, vermin, water pollution and visual impact. At least daily collection should be arranged by the waste collector.

4.5.2.2 Chemical Waste

Paints, lubricants and used batteries may be generated during maintenance activities on the road networks within the Project site. To prevent health hazards to operators, all such chemical wastes should be collected and handled carefully.

To minimise potential environmental hazard due to waste handling, localized chemical waste storage areas should be located close to the source of waste generation for temporary storage. Drum-type containers with proper labelling should be used to collect chemical wastes for storage at the designated areas.

The producers should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. All chemical wastes generated should be dealt with according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes under the provisions of the Waste Disposal (Chemical Waste) (General) Regulation. Collection and disposal of chemical waste shall comply with the Waste Disposal Ordinance.

It is recommended that the chemical wastes are disposed at licensed chemical waste treatment facilities, such as the CWTC in Tsing Yi. A licensed collector should be employed for the chemical waste collection.

4.6 Evaluation of Residual Impact

With the implementation of recommended mitigation measures for the handling, transportation and disposal of the identified waste, adverse residual waste management implications are not anticipated for both the construction and operation phases.

4.7 Environmental Monitoring and Audit

4.7.1 Construction Phase

It would be the Contractor's responsibility to ensure that any wastes produced during the construction and demolition works are handled, stored and disposed of in accordance with good waste management practices and relevant regulations and other legislative requirements. The

recommended mitigation measures should form the basis of the site WMP to be developed by the Contractor in the construction stage.

It is recommended that site inspections should be undertaken each week to determine if wastes are being managed in accordance with approved procedures. The audits should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation of the recommended good site practice and other waste management mitigation measures.

A WMP, as a part of the EMP, should be prepared in accordance with ADV-19 and submitted to the Architect/ Engineer for approval. The recommended mitigation measures should form the basis of the WMP. The monitoring and auditing requirement stated in ADV-19 should be followed with regard to the management of C&D materials.

4.7.2 Operational Phase

No EM&A requirement is considered necessary during the operation phase.

4.8 Conclusion

Potential waste management implications from the generation of waste during the construction phase have been evaluated. Measures, including the opportunity for on-site sorting, reusing C&D materials etc, have been explored to minimise the surplus materials to be disposed. Recommendations have been made for implementation by the Contractor during the construction period to minimise waste generation and off-site disposal.

The types of waste that would be generated during the operation phase have been identified. Recommendations have been made to ensure proper treatment and disposal of these waste.

With the implementation of recommended mitigation measures, the storage, handling, transportation and disposal of waste during construction and operation of the Project is not anticipated to cause adverse environmental impact.

5 Environmental Monitoring and Audit

5.1 General

This Section presents a summary of Environmental Monitoring and Audit (EM&A) requirements for each impact assessment described in this EA Report. Details of the EM&A programme and the specific monitoring requirements will be provided in the updated Environmental Impact Assessment in the later stage.

5.2 Air Quality Impact

5.2.1 Construction Phase

With the implementation of the recommended mitigation measures, no adverse air quality impact is expected. However, dust monitoring is considered necessary during the construction phase of the Project and regular site audits will also be required to ensure mitigation measures are properly implemented. Details are discussed in the EM&A Manual of the approved EIA report.

5.2.2 Operational Phase

As there is no adverse air quality impact anticipated during the operation phase of the Project, monitoring and audit is not considered necessary.

5.3 Noise Impact

5.3.1 Construction Phase

The Environmental Monitoring and Audit (EM&A) program shall be established, incorporating regular site inspections based on the predicted occurrence of noisy activities. This program will assess the implementation of the recommended mitigation measures to ensure that nearby Noise Sensitive Receivers (NSRs) are not subjected to unacceptable construction noise impacts.

5.3.2 Operational Phase

Noise monitoring during the operation phase of this Project is considered not necessary as the proposed development would not be expected to generate significant noise impact to the adjacent identified NSRs with the proposed mitigation measures.

5.4 Water Quality Impact

5.4.1 Construction Phase

A water quality monitoring and site auditing programme has been recommended in the previously approved Section 16 submission to ensure mitigation measures during the construction phase will be implemented. No changes to the water quality monitoring and site auditing programme are required.

5.4.2 Operational Phase

The need for water quality monitoring at the residential portion during operational phase will be subject to whether a temporary on-site STP is implemented and the conditions of the discharge license.

5.5 Waste Management Implications

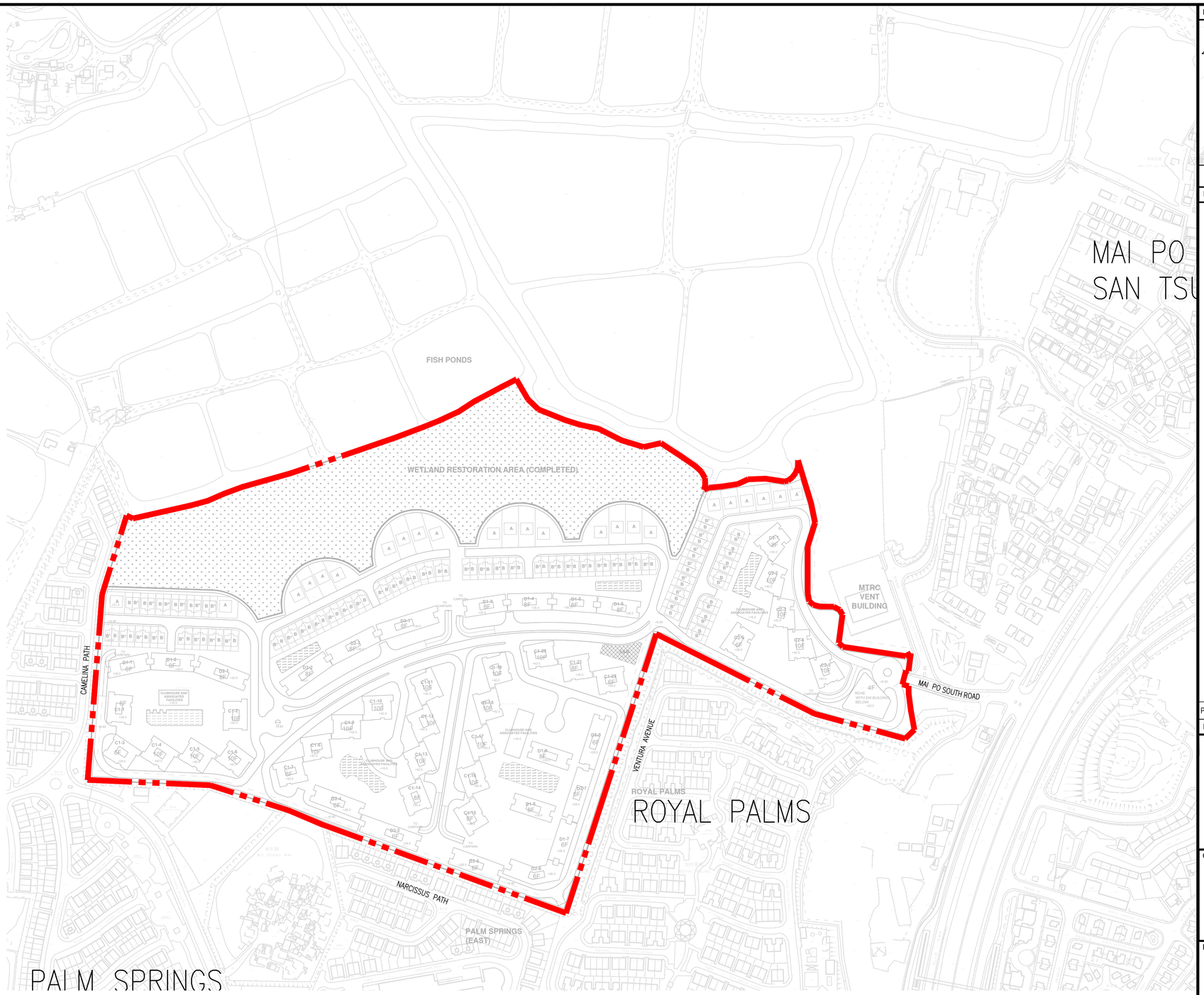
5.5.1 Construction Phase

It is recommended that site inspections should be undertaken each week to determine if wastes are being managed in accordance with approved procedures form the basis of the site WMP. The audits should look at all aspects of on-site waste management practices including waste generation, storage, recycling, transport and disposal. Any irregularities observed during the site inspections will be raised promptly to the contractor for rectification. Apart from site inspections, documents including licenses, permits, disposal and recycling records should be reviewed and audited for compliance with the legislation of the recommended good site practice and other waste management mitigation measures.

5.5.2 Operational Phase

No EM&A requirement is considered necessary during the operation phase.

Figures



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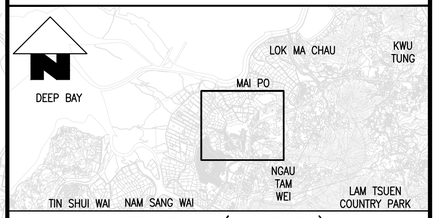

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- WETLAND RESTORATION AREA
- CLUBHOUSE AMENITY AREA/ WATER BODY
- POOL AREA
- E & M BUILDINGS (TEMPORARY DEWERAGE TREATMENT PLANT)
- A — 3 STOREY DETACHED HOUSE (+21mPD)
- B* B — 3 STOREY SEMI-DETACHED HOUSE (+21mPD)
- C1 — 6,8 &10 STOREY RESIDENTIAL TOWER
- C2 — 6,8 &10 STOREY RESIDENTIAL TOWER
- D1 — 6 & 8 STOREY RESIDENTIAL TOWER
- D2 — 6 & 8 STOREY RESIDENTIAL TOWER
- D3 — 6 & 8 STOREY RESIDENTIAL TOWER

NOTES:
ALL HOUSES ARE PROVIDED WITH BASEMENT CARPARK

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TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI ,YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Title

PROJECT LAYOUT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1	Status	Rev
1:2000	PRE	P1

Drawing Number

FIGURE 0.1

0 20 40 60 80 100
METRES
1 : 2000

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F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 0.1.dwg Sep 10, 2025 - 2:32pm
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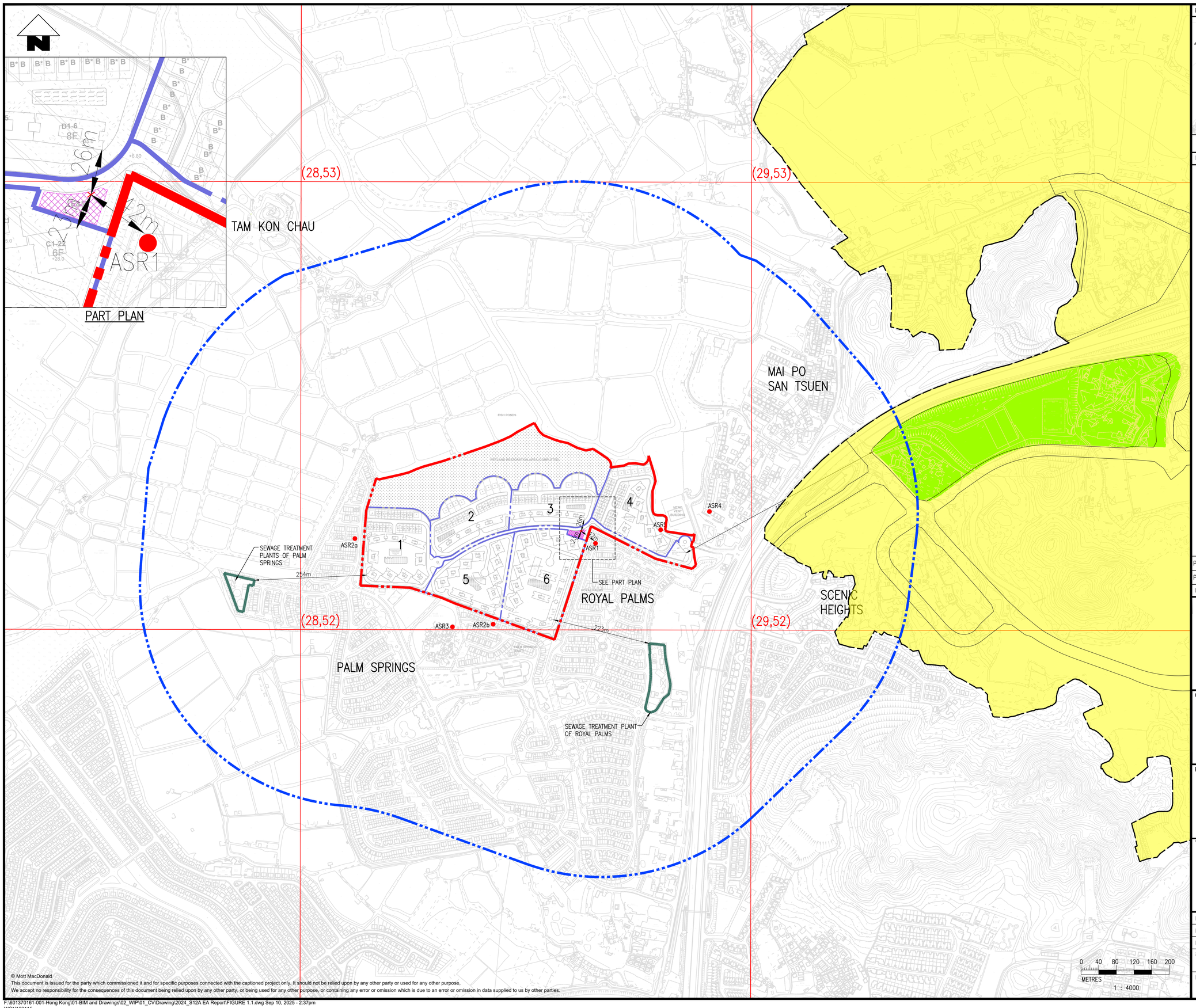

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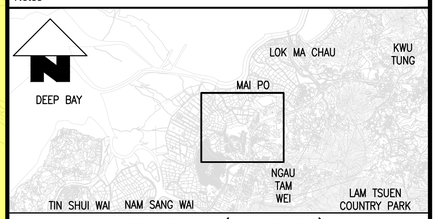

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- (28,52) REPRESENTATIVE PATH GRIDS
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE AIR SENSITIVE RECEIVERS
- SAN TIN /LOK MA CHAU (STLMC) EFFLUENT POLISHING PLANT AND FOOD WASTE PRE-TREATMENT FACILITIES
- LOCATION OF PROPOSED TEMPORARY ON-SITE SEWAGE TREATMENT PLANT
- EXHAUST OF PROPOSED TEMPORARY ON-SITE SEWAGE TREATMENT PLANT
- BOUNDARY OF SAN TIN TECHNOPOLE

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Title

LOCATION OF REPRESENTATIVE AIR SENSITIVE RECEIVERS AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

Drawing Number

FIGURE 1.1

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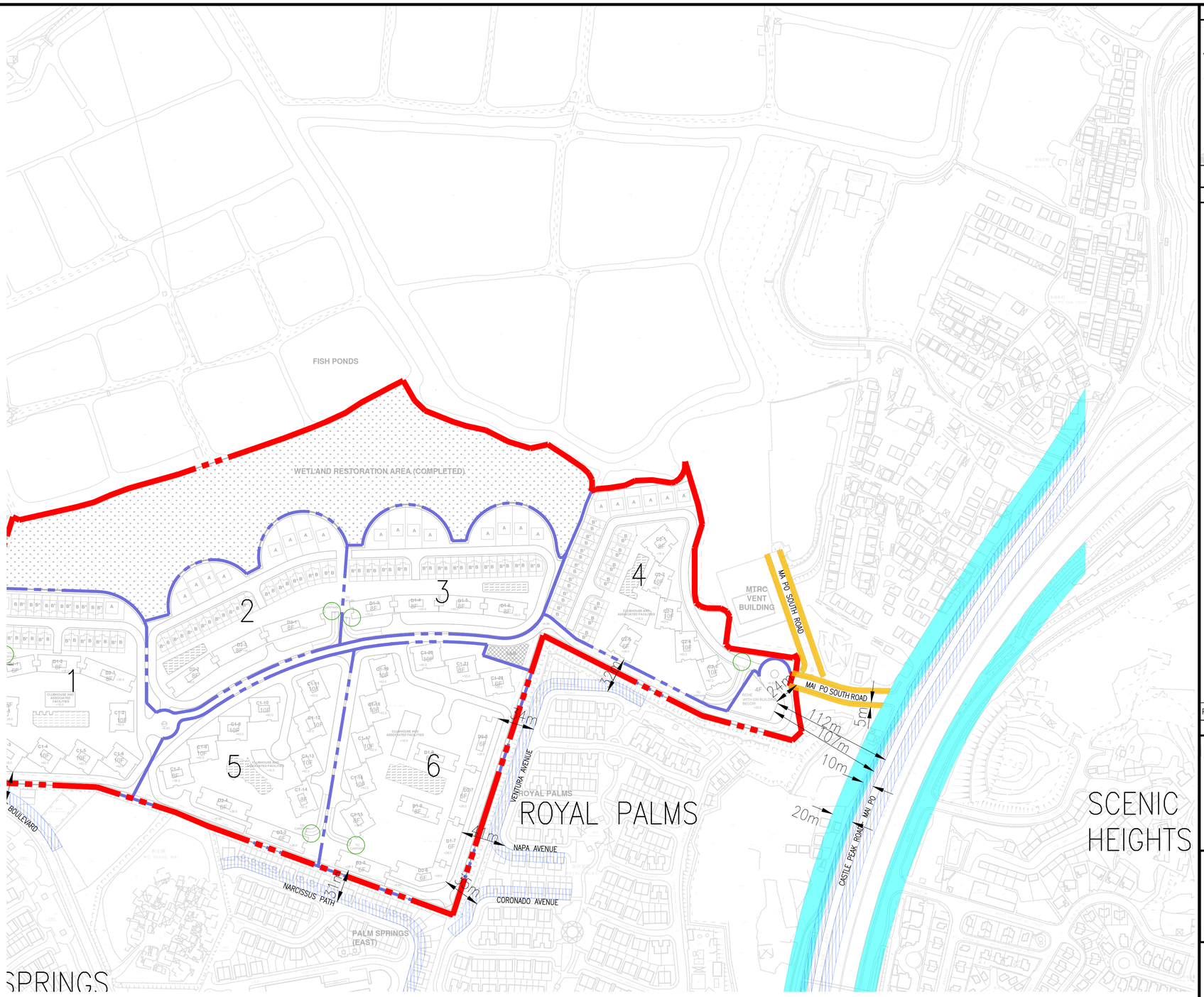
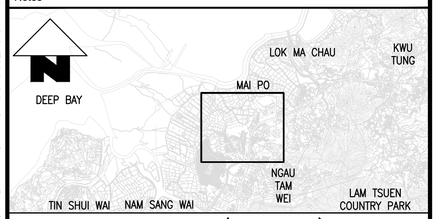


REMARK:
NO AIR-SENSITIVE USES OF THE PROPOSED DEVELOPMENT INCLUDING OPENABLE WINDOWS, FRESH AIR INTAKES AND RECREATIONAL USES IN THE OPEN SPACE SHALL BE LOCATED WITHIN THE BUFFER ZONES.

0 20 40 60 80 100
METRES
1 : 2000

Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 — CONSTRUCTION PHASE NO.
- BUFFER ZONES(20m)
- BUFFER ZONES(10m)
- BUFFER ZONES(5m)
- INGRESS/EGRESS TO BASEMENT CARPARK

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Title

BUFFER DISTANCES FOR VEHICULAR EMISSION IMPACT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:2000	Status	PRE	Rev	P1

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FIGURE 1.2

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E 823000
E 824000
E 825000
N 839500
N 838500

TAM KON CHAU
MAI PO SAN TSUEN
ROYAL PALMS
SCENIC HEIGHTS
PALM SPRINGS
FISH PONDS
WETLAND RESTORATION AREA (COMPLETED)
METRO VENT BUILDING

0 40 80 120 160 200
METRES
1 : 4000

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F:\601370161-001-Hong Kong\01-BIM and Drawings\02_WIP\01_CV\Drawing\2024_S12A EA Report\FIGURE 2.1.dwg Jul 25, 2025 - 8:47am
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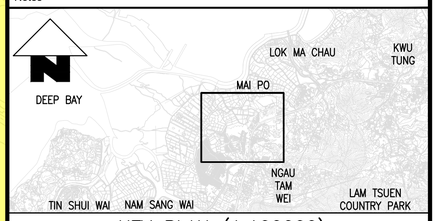

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- BOUNDARY OF SAN TIN TECHNOPOLE

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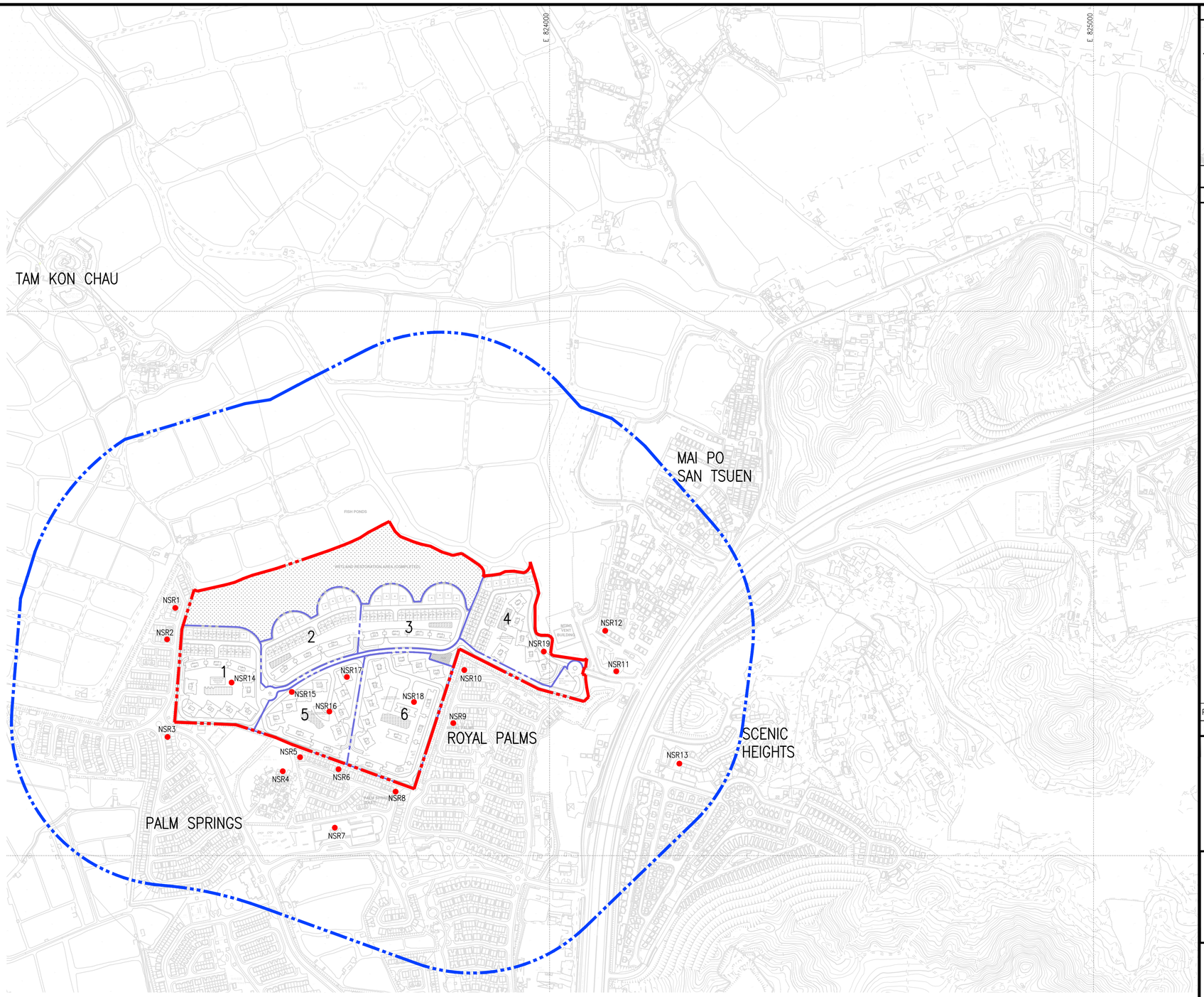
Title

NOISE ASSESSMENT AREA AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: 1:4000
Status: PRE
Rev: P1

Drawing Number: FIGURE 2.1



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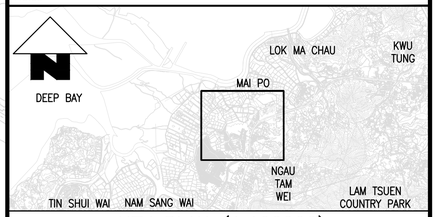

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

0 40 80 120 160 200
METRES
1 : 4000

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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.2

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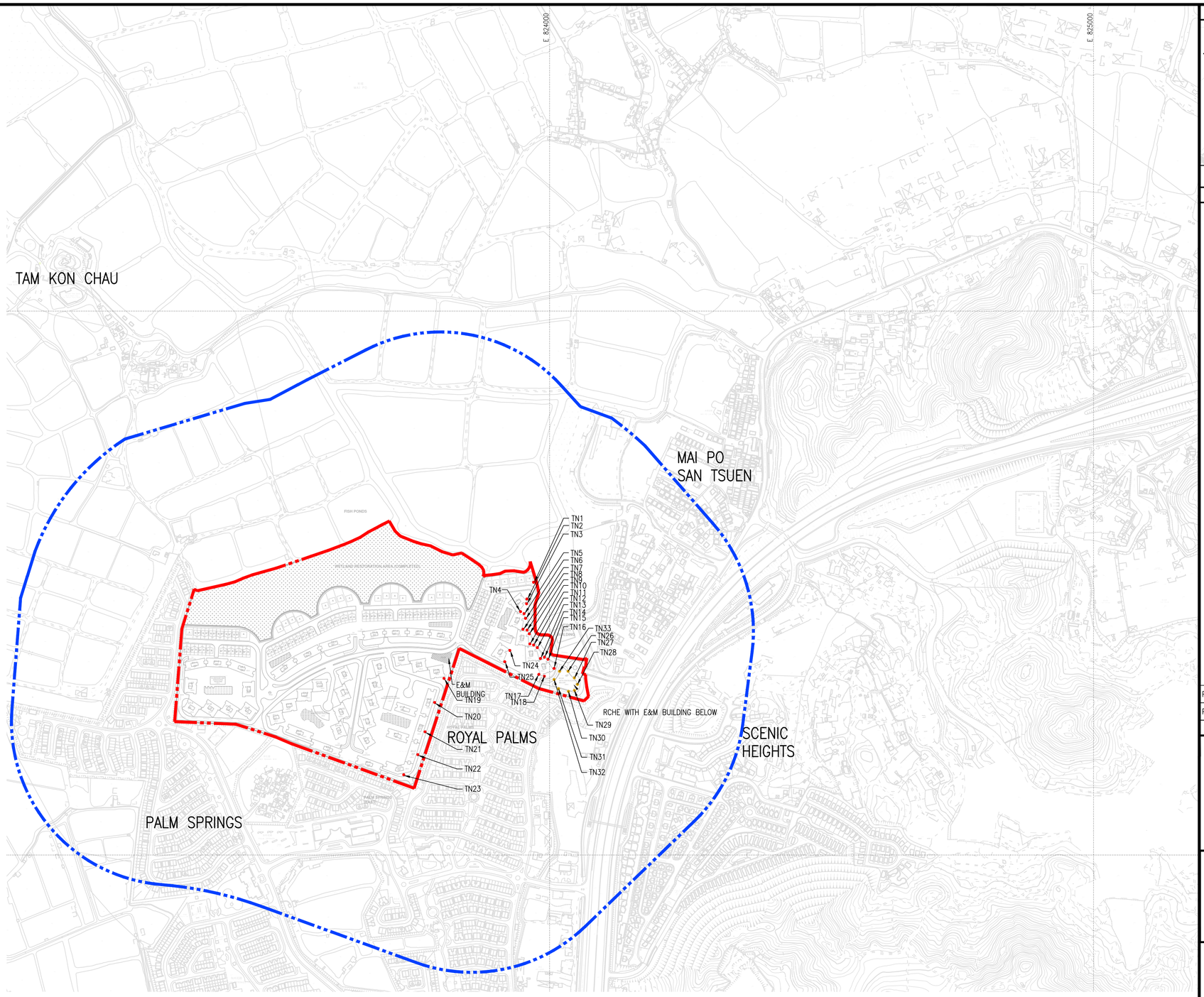

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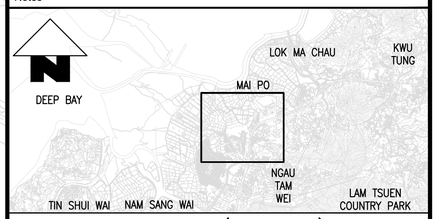

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR RCHE

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Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (TRAFFIC NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.3a

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METRES
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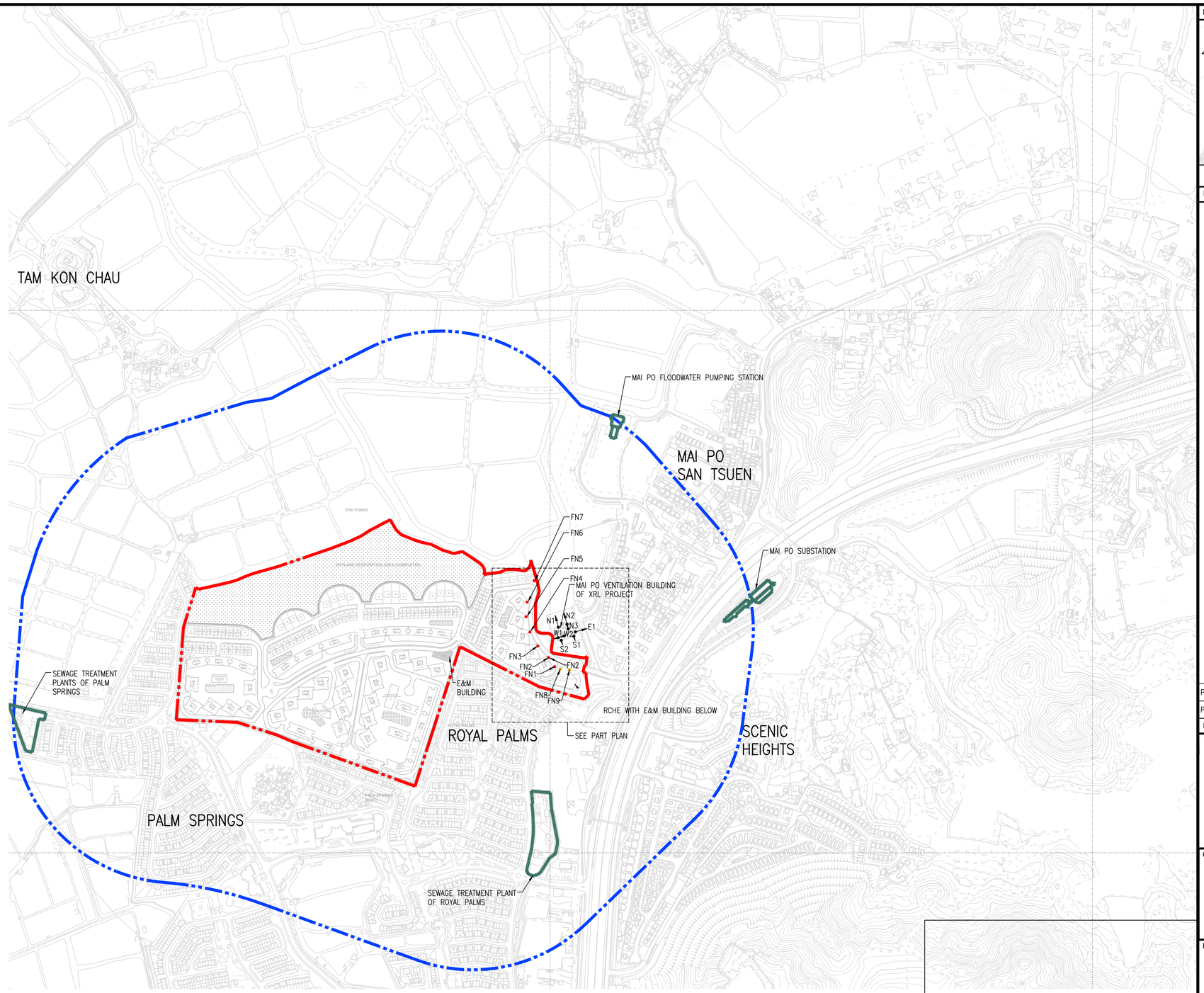
WON102115



0 40 80 120 160 200
METRES
1 : 4000

PART PLAN (1:2000)

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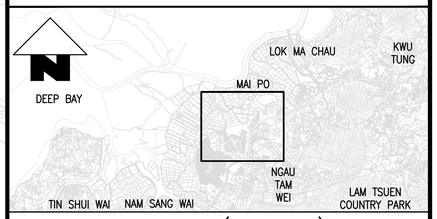

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS FOR RCHE
- LOUVER LOCATION

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Client

PROFIT POINT ENTERPRISES LIMITED

Project

TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI ,YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Title

LOCATION OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS (NSRS) IN OPERATION PHASE (FIXED NOISE)

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000/ 1:2000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.3b

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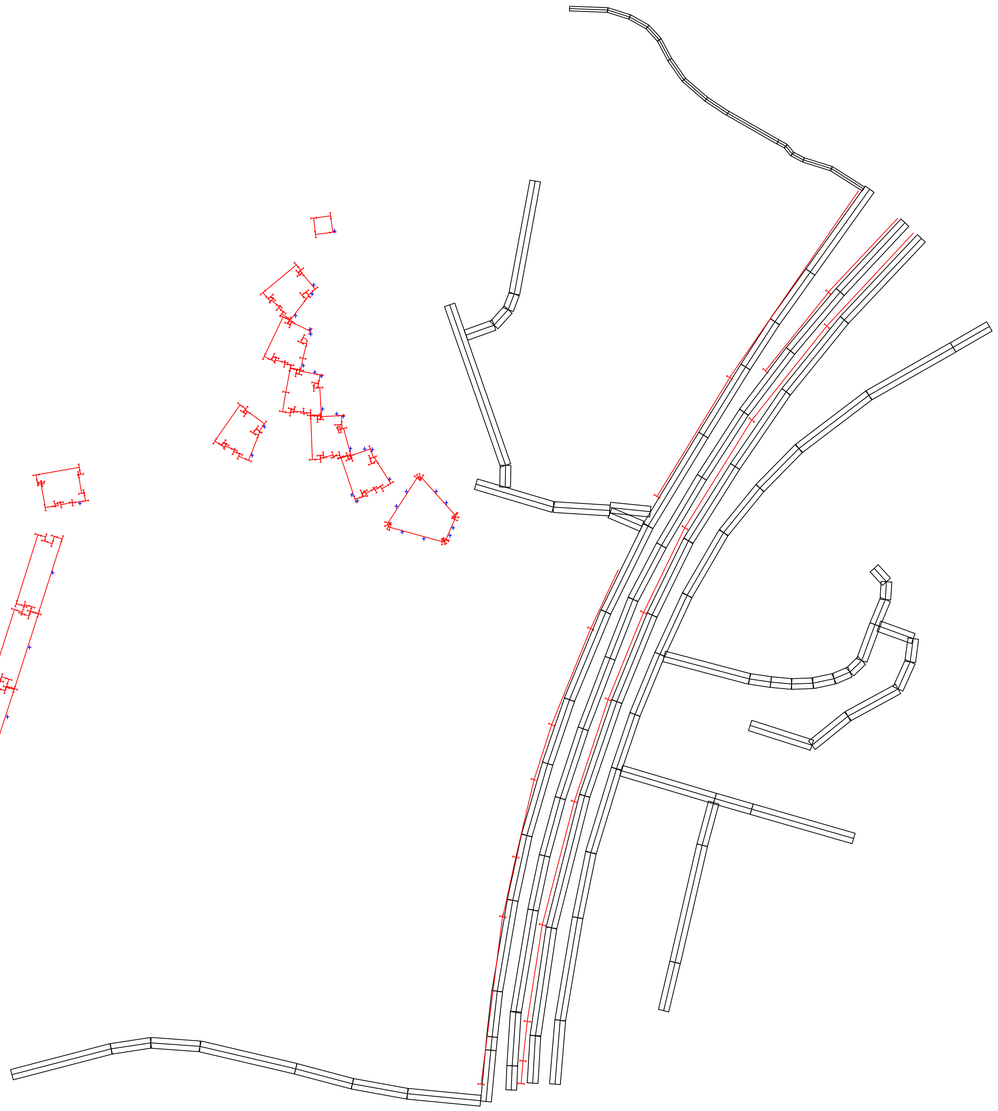

Notes

Key to symbols

Rev	Date	Drawn	Description	Ch'k'd	App'd
P2	MAY 25	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

COMPUTER PLOT OF NOISE MODEL

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	

Scale at A1: 1:2000

Status: PRE

Rev: P2

Drawing Number

FIGURE 2.4

0 20 40 60 80 100
METRES
1 : 2000

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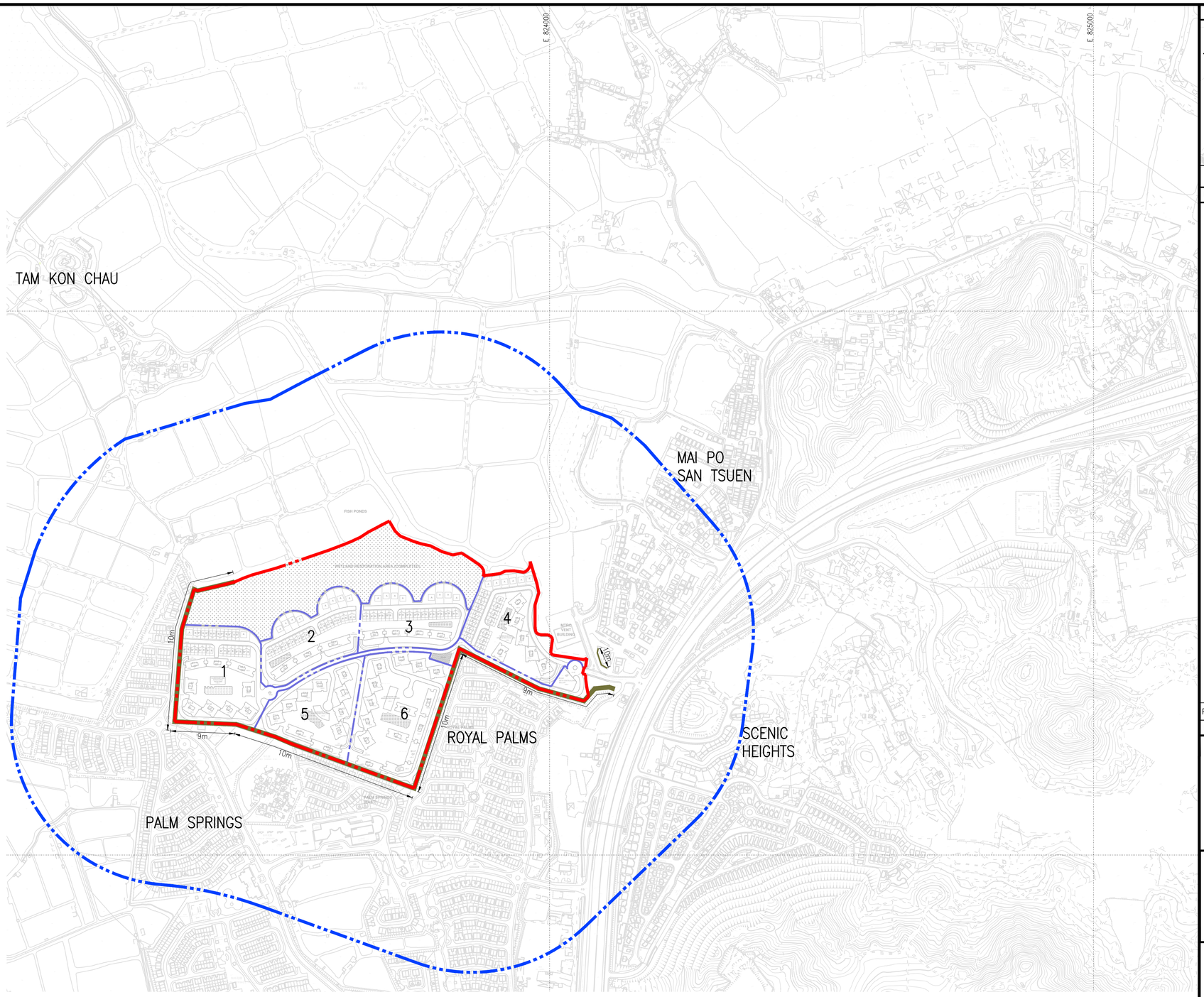
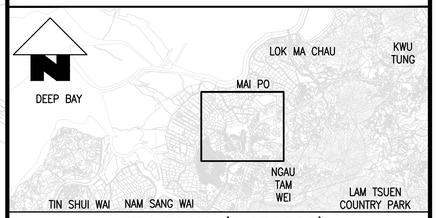
WON102115



Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- PHASE BOUNDARY
- 1 — CONSTRUCTION PHASE NO.
- EXTENT OF TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title

PROPOSED NOISE BARRIERS LOCATIONS FOR CONSTRUCTION PHASE

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 2.5

0 40 80 120 160 200
METRES
1 : 4000

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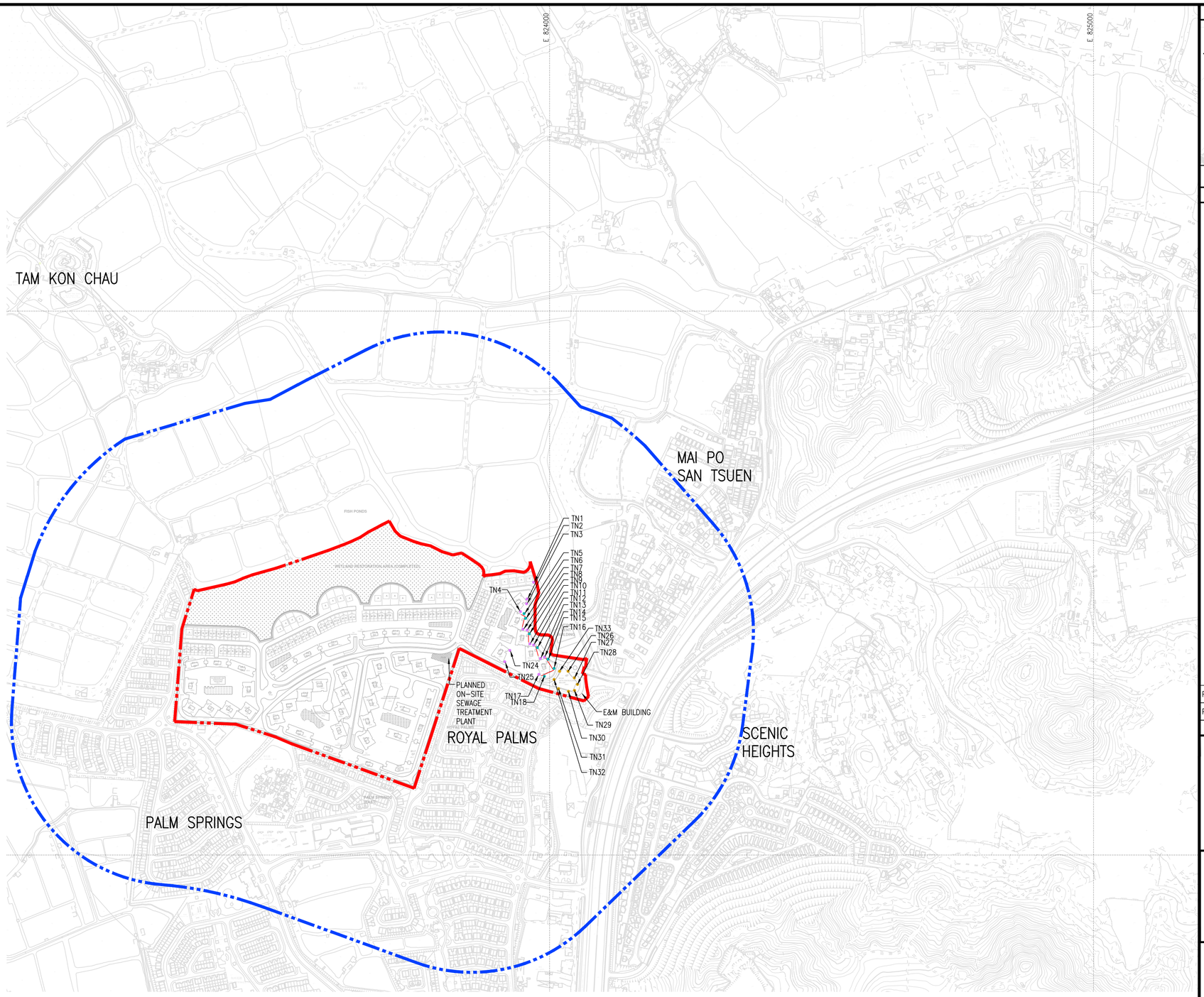
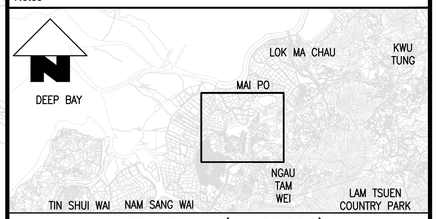
WON102115



Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (300m)
- NSR (WITHOUT EXCEEDANCE / WITH EXCEEDANCE)
- FACADE WITH THE ADOPTION OF ACOUSTIC WINDOW
- NSR FOR RCHE

REMARKS:
FOR THE MITIGATION MEASURES OF THE RCHE PLEASE REFER TO APPENDIX 2.6

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P2	MAY 25	TW	EA SECOND DRAFT	JC	EC
P1	JUL 24	TW	EA FIRST DRAFT DRAFT	JC	EC

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Title

LOCATION OF MITIGATION MEASURES FOR TRAFFIC NOISE

Designed	GK		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	SC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P2

Drawing Number

FIGURE 2.6

0 40 80 120 160 200
METRES
1 : 4000

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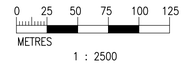
WON102115

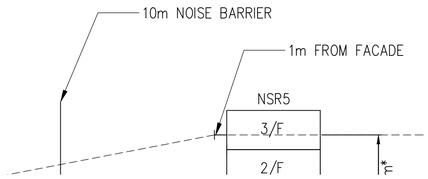




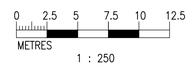
FIGURE 2.2
1:2500



NOTIONAL SOURCE
POSTION FOR
PHASE 5



SECTION A
1:250



LEGEND:

- SITE BOUNDARY
- PHASE BOUNDARY
- 1 CONSTRUCTION PHASE NO.
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Rev	Date	Drawn	Description	Ch'k'd	App'd
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Title
CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 1 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: AS SHOWN
Status: PRE
Rev: P1

Drawing Number
FIGURE 2.7

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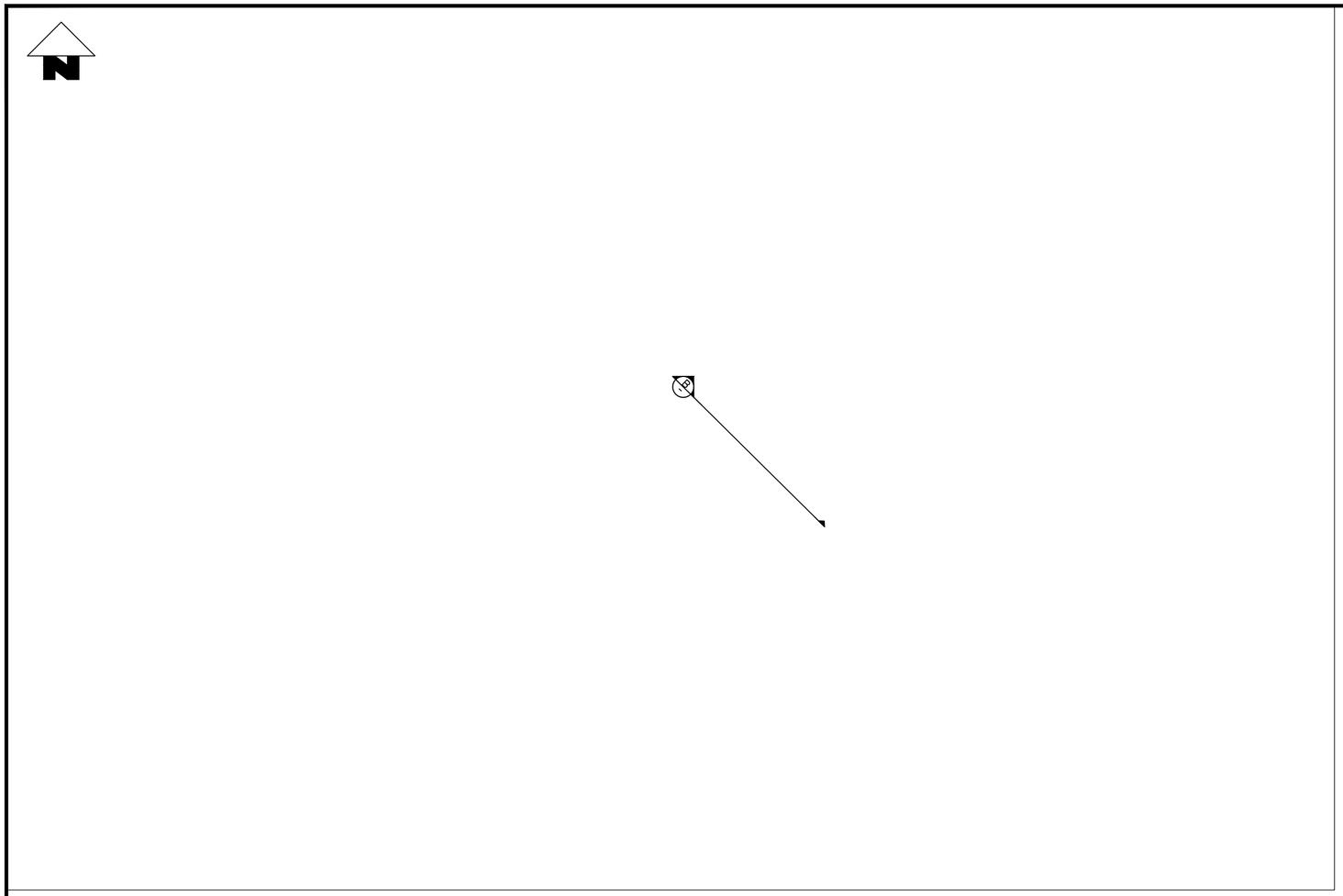
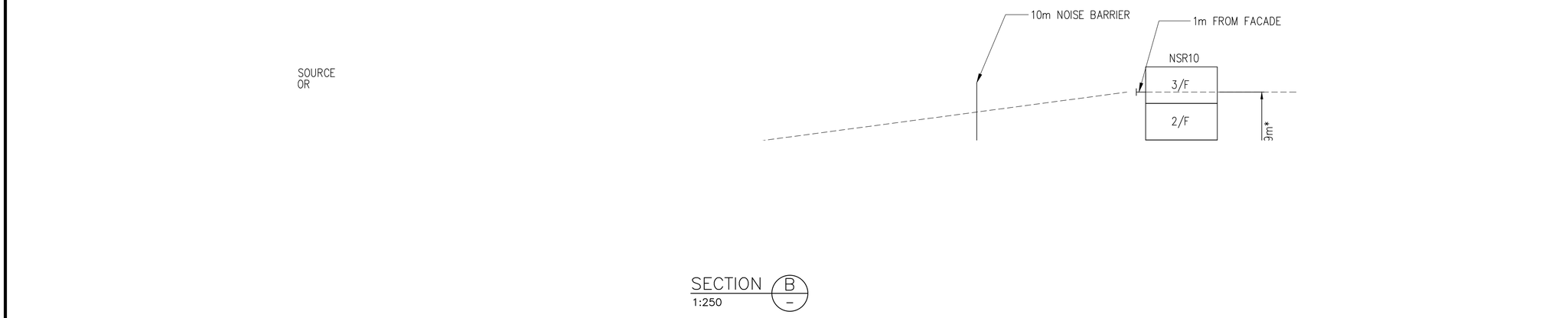


FIGURE 2.2
1:2500

0 25 50 75 100 125
METRES
1 : 2500



SECTION B
1:250

0 2.5 5 7.5 10 12.5
METRES
1 : 250

Notes

LEGEND:

SITE BOUNDARY

PHASE BOUNDARY

1 CONSTRUCTION PHASE NO.

REPRESENTATIVE NOISE SENSITIVE RECEIVERS

Key to symbols

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	APR 25	TW	EA SECOND DRAFT	JC	EC

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Title

CROSS SECTION DIAGRAM SHOWING EXISTING TEMPORARY NOISE BARRIERS FOR CONSTRUCTION PHASE (SHEET 2 OF 2)

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	AC		Approved	EC	

Scale at A1: AS SHOWN
Status: PRE
Rev: P1

Drawing Number: FIGURE 2.8

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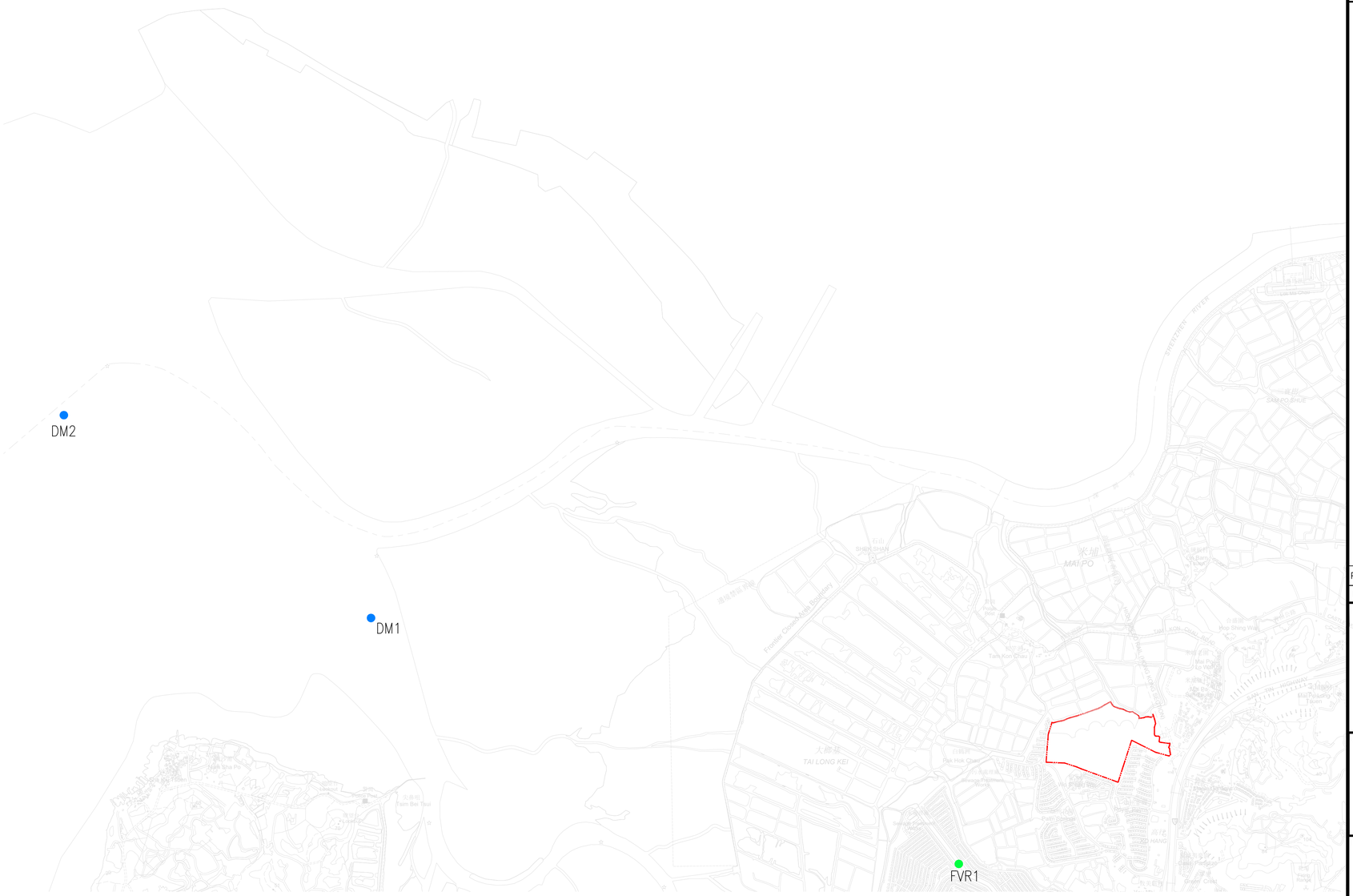

Notes

KEY PLAN (1:100000)

Key to symbols

LEGEND:

SITE BOUNDARY

MARINE WATER QUALITY MONITORING STATION

RIVER WATER QUALITY MONITORING STATION

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	JUL 24	TW	EA FIRST DRAFT	JC	EC

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Title

LOCATION OF REPRESENTATIVE WATER QUALITY MONITORING STATIONS

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	

Scale at A1	Status	Rev
1:15000	PRE	P1

Drawing Number

FIGURE 3.1

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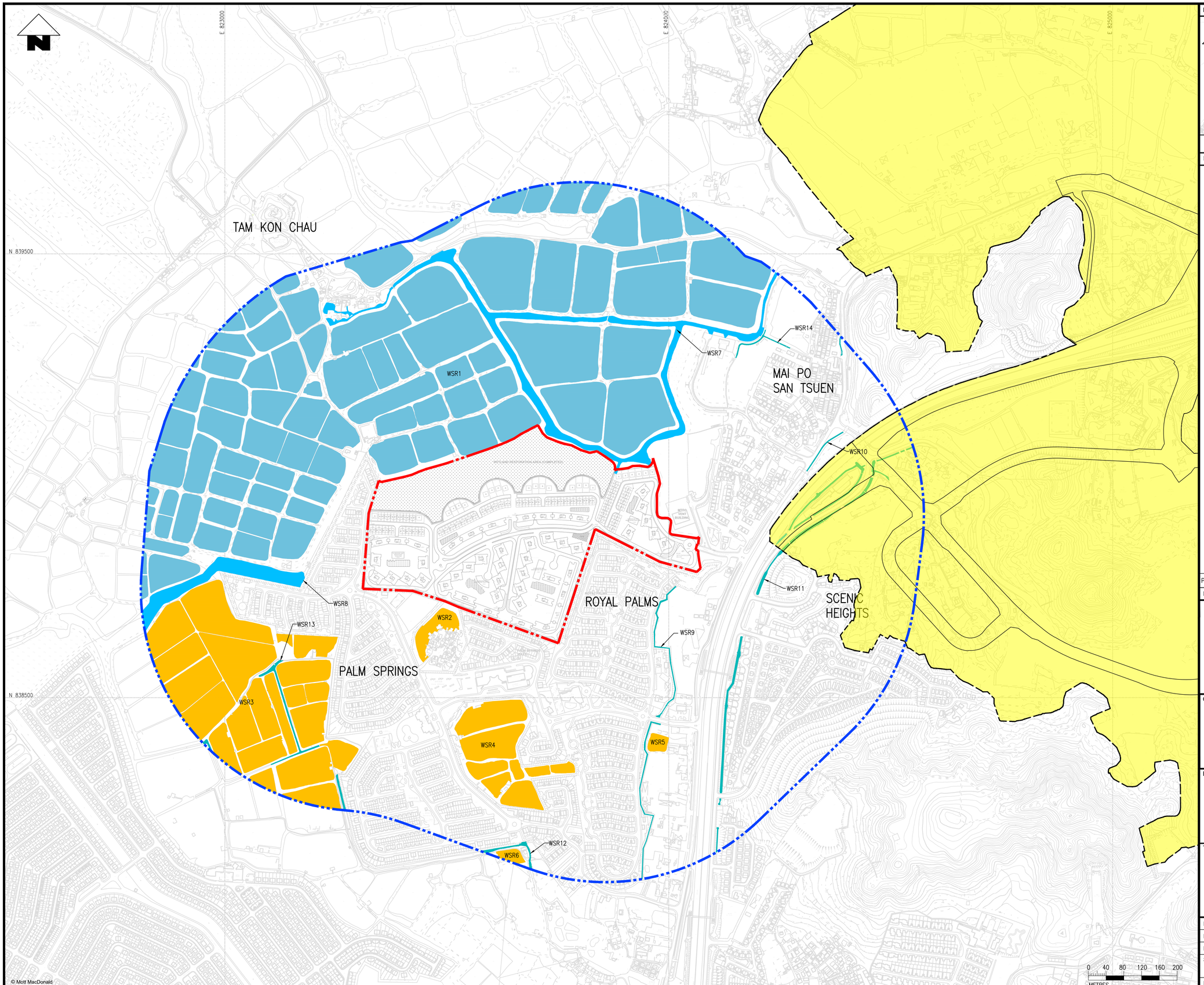
WON102115



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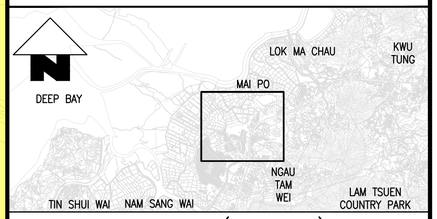

KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- WATER DITCH
- FISH POND
- POND
- CHANNEL
- BOUNDARY OF SAN TIN TECHNOPOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	APR 25	TW	EA FIRST DRAFT	JC	EC

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Title

LOCATION OF REPRESENTATIVE WATER QUALITY SENSITIVE RECEIVERS AND CONCURRENT PROJECT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	
Scale at A1	1:4000	Status	PRE	Rev	P1

Drawing Number

FIGURE 3.2

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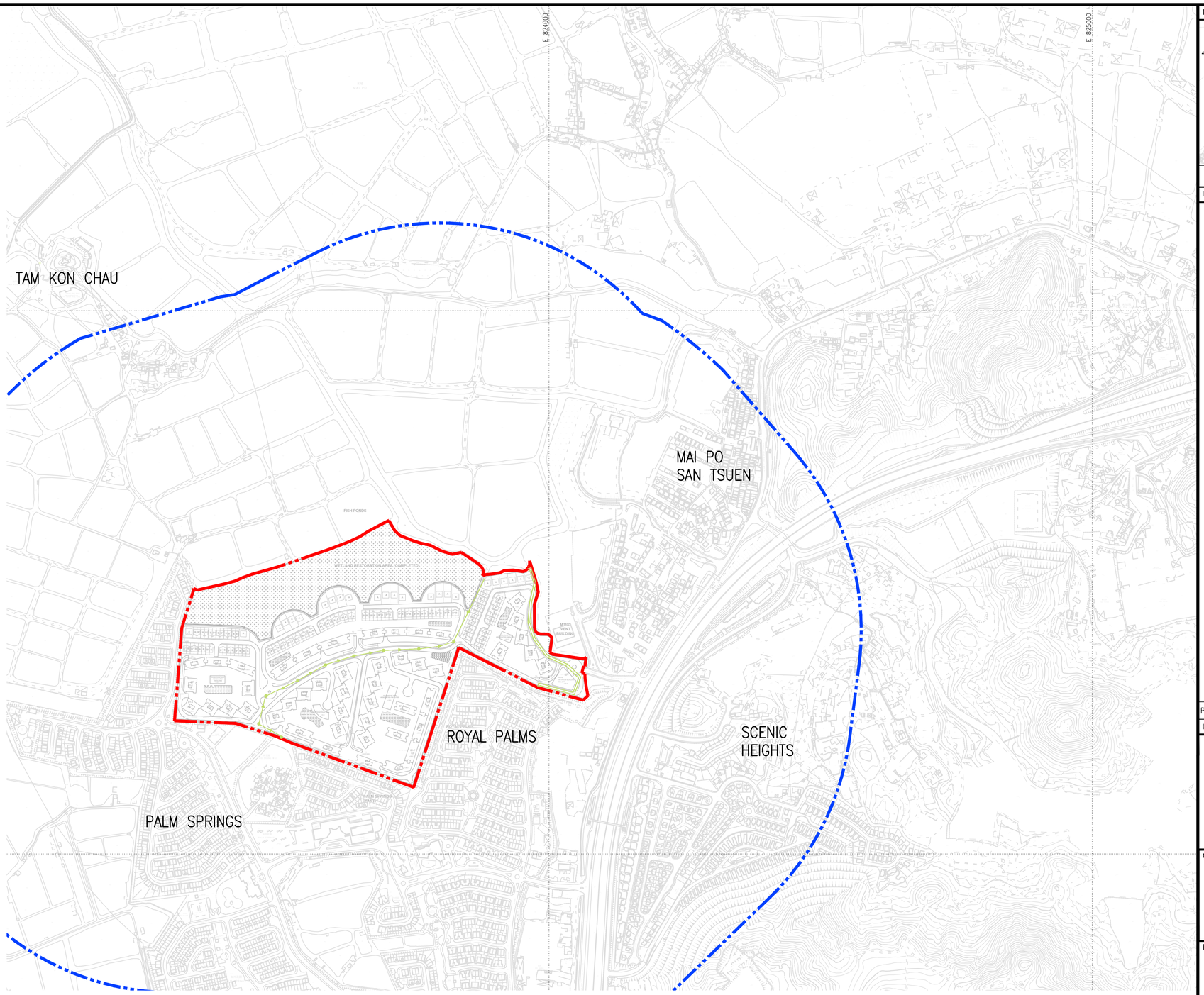
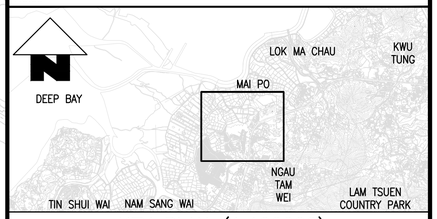


Notes



KEY PLAN (1:100000)

Key to symbols

LEGEND:

- SITE BOUNDARY
- ASSESSMENT AREA (500m)
- PROPOSED DRAINAGE SYSTEM
- PROPOSED BOX CULVERT
- PROPOSED MANHOLE

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	APR 25	TW	EA FIRST DRAFT	JC	EC

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Title

PROPOSED DRAINAGE SYSTEM AND BOX CULVERT

Designed	NS		Eng check	JC	
Drawn	TW		Coordination	LC	
Dwg check	DC		Approved	EC	

Scale at A1: 1:4000 | Status: PRE | Rev: P1

Drawing Number

FIGURE 3.3

0 40 80 120 160 200
METRES
1 : 4000

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WON102115

Appendices

endix 1.1: Email Correspondence between the Pro ect's Traffic Consultant and the Transport Departmen

Nick Sin

From: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Sent: Thursday, December 21, 2023 2:33 PM
To: CHAN Kelvin
Cc: Chi Kong LEUNG; Ming Yip TSE
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

Dear Kelvin,

Please be advised that I have no comment on your proposed classification of Mai Po South Road as "Feeder Road" from traffic engineering point of view.

Thank you very much.

Regards,

Florence KWAN
E/B2, Traffic Engineering (NTW) Division
Transport Department
Tel. No.: 2399 2727

From: CHAN Kelvin [redacted]
To: Florence Tak Yee KWAN <florencekwan@td.gov.hk>
Cc: Ming Yip TSE <mingyiptse@td.gov.hk>, Chi Kong LEUNG <chikongleung@td.gov.hk>
Date: 21/12/2023 12:29 PM
Subject: RE: Planning Application No. A/YL-MP/344 - Road Type Classification of Nearby Road of the Subject Site

---

Dear Florence,

Thanks for your prompt reply.

Therefore, it is proposed that Mai Po South Road should be classified as **"Feeder Road"** under the road classification in rural areas.

We would be most grateful if you could reply to us at your earliest convenience. Should you have any enquiries or require further information, please do not hesitate to contact the undersigned at 2864 6462.

Regards,

Kelvin Chan
Principal Traffic Engineer
[redacted]
SYSTRA MVA
22nd Floor • Genesis • 33-35 Wong Chuk Hang Road • Hong Kong

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Royal Palms
Description:	No noticeable noise was heard at the side facing Castle Peak Road - Mai Po or the side facing Palm Canyon Drive.
Record Photo:	View 1: Facing Castle Peak Rod - Mai Po  View 2: Facing Palm Canyon Drive 
Remark:	

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Ventilation Building (MPVB)
Description:	No noticeable noise from Mai Po Ventilation Building was heard from the side facing Mai Po South Road.
Record Photo:	View 1: Facing Mai Po South Road  
Remark:	Mai Po Ventilation Building was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Substation
Description:	No noticeable noise from Mai Po Substation was heard from the side facing San Tam Road. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing San Tam Road 
Remark:	Mai Po Substation was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Sewage Treatment Plant at Palm Springs
Description:	No noticeable noise was heard from the side facing Springs Boulevard Road.
Record Photo:	View 1: Facing Palm Springs Boulevard Road 
Remark:	The sewage treatment plant at Palm Springs was inaccessible to public. Site photos of other angles could not be taken. 

Appendix 2.1 Site Survey Records for Fixed Noise Sources

Location:	Mai Po Floodwater Pumping Station
Description:	No noticeable noise from Mai Po Stormwater Pumping Station was heard from the side facing Mai Po Road or at the entrance of the Station. The equipment that generates noise appears to be enclosed in a building structure.
Record Photo:	View 1: Facing the brownfield land adjacent to Mai Po Road  View 2: Facing the entrance of the Floodwater Pumping Station 
Reference:	Mai Po Floodwater Pumping Station was inaccessible to public. Site photos of other angles could not be taken. 

Typical Plant Inventory (per phase)						
QPME / Quiet Consturction Method (QCM) ?	**PME**	**TM or Other Reference [1][2][3][4][5]**	**SWL, dB(A)**	**No. of PME**	**% on time**	**Total SWL, dB(A)**
Group A - Site Clearance						
Group A1 - Pavement Breaking / Excavation						
✓	Hydraulic Crusher for Concrete Breaking / Demolition Works	QME IN4	94	1	100%	94
✓	Excavator, wheeled/tracked (QPME)	QPME EPD 12299	92	1	80%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	1	100%	100
	Water pump (electric)	CNP 281	88	1	100%	88
						102
Group A2 - Compacting						
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	2	50%	105
✓	Bulldozer, tracked (QPME)	EPD- 12694	108	1	50%	105
	Roller, vibratory	CNP 186	108	1	60%	106
						110
Group B - Substructure Works						
Group B1 - Piling Works (Option A)						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
✓	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	1	80%	91
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	3	60%	108
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator, silenced, 75 dB(A) at 7 m	CNP 102	100	2	100%	103
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Piling, large diameter bored, reverse circulation drill	CNP 166	100	2	60%	101
						115
Group B1 - Raft Foundation (Option B)						
	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Excavator, wheeled/tracked (QPME)	EPD- 12299	92	2	80%	94
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Water pump (electric)	CNP 281	88	2	100%	91
	Generator (QPME)	QPME EPD 14730	95	2	100%	98
	Concrete lorry mixer	CNP 044	109	1	70%	107
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	70%	104
	Concrete pump, stationary mounted	CNP 047	109	1	60%	107
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	4	50%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Saw, circular, wood	CNP 201	108	2	50%	108
	Bar bender and cutter (electric)	CNP 021	90	4	50%	93
						115
Group C - Superstructure Works						
Group C1 - General Superstructure						
✓	Crane, mobile (QPME)	EPD- 12240	101	2	80%	103
	Poker, vibratory, hand-held (electric)	OCUPME A19	102	3	60%	105
	Power pack for hand-held items of PME	CNP 168	100	4	50%	103
	Compactor, vibratory	OCUPME 050	105	1	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	70%	93
	Concrete lorry mixer	CNP 044	109	2	70%	110
	Generator (QPME)	QPME EPD 14730	95	1	100%	95
	Drill/grinder, hand-held (electric)	CNP 065	98	5	60%	103
	Bar bender and cutter (electric)	CNP 021	90	3	60%	93
	Water pump (electric)	CNP 281	88	6	100%	96
	Dump truck , 5.5 tonne < gross vehicle weight ≦ 38 tonne	OCUPME A38	105	4	60%	109
	Air compressor, air flow <= 10m3/min	CNP 001	100	4	100%	106
						115

Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link (XRL)

Commissioning Test Report for the Fixed Plant Noise at Mai Po (MPV), Ngau Tam Mei (NTV) and Shing Mun (SMV) Ventilation Buildings; ERS Plant Building – North (SPN) and ERS Plant Building – South (SPS)

MTR Corporation

July 2018

Location	NSR	Description
SMV	SM1	Sau Shan House, Cheung Shan Estate
	SM4	Shui Hong Nursing House
SPN	SS7	Leung Uk Tsuen Village House
	SS10	DD110 LOT 452, Wang Toi Shan
	SS15[(a)]	Abandoned village house in Shek Kong
SPS	SS11a[(a)]	Leung Uk Tsuen Squats
	SS20[(a)]	Village house in Shek Kong

Note:

(a) Certain direction of the ventilation shaft is totally or partially screened by the proposed noise barriers at Shek Kong Stabling Sidings (SSS).

3.2.4 Measurement Schedule

The noise measurements were carried out at the monitoring location for MPV, NTV, SMV, SPN and SPS, where the fixed plant items were operated steadily and continuously at their noisiest operating mode under normal scenario. The noise measurement schedule is shown in **Table 3.5**. Sample measurement photos of MPV, NTV, SMV, SPN and SPS are shown in **Appendix A3**.

Table 3.5 Measurement Schedule

Location	Date
MPV	25 – 26 Apr 2018
NTV	17 – 18 May 2018
SMV	8 – 9 Jun 2018
SPN	24 – 25 May 2018
SPS	24 – 25 May 2018

4 Measurement Results

4.1 The Noise Levels of Fixed Plant Noise Sources

The noise levels measured under the worst case scenario are determined and presented in **Table 4.1**. Details of the measurement results are shown in **Appendix A3**.

Table 4.1 Summary of Sound Power Levels for Fixed Plants

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
MPV	North N1 [(a)]	67
	North N2	69
	North N3	72
	East E1	74
	South S1	74
	South S2	75
	West W1	70
	West W2 [(a)]	69
NTV	North N1	72

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	North N2	69
	North N3	61
	North N4 [(a)]	73
	East E1	77
	East E2	72
	South S1	78
	South S2	78
	South S3 [(a)]	71
	South S4 [(a)]	71
	South S5 [(a)]	76
	South S6 [(a)]	88
	West W1 [(a)]	82
SMV	North N1	80
	North N2	63
	North N3	77
	North N4	61
	North N5 [(a)]	74
	East E1 [(a)]	89
	East E2	81
	East E3	62
	East E4 [(a)]	74
	East E5 [(a)]	67
	South S1	89
	South S2	84
	South S3	86
	South S4	86
	South S5 [(a)]	68
	West W1	76
	West W2	76
	West W3 [(a)]	97
	West W4	78
SPN	North N1	84
	North N2	84
	North N3	66
	East E1	85
	East E2	64
	East E3	68
	South S1	90
	South S2	89
	West W1	87
	West W2	72
SPS	North N1	88
	North N2	90
	North N3	71

Works Area	Direction Facing/ Elevation	Calculated SWL L_{Aeq}, dB(A)
	East E1	84
	East E2	90
	East E3	89
	East E4	78
	East E5	76
	South S1	82
	South S2	84
	South S3	82
	West W1	84
	West W2	76
	West W3	80
	West W4	74

Note:

(a) The plant would be operated during day and evening time only under normal scenario.

A compliance check against the fixed plant noise criteria at NSR was conducted. The cumulative noise levels from noise sources were assessed to ensure the compliance with the noise criterion. **Table 4.2** shows the results, details of the calculation are also given in **Appendix A3**.

Table 4.2 Cumulative Fixed Plant Noise at NSR

NSR	Source Location	Cumulative SPL, dB(A)		Noise Criteria, dB(A)		Compliance (Y/N)	
		Day and Evening Time	Night-time	Day and Evening Time	Night-time	Day and Evening Time	Night-time
MP1	Ventilation Shaft and Building Service	29	28	60	50	Y	Y
MP5	Ventilation Shaft and Building Service	34	33	51	45	Y	Y
MP6	Ventilation Shaft and Building Service	35	35	60	50	Y	Y
NT1	Ventilation Shaft for N/B [(a)] and Building Service	42	36	55	44	Y	Y
	Ventilation Shaft for S/B [(a)] and Building Service	43	40	55	44	Y	Y
NT1a	Ventilation Shaft for N/B [(a)] and Building Service	43	40	55	44	Y	Y
	Ventilation Shaft	44	42	55	44	Y	Y

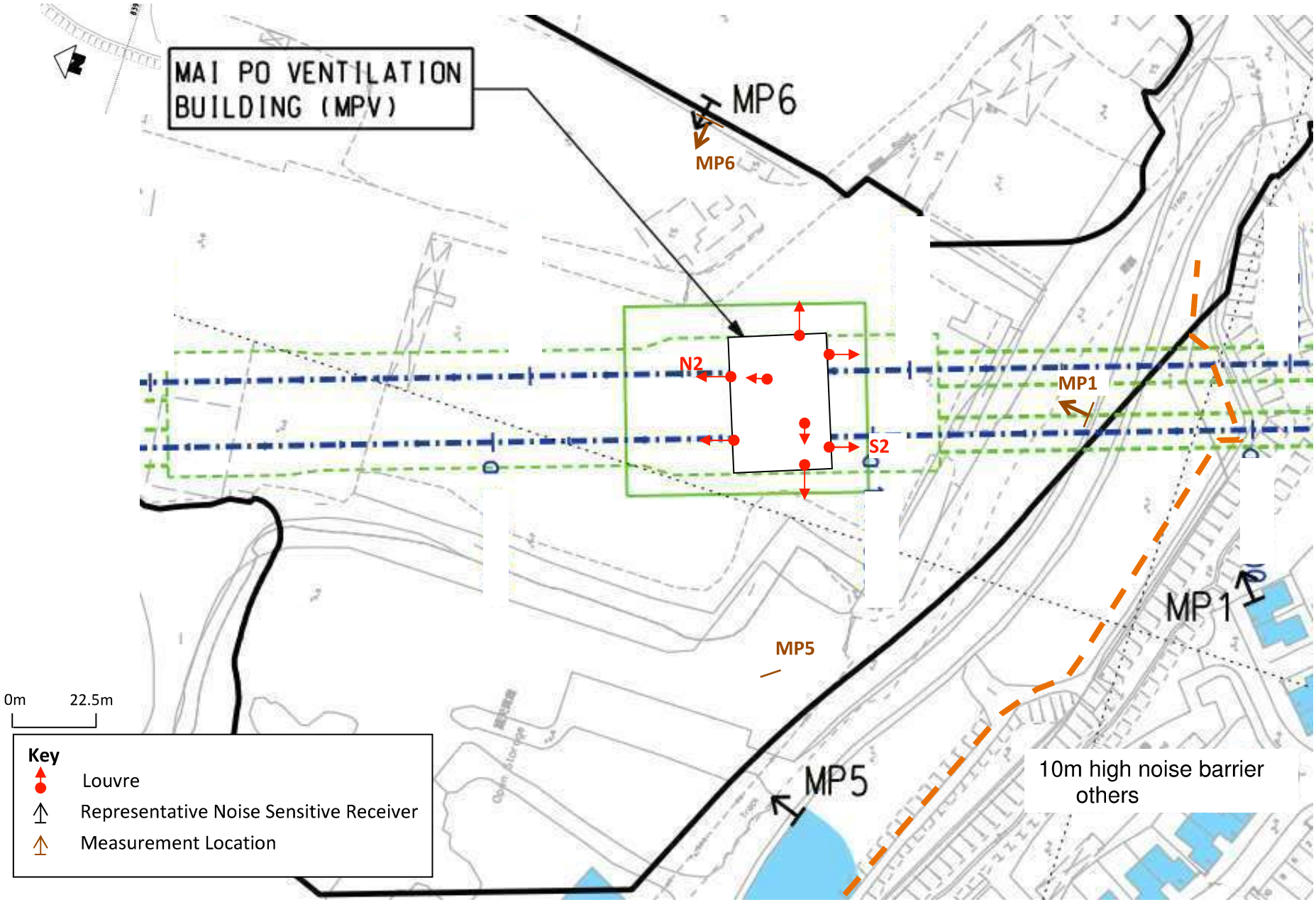


Figure 2. Representative Noise Sensitive Receiver (NSR), Noise Measurement Location and Fixed Plant Sources at MP

Appendix 2.4 Construction Noise Assessment

NSR: NSR1

	Max. SWL		[3] Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	[1]	84	-46	-10	3	62	
Phase 2	115	[1]	220	-55	-10	3	53	
Phase 3	115	[1]	389	-60	-10	3	48	
Phase 4	115	[1]	577	-63	-10	3	45	
Phase 5	115	[1]	287	-57	-10	3	51	
Phase 6	115	[1]	414	-60	-10	3	48	
						WSW (max spl)	**63**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR2

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	73	-45	-10	3	63	
Phase 2	115	(1)	223	-55	-10	3	53	
Phase 3	115	(1)	402	-60	-10	3	48	
Phase 4	115	(1)	591	-63	-10	3	45	
Phase 5	115	(1)	262	-56	-10	3	52	
Phase 6	115	(1)	404	-60	-10	3	48	
						WSW (max spl)	**64**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR3

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	85	-47	-10	3	61	
Phase 2	115	(1)	259	-56	-10	3	52	
Phase 3	115	(1)	439	-61	-10	3	47	
Phase 4	115	(1)	626	-64	-10	3	44	
Phase 5	115	(1)	218	-55	-10	3	53	
Phase 6	115	(1)	386	-60	-10	3	48	
						WSW (max spl)	**63**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR4

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	154	-52	-10	3	56	
Phase 2	115	(1)	211	-54	-10	3	54	
Phase 3	115	(1)	329	-58	-10	3	50	
Phase 4	115	(1)	456	-61	-10	3	47	
Phase 5	115	(1)	89	-47	-10	3	61	
Phase 6	115	(1)	190	-54	-10	3	54	
						WSW (max spl)	**64**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR5

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	133	-50	-10	3	58	
Phase 2	115	(1)	187	-53	-10	3	55	
Phase 3	115	(1)	289	-57	-10	3	51	
Phase 4	115	(1)	418	-60	-10	3	48	
Phase 5	115	(1)	54	-43	-10	3	65	
Phase 6	115	(1)	150	-52	-10	3	56	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR6

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	184	-53	-10	3	55	
Phase 2	115	(1)	217	-55	-10	3	53	
Phase 3	115	(1)	278	-57	-10	3	51	
Phase 4	115	(1)	375	-59	-10	3	49	
Phase 5	115	(1)	65	-44	-10	3	64	
Phase 6	115	(1)	67	-45	-10	3	63	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR7

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	278	-57	-10	3	51	
Phase 2	115	(1)	321	-58	-10	3	50	
Phase 3	115	(1)	381	-60	-10	3	48	
Phase 4	115	(1)	457	-61	-10	3	47	
Phase 5	115	(1)	173	-53	-10	3	55	
Phase 6	115	(1)	167	-52	-10	3	56	
						WSW (max spl)	**60**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR8

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	282	-57	-10	3	51	
Phase 2	115	(1)	294	-57	-10	3	51	
Phase 3	115	(1)	292	-57	-10	3	51	
Phase 4	115	(1)	335	-59	-10	3	49	
Phase 5	115	(1)	162	-52	-10	3	56	
Phase 6	115	(1)	66	-44	-10	3	64	
						WSW (max spl)	**65**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR9

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	301	-58	-10	3	50	
Phase 2	115	(1)	269	-57	-10	3	51	
Phase 3	115	(1)	175	-53	-10	3	55	
Phase 4	115	(1)	173	-53	-10	3	55	
Phase 5	115	(1)	216	-55	-10	3	53	
Phase 6	115	(1)	69	-45	-10	3	63	
						WSW (max spl)	**65**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR10

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	294	-57	-10	3	51	
Phase 2	115	(1)	243	-56	-10	3	52	
Phase 3	115	(1)	93	-47	-10	3	61	
Phase 4	115	(1)	82	-46	-10	3	62	
Phase 5	115	(1)	239	-56	-10	3	52	
Phase 6	115	(1)	82	-46	-10	3	62	
						WSW (max spl)	**67**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) NSR is >300m away from the concurrent project "San Tin/ Lok Ma Chau Development Node"

Appendix 2.4 Construction Noise Assessment

NSR: NSR11

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	577	-63	-10	3	45	
Phase 2	115	(1)	519	-62	-10	3	46	
Phase 3	115	(1)	340	-59	-10	3	49	
Phase 4	115	(1)	167	-52	-10	3	56	
Phase 5	115	(1)	518	-62	-10	3	46	
Phase 6	115	(1)	368	-59	-10	3	49	
Concurrent Project	113	(3)	86	-47		3	69	
						WSW (max spl)	**70**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.4 Construction Noise Assessment

NSR: NSR12

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	548	-63		3	55	
Phase 2	115	(1)	498	-62		3	56	
Phase 3	115	(1)	304	-58		3	60	
Phase 4	115	(1)	148	-51		3	67	
Phase 5	115	(1)	510	-62		3	56	
Phase 6	115	(1)	366	-59		3	59	
Concurrent Project	113	(3)	115	-49		3	67	
						WSW (max spl)	**71**	dB(A)

Note: (1) Reference to the maximum mitigated sound power level among all works activities

(2) Barrier correction provided by temporary noise barrier installed around the site

(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.4 Construction Noise Assessment

NSR: NSR13

	Max. SWL		Distance (m)	Distance Correction	Barrier Effect	Façade Correction	SPL	
Phase 1	115	(1)	721	-65	-10	3	43	
Phase 2	115	(1)	669	-65	-10	3	43	
Phase 3	115	(1)	513	-62	-10	3	46	
Phase 4	115	(1)	311	-58	-10	3	50	
Phase 5	115	(1)	637	-64	-10	3	44	
Phase 6	115	(1)	491	-62	-10	3	46	
Concurrent Project	113	(3)	138	-51		3	65	
						WSW (max spl)	**66**	dB(A)

Note:
(1) Reference to the maximum mitigated sound power level among all works activities
(2) Barrier correction provided by temporary noise barrier installed around the site
(3) Reference to the approved EIA (Register No.: EIA-302/2023) San Tin/ Lok Ma Chau Development Node.

Appendix 2.5 - Fixed Plant Noise Assessment

Daytime Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Daytime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	67	81	-46	0	0	3	0	24	39	65
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	67	62	-44	0	0	3	0	26	41	65
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	69	51	-42	0	0	3	0	30		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	67	54	-43	0	0	3	0	27	41	65
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	69	52	-42	0	0	3	0	30		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	67	51	-42	0	0	3	0	28	40	65
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	69	59	-43	0	0	3	0	29		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	67	56	-43	0	0	3	0	27	39	65
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	71	-45	0	0	3	0	27		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	67	68	-45	0	0	3	0	25	37	65
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	69	86	-47	0	0	3	0	25		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	67	97	-48	0	0	3	0	22	35	65
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	69	116	-49	0	0	3	0	23		
FN8	Mai Po Ventilation Building	MPVB North N1 (N1)	67	82	-46	0	0	3	0	24	39	65
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	80	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	79	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	70	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	58	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	63	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		
FN9	Mai Po Ventilation Building	MPVB North N1 (N1)	67	84	-47	0	0	3	0	23	39	65
		MPVB North N2 (N2)	69	87	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	78	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	74	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	66	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	60	-44	0	0	3	0	34		
		MPVB West W1 (W1)	70	66	-44	0	0	3	0	29		
		MPVB West W2 (W2)	69	66	-44	0	0	3	0	28		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.

(2) The above results only apply to uses which rely on opened windows for ventilation.

Appendix 2.5 - Fixed Plant Noise Assessment

Night time Fixed Plant Noise Assessment (Mai Po Ventilation Building)												
NSR ID	**Fixed Noise Source**	**Louvres - Direction Facing**	**SWL, dB(A)[1]**	**Horizontal Distance (m)**	**Distance Attenuation dB(A)**	**Tonality Correction dB(A)**	**Screening Correction dB(A)[2]**	**Facade Correction dB(A)**	**Barrier Correction dB(A)[3]**	**SPL, $L_{eq(30min)}$, dB(A)**	**Resultant SPL, $L_{eq(30min)}$, dB(A)**	**Nighttime Noise Criteria, dB(A)**
FN1	Mai Po Ventilation Building	MPVB North N1 (N1)	0	81	-46	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	81	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	72	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	57	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	62	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		
FN2	Mai Po Ventilation Building	MPVB North N1 (N1)	0	62	-44	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	73	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	70	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	62	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	42	-40	0	0	3	0	38		
		MPVB West W1 (W1)	70	44	-41	0	0	3	0	32		
		MPVB West W2 (W2)	0	51	-42	0	0	3	0	0		
FN3	Mai Po Ventilation Building	MPVB North N1 (N1)	0	54	-43	0	0	3	0	0	41	55
		MPVB North N2 (N2)	69	69	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	66	-44	0	0	3	0	31		
		MPVB East E1 (E1)	74	75	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	69	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	44	-41	0	0	3	0	37		
		MPVB West W1 (W1)	70	42	-40	0	0	3	0	33		
		MPVB West W2 (W2)	0	52	-42	0	0	3	0	0		
FN4	Mai Po Ventilation Building	MPVB North N1 (N1)	0	51	-42	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	68	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	68	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	81	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	78	-46	0	0	3	0	31		
		MPVB South S2 (S2)	75	55	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	49	-42	0	0	3	0	31		
		MPVB West W2 (W2)	0	59	-43	0	0	3	0	0		
FN5	Mai Po Ventilation Building	MPVB North N1 (N1)	0	56	-43	0	0	3	0	0	38	55
		MPVB North N2 (N2)	69	71	-45	0	0	3	0	27		
		MPVB North N3 (N3)	72	75	-45	0	0	3	0	30		
		MPVB East E1 (E1)	74	89	-47	0	0	3	0	30		
		MPVB South S1 (S1)	74	89	-47	0	0	3	0	30		
		MPVB South S2 (S2)	75	71	-45	0	0	3	0	33		
		MPVB West W1 (W1)	70	64	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	71	-45	0	0	3	0	0		
FN6	Mai Po Ventilation Building	MPVB North N1 (N1)	0	68	-45	0	0	3	0	0	36	55
		MPVB North N2 (N2)	69	78	-46	0	0	3	0	26		
		MPVB North N3 (N3)	72	85	-47	0	0	3	0	28		
		MPVB East E1 (E1)	74	99	-48	0	0	3	0	29		
		MPVB South S1 (S1)	74	101	-48	0	0	3	0	29		
		MPVB South S2 (S2)	75	89	-47	0	0	3	0	31		
		MPVB West W1 (W1)	70	81	-46	0	0	3	0	27		
		MPVB West W2 (W2)	0	86	-47	0	0	3	0	0		
FN7	Mai Po Ventilation Building	MPVB North N1 (N1)	0	97	-48	0	0	3	0	0	34	55
		MPVB North N2 (N2)	69	102	-48	0	0	3	0	24		
		MPVB North N3 (N3)	72	110	-49	0	0	3	0	26		
		MPVB East E1 (E1)	74	122	-50	0	0	3	0	27		
		MPVB South S1 (S1)	74	126	-50	0	0	3	0	27		
		MPVB South S2 (S2)	75	121	-50	0	0	3	0	28		
		MPVB West W1 (W1)	70	114	-49	0	0	3	0	24		
		MPVB West W2 (W2)	0	116	-49	0	0	3	0	0		
FN8	Mai Po Ventilation Building	MPVB North N1 (N1)	0	82	-46	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	88	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	80	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	79	-46	0	0	3	0	31		
		MPVB South S1 (S1)	74	70	-45	0	0	3	0	32		
		MPVB South S2 (S2)	75	58	-43	0	0	3	0	35		
		MPVB West W1 (W1)	70	63	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		
FN9	Mai Po Ventilation Building	MPVB North N1 (N1)	0	84	-47	0	0	3	0	0	39	55
		MPVB North N2 (N2)	69	87	-47	0	0	3	0	25		
		MPVB North N3 (N3)	72	78	-46	0	0	3	0	29		
		MPVB East E1 (E1)	74	74	-45	0	0	3	0	32		
		MPVB South S1 (S1)	74	66	-44	0	0	3	0	33		
		MPVB South S2 (S2)	75	60	-44	0	0	3	0	34		
		MPVB West W1 (W1)	70	66	-44	0	0	3	0	29		
		MPVB West W2 (W2)	0	66	-44	0	0	3	0	0		

Notes: (1) The SWLs referenced the Commissioning Test Report submitted under EP-349/2009/N for the Hong Kong Section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link (Appendix 2.4). The plants (N1 and W2) would be operated during day and evening time only under normal scenario.

(2) The above results only apply to uses which rely on opened windows for ventilation.

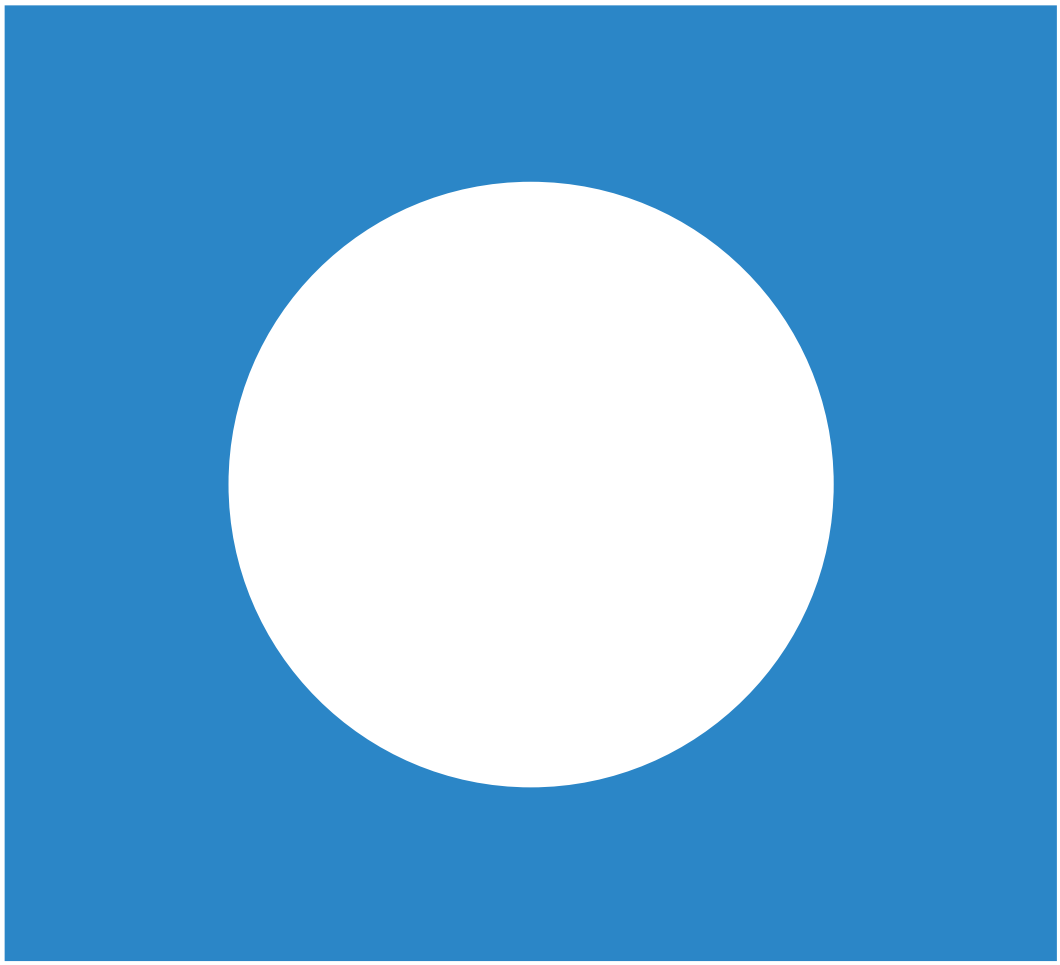
Proposed Use of Project NSRs (RCHE)

RCHE	TN26	TN27	TN28	TN29	TN30	TN31	TN32	TN33
G/F	For EM purpose							
1/F	F.G.	F.G.	F.G.	F.G.	F.G.	70	59	60
2/F	F.G.	F.G.	F.G.	F.G.	F.G.	F.G.	59	60
3/F	F.G.	F.G.	F.G.	F.G.	F.G.	F.G.	61	61

Min	59
Max	70

Proposed Use	
≤65	All type of uses, except hospitals, clinics, convalescences and residential care homes for the elderly (diagnostic rooms, wards)
≤70	Offices, Hotels & Hostels and all domestic premises including temporary housing accomdation
F.G.	Fixed glazing will be adopted

Note: The above results only apply to uses which rely on opened windows for ventilation.



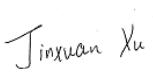
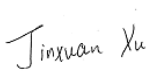
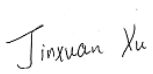
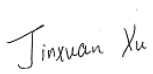
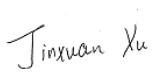
Sewerage Impact Assessment (SIA)

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Date: 15 September 2025

Revision 4

Quality Management

Issue/revision	0	1	2	3	4
Remarks					
Date	23 Jul. 2024	20 Jan. 2025	15 April 2025	04 September 2025	15 September 2025
Prepared by	Jinxuan Xu	Jinxuan Xu	Jinxuan Xu	Jinxuan Xu	Jinxuan Xu
Signature					
Checked by	Alex Cheung	Chan, Connie Lai-Shan	Chan, Connie Lai-Shan	Yuen, Desmond Chun-Wai	Yuen, Desmond Chun-Wai
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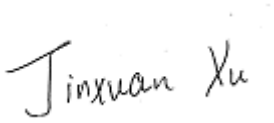
Signature					
Project number					
Report number	0	1	2	3	4

Signatures

Prepared by



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Appendix A Estimation of Sewage Flow from Swimming Pool

1 INTRODUCTION

1.1 WSP (Asia) Limited was commissioned by Profit Point Enterprises Ltd to conduct a Sewerage Impact Assessment (SIA) for a Comprehensive Development to include Wetland Restoration Area at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101 (thereafter referred to as "the Application Site") by assessing the impact of the sewage generated due to the proposed comprehensive residential development.

1.2 The purpose of this application is to propose amendments to the previously approved application No. A/YL-MP/344.

1.3 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone.

1.4 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.5 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.6 The proposed development consists of a mix of 3 storeys detached and semi-detached house and 6, 8 and 10 storey residential tower. 48,716 m^2 of land are reserved for landscaping purpose as open greenery area.

1.7 The proposed development consists of 3,562 housing unit in total with a plot ratio of 1.28 and an average unit gross floor area of 74.7 m^2.

1.8 The application site includes a residential care home for elderly (RCHE). The RCHE would consist of 100 beds and 15 staff. For assessment in this report, the land use is considered hospital, and the staff are assumed to be non-residential.

2 OUTLINE OF APPLICATION SITE AND PLANNED SEWERAGE CONDITIONS

2.1 The Application Site is classified as unsewered area with respect to the Yuen Long and Kam Tin Sewerage Master Plan (YLKT SMP).

2.2 According to the approved EIA report for the Project "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation" (EIA-302/2023), a new tertiary effluent polishing plant, namely San Tin Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m3/day by 2031, and 125,000 m3/day by 2035. The San Tin EPP is less than 500m northeast to the Application Site, and has plan to collect sewage from nearby developments and villages in Yuen Long.

2.3 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. The sewerage system within the Application Site will be designed to facilitate the future connection to the San Tin EPP.

2.4 In case of mismatching with the implementation program of San Tin EPP, two alternative sewerage discharge options are proposed for the proposed development:

- Alternative Option 1: Construct a temporary onsite Sewage Treatment Plant (STP) and discharge treated effluent from the STP to Mai Po Tributary as a temporary measure before the operation of the San Tin EPP.
- Alternative Option 2: Convey the sewage from the Application Site to Yuen Long Sewage Treatment Works (YLSTW) via Nam Sang Wai sewage pumping station (SPS) by proposed twin rising mains / sewers.

3 ASSESSMENT METHODOLOGY

3.1 The assessment has been carried out in accordance with the guidelines set out in EPD Report No. EPD/TP 1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 ("GESF").

3.2 The projected demand for the sewerage system was identified to estimate the potential sewerage impact on the San Tin EPP, YLSTW, Nam Sang Wai SPS and the proposed temporary sewerage system serving the Application Site.

3.3 With reference to Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF), the Global Unit Flow Factors indicated in **Table 3-1** and the Global Peaking factors shown in **Table 3-2** are adopted for estimation of population and sewage flow generated from the Application Site.

Table 3-1 Global Unit Flow Factor (UFF)

Type	**Units Flow Factors (m^3/person/day)**
Private Housing (R3)	0.37 (Planning)
Staff of Housing (General)	0.28
Domestic (Institutional and special class)	0.19
Staff of RCHE (Commercial J11)	0.28

Table 3-2 Global Peaking Factor

Population	**Global Peaking Factor (excluding stormwater allowance)**
More than 50000	$\text{Max}(\frac{6}{N^{0.175}}, 1.6)$
10,000 – 50,000	3
5,000 – 10,000	4
1,000 – 5,000	5
Less than 1,000	6

4 POPULATION AND SEWAGE FLOW PROJECTION

4.1 The expected amount of sewage generated from the amended comprehensive residential development of this application is tabulated in **Table 4-1** as follow:

Table 4-1Comparison of Flow Projection Between the Last Approved Scheme and the Amended Scheme of This Application

Scenario	Design Population		Unit Flow Factor [(i)] (m^3/head/day)	ADWF (m^3/day)	Total ADWF (m^3/day)	Peaking Factor	Peak Flow (m^3/day)
Approved Scheme in 2024	Resident	2210 [(ii)]	0.37	817.7	830.3	4	3291.8
	Staff	10	0.28	2.8		4	
	Pool [(iii)]			9.8[(iii)]		N/A	
Amended Scheme of this Application	Resident of Housing	9974 [(iv)]	0.37	3690.38	3779.16	3	11251.12
	Staff of Housing	80	0.28	22.4		3	
	Pools [(iii)]			43.18 [(iii) (v)]		N/A	
	Resident of RCHE	100	0.19	19		3	
	Staff of RCHE	15	0.28	4.2		3	

Note:

(i) The Unit Flow Factor for the resident and staff are extracted from GESF. The Unit Flow Factor for commercial activities type J11, community, social & personal services are adopted for estimating the flow generated by the staff.

(ii) Assumes 2.8 family members in each of the 789 houses in the approved scheme in 2024 based on the 2021 population census for Yuen Long District.

(iii) The sewage flow generated from the pools in clubhouse and individual houses is estimated to be 9.8 m^3/day in the last approved scheme, and 43.18 m^3/day in the amended scheme of this application. The estimation of the sewage flow from pools in the amended scheme of this application is attached in ***Appendix A***.

(iv) Assumes 2.8 family members in each of the 3562 houses in the amended scheme of this application based on the 2021 population census for Yuen Long District.

(v) Flow from the pools is considered as peak flow.

5 SEWERAGE IMPACT ASSESSMENT for SAN TIN EPP

5.1 It is proposed that sewage generated from the Application Site will be discharged to proposed San Tin EPP, which is less than 500m northeast to the Application Site, via a proposed sewer. The proposed possible sewage disposal scheme inside and outside the Application Site is shown in **Figure 2**.

5.2 According to the approved EIA "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation", a new tertiary effluent polishing plant, namely San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP) is expected to be constructed with a capacity to treat ADWF up to 65,000 m^3/day by 2031, and 125,000 m^3/day by 2035. The San Tin EPP has plan to collect sewerage from nearby developments.

5.3 Although San Tin EPP is designed for the project of San Tin / Lok Ma Chau Development Node, it still has flexibility of 26,377 m^3/day ADWF for receiving additional sewage flow from developments, existing villages, reject water from Water Reclamation Plant and centrate from Food-Waste Pre-treatment Facilities, as stated in the approved EIA "Agreement No. CE 20/2021 (CE) First Phase Development of The New Territories North–San Tin / Lok Ma Chau Development Node – Investigation".

5.4 As such, the San Tin EPP have sufficient capacity to cater for the additional flow of 3,779.16 m^3/day ADWF from the Application Site. There will not be any adverse impact on the existing and planned sewerage system due to the Application Site.

5.5 Currently, there is no information indicating the depth and exact location of proposed connection point to the San Tin EPP, because the San Tin EPP is at very early design stage. Therefore, the type, length, slope and size of the sewerage system from the Application Site to the San Tin EPP cannot be determined at this stage. Meanwhile, area for an internal sewerage pumping station has been reserved, if a twin rising mains is needed in the future, as shown in **Figure 2**. The proposed internal sewerage pumping station will be constructed and maintained by the applicant.

5.6 An updated SIA will be submitted to the satisfaction of EPD assessing the potential sewerage impact to the San Tin Technopole sewerage system for conducting the hydraulic assessment and verifying the assumptions adopted in the current assessment when San Tin Technopole sewerage system is confirmed and becomes available.

6 SEWERAGE IMPACT ASSESSMENT FOR FALLBACK OPTION 1

6.1 The proposed development will be completed in 2031, thus, the population in-take for the Application Site would be likely after the commissioning of the San Tin EPP and the associated sewerage facilities. In case of mismatching with the implementation program of San Tin EPP, alternative schemes are proposed.

6.2 Fallback Option 1 is the provision of a temporary on-site sewage treatment facility with tertiary treatment technology as an interim measure to handle the sewage generated from the WSW Development before the availability of San Tin EPP. The treated effluents will be discharged to Mai Po Tributary. The proposed possible sewage disposal scheme is shown in **Figure 3**.

Standards and Regulations on Water Quality

6.3 Water quality in Hong Kong is subject to the provisions of the Water Pollution Control Ordinance (Cap 358), 1980 (WPCO). Territorial Water has been subdivided into ten Water Control Zones (WCZ) and four supplementary water control zones. The Application Site is located in the Deep Bay Control Zone. As such, the sewage disposal scheme would have to comply with the Zero Discharge Policy in accordance to Town Planning Board Guidelines (i.e. TPB PG-No. 12C) that there will be no net increase in the pollution loads into the Deep Bay Water Control Zone.

6.4 However, "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach and for this temporary sewage treatment plant, it was not applicable. Besides designing the temporary onsite STP to Group C Inland Waters' discharge standards as a minimum requirement, the design of temporary onsite STP will also follow the below tertiary effluent standards.

Table 6-1 Water Quality Standards of Treated Sewage Effluent to Deep Bay

Parameter	Unit	Tertiary Effluent Standards (Upper Limit)
BOD_5	mg/L	10
TSS	mg/L	10
TN	mg/L	20
TP	mg/L	2

Ammonia-N [(1)]	mg/L	5
E. coli	count/100mL	100 [(2)]

Note:

(1) Ammonia-N standard is applicable for discharge to be made into inland waters of Deep Bay.

(2) *E. coli* standards are set based on the Water Pollution Control Ordinance-Technical Memorandum and receiving water body.

Temporary Onsite STP

6.5 Membrane bio-reactor wastewater treatment technology will be adopted for the temporary with capacity of 3,779.16 m^3/day. The treated effluent will be discharged to the Mai Po Tributary.

6.6 The MBR plant is a combined system of biological treatment and microfiltration process, which is capable of generating high quality effluent. The MBR process operates at a higher biomass concentration than conventional activated sludge system. The pores on the membrane surface have a diameter of 0.04 micrometres, separating bacteria, solid and *E. Coli* in accordance with tertiary effluent standards. The MBR process will be operated at optimum conditions with sufficient retention time in order to reduce BOD_5 and ammonia nitrogen to the tertiary effluent standards.

6.7 Furthermore, operation conditions and quality of the effluent will also be real-time monitored. Immediate maintenance will be carried out if any parameter is found to approach or exceed its pre-set limits. Samples of effluent will also be taken regularly and tested to ensure compliance with the tertiary effluent standards.

6.8 This temporary on-site MBR plant shall be designed with the excess flow (PDWF – capacity of temporary onsite STP, i.e., excess flow = 7,471.96 m^3/day) being equalized in an equalization tank of adequate volume to store up at least such flow for 2 hours (i.e. 622.66 m^3).

6.9 The production of sludge is estimated to be 56.15 m^3/day for solid content of 1% w/w. The sludge will be screened and dewatered, with a minimum solid content of 30%. The dewatered sludge will be collected by a licensed collector at regular intervals and disposed at the landfill. As an alternative, the dewatered sludge could also be transferred to nearby Government's Sewerage Treatment Works for off-site treatment

due to its small quantity.

6.10 The quantity of treated effluent to discharged to Mai Po Tributary is estimated to be 3,779.16 – 56.15 = 3,723.01 m^3/day.

7 SEWERAGE IMPACT ASSESSMENT FOR FALLBACK OPTION 2

7.1 In terms of Option 2, it is proposed that the sewage generated from the proposed development will be collected at the proposed internal sewage pumping station and then pump through a proposed twin rising main / sewers to Nam Sang Wai SPS for disposal at YLSTW. The proposed possible sewage disposal scheme is shown in **Figure 4**.

7.2 In general, within the Application Site, manholes will be located at various points along the sewers either to accept a connection from individual building or at a change of horizontal or vertical alignment. The manholes will provide access for cleaning and maintenance purposes. The sewer will be designed in accordance with the Sewerage Manual published by Drainage Services Department (DSD) and the Building Ordinance.

7.3 An updated SIA will be submitted to the satisfaction of EPD if Option 2 is pursued.

8 MAINTENANCE RESPONSIBILITIES

8.1 The sewerage system within and outside the development site will be constructed by the applicant. The system within the site will be maintained by the applicant. For sewers outside the application site boundary, maintenance responsibilities are proposed to be transferred to DSD after construction completion, subject to DSD's agreement.

9 CONCLUSION

9.1 A sewerage impact assessment has been conducted for the comprehensive residential development at Wo Shang Wai to confirm that the proposed San Tin EPP is adequately able to take up the sewerage discharge of the Application Site.

9.2 However, the implementation program of San Tin EPP may be postponed and cannot meet the anticipated first population intake of the proposed development in 2031. Two alternative proposed sewerage schemes for the comprehensive residential development at Wo Shang Wai were also proposed and assessed.

9.3 For alternative Option 1, a temporary on-site sewage treatment facility with the tertiary treatment process of MBR will treat the 3,779.16 m^3/day sewage from the development to achieve effluent quality meeting tertiary effluent standards before discharge to Mai Po Tributary. Since "Zero discharge into Deep Bay Control Zone" was an administrative long-term approach, it was not applicable in this temporary sewage treatment plant.

9.4 For alternative Option 2, it is proposed that the sewage generated from the proposed development will be collected at the proposed internal sewage pumping station and then pump through a proposed twin rising main / sewers to Nam Sang Wai SPS for disposal at YLSTW.

9.5 The Application Site is located at the unsewered area, so the applicant will be responsible for the construction of new sewerage systems within the Application Site and outside the Application Site to San Tin EPP or the Nam Sang Wai SPS.

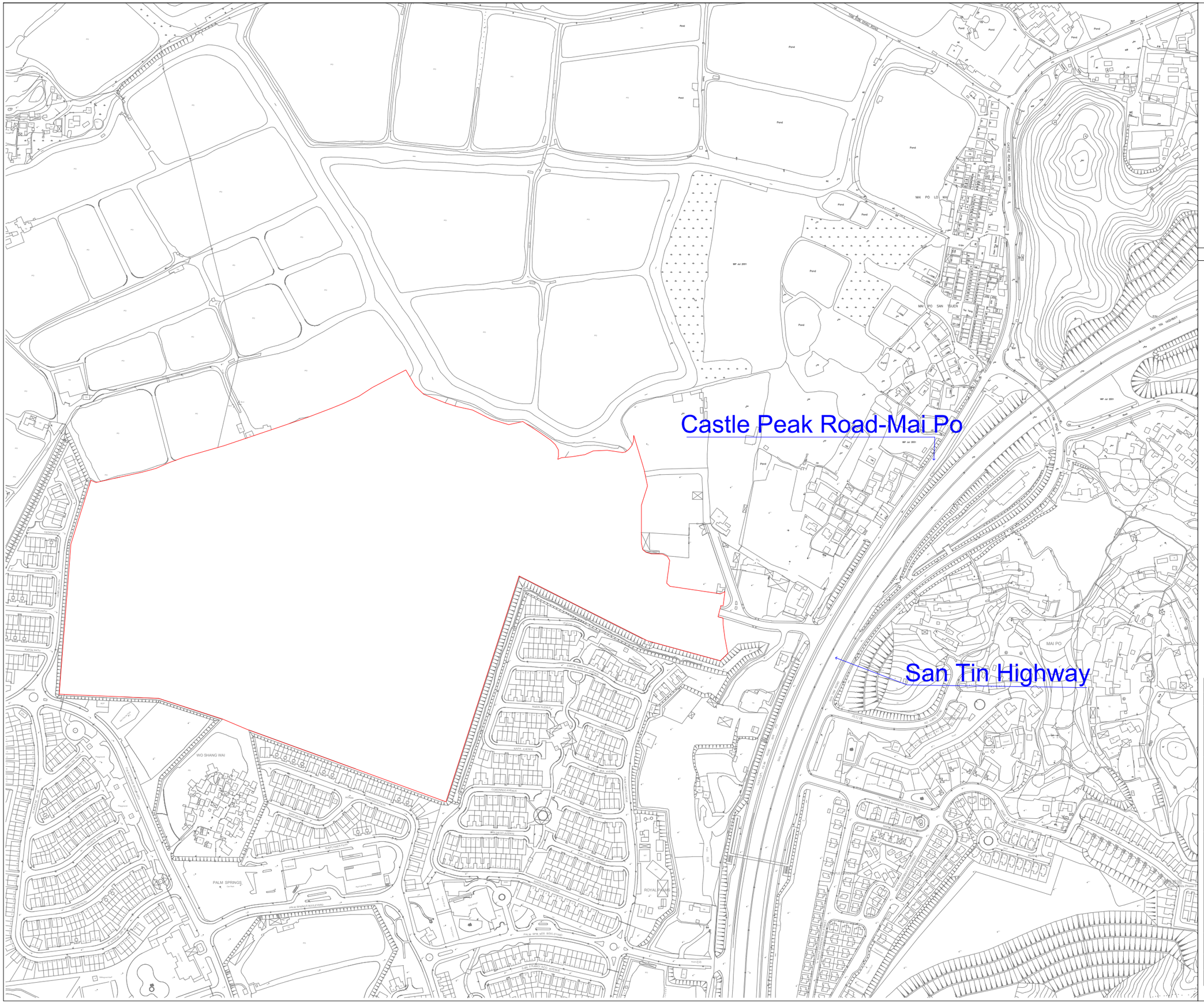
9.6 New sewers constructed outside site boundary connecting to the San Tin EPP or the Nam Sang Wai SPS will be transferred to DSD after construction completion, subject to DSD's agreement.

9.7 An updated SIA report for the selected sewage disposal arrangement will be submitted to the satisfaction of EPD. The updated SIA will assess the potential sewerage impact to the STT sewerage system based on the latest STT sewerage scheme for conducting the hydraulic assessment and verifying the assumptions adopted in the current assessment.

9.8 If Fallback Option 2 is pursued, an updated SIA will be submitted to the satisfaction of EPD, assessing the impact to the existing and planned public sewerage system as well as the sizing of the new rising mains / sewers, and subject to further discussions

with Authorities at the detailed design stage.

Figures



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LOCATION PLAN

LEGENDS:

PROJECT SITE BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

AMENDMENTS TO APPROVED APPLICATION NO. A/YL-MP/229 FOR A COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing title

PROJECT SITE LOCATION AND ITS SURROUNDINGS

Drawing no.			Rev.
Figure 1			0
Drawn: JX	Date: MARCH2023	Checked: –	Approved: –
Scale: 1:2000		Status	

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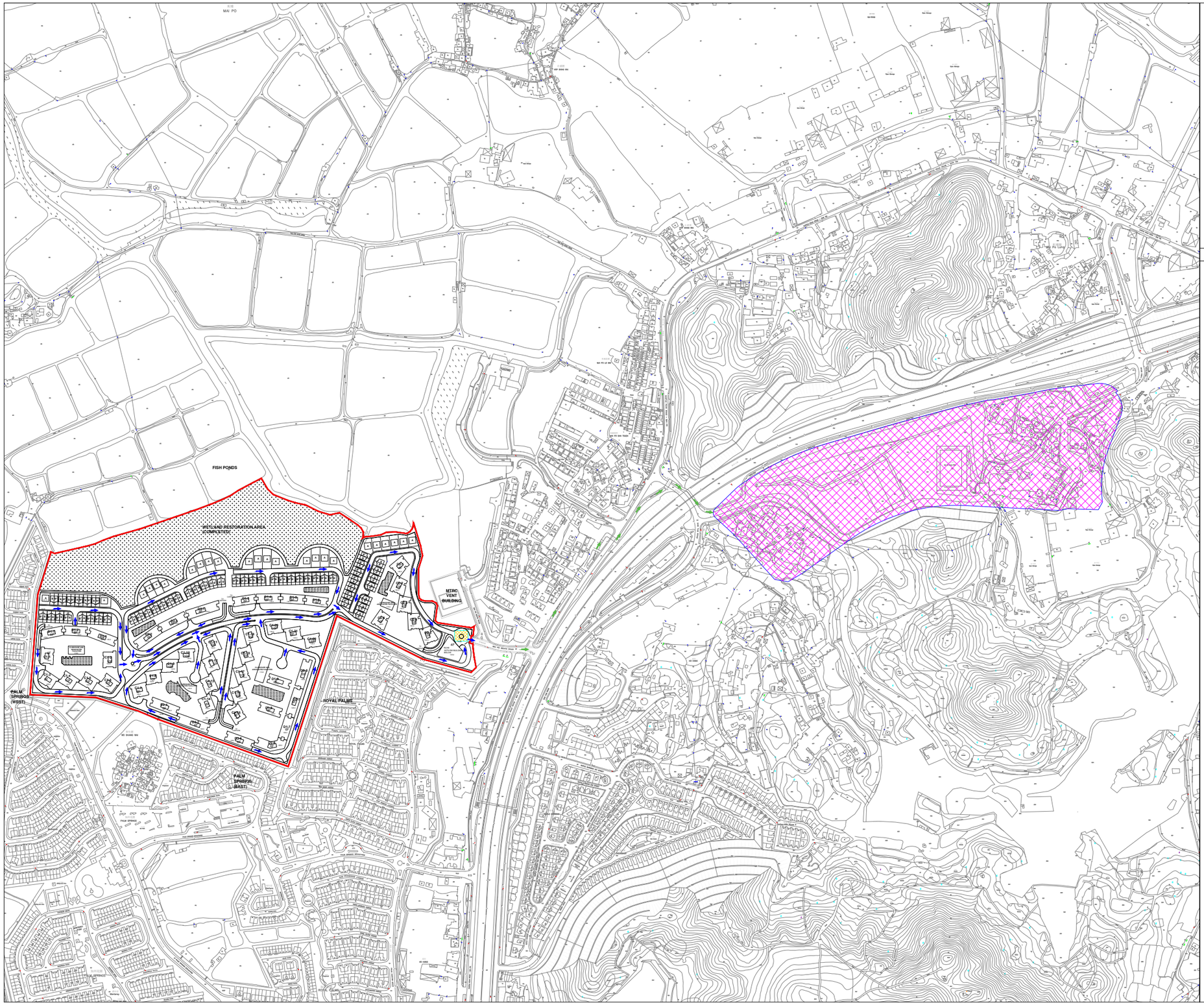

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED LOCATION OF San Tin Lok Ma Chau Effluent Polishing Plant (San Tin EPP)
- PROPOSED INTERNAL FOUL SEWERAGE
- PROPOSED PUBLIC FOUL SEWERAGE SYSTEM
- RESERVED FOR UNDERGROUND INTERNAL SEWAGE PUMPING STATION

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND SEWERAGE SYSTEM OUTSIDE APPLICATION SITE TO SAN TIN EPP

Drawing no.			Rev.
Figure 2			–
Drawn	Date	Checked	Approved
JX	SEP2025	–	–
Scale		Status	
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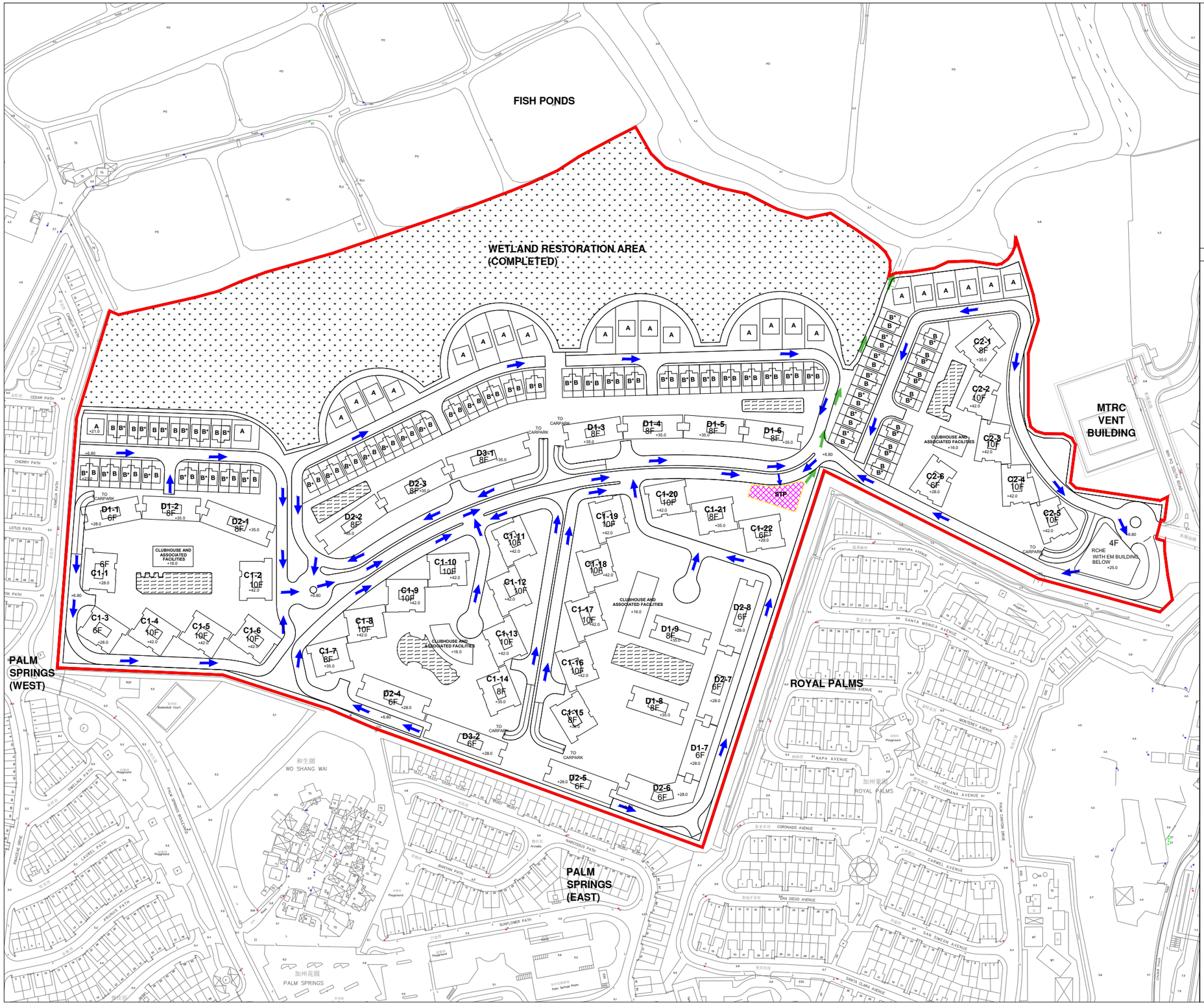

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LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- LOCATION of PROPOSED TEMPORARY ONSITE SEWAGE TREATMENT PLANT
- PROPOSED FOUL SEWERAGE
- PROPOSED TREATED EFFLUENT DISCHARGE PATH

Rev	Description	By	Date

Consultant

wsp

Project title

SEWERAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

LAYOUT PLAN OF PRELIMINARY DESIGNED INTERNAL SEWERAGE SYSTEM AND TREATED EFFLUENT DISCHARGE SYSTEM

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Figure 3			–
Drawn	Date	Checked	Approved
JX	SEP2025	–	–
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Appendices

Appendix A

Estimation of Sewage Flow from Swimming Pool

Appendix A - Estimation of Sewage Flow From Swimming Pool and Water Features					
Flow from Swimming Pool					
Pool (Phase1)			Pool (Phase2)		
Pool area	712.17	m^2	Pool area	418.14	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	854.60374	m^3	Pool volume	501.76255	m^3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	39.56	L/s	Flow Rate	23.23	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	7.1216978	m^3/day	Volume of backwash	4.1813546	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	7.1216978	m^3/day	Total Pool (house)	4.1813546	m^3/day
Pool (Phase3)			Pool (Phase4)		
Pool area	377.12	m^2	Pool area	490.55	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	452.5396	m^3	Pool volume	588.66438	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	20.95	L/s	Flow Rate	27.25	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	3.77	m^3/day	Volume of backwash	4.91	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool	3.77	m^3/day	Total Pool	4.91	m^3/day
Pool (Phase5)			Pool (Phase6)		
Pool area	666.41	m^2	Pool area	868.90	m^2
Pool depth	1.2	m	Pool depth	1.2	m
Pool volume	799.69	m3	Pool volume	1042.68	m3
Turn over rate	6	hr	Turn over rate	6	hr
Flow Rate	37.02	L/s	Flow Rate	48.27	L/s
Duration of Backwash fr	3	min/day	Duration of Backwash fr	3	min/day
Volume of backwash	6.66	m^3/day	Volume of backwash	8.69	m^3/day
No. of pool	1	nos	No. of pool	1	nos
Total Pool (house)	6.66	m^3/day	Total Pool	8.69	m^3/day
Water Features					
Pool area	1569.78	m^2			
Pool depth	0.6	m			
Pool volume	941.86719	m3			
Turn over rate	6	hr			
Flow Rate	43.60	L/s			
Duration of Backwash fr	3	min/day			
Volume of backwash	7.85	m^3/day			
No. of pool	1	nos			
Total Pool	7.85	m^3/day	**All Pools**	**43.2**	**m^3/day**

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

(REVISION 3)
DATE: SEPTEMBER 2025

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Quality Management

Issue/revision	0	1	2	3
Remarks				
Date	08 Aug. 2024	20 Jan. 2025	20 April 22, 2025	4 September 2025
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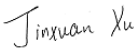
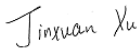
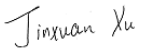
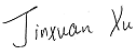
Signature				
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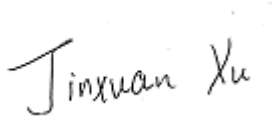
Authorised by	Kau, Paul	Kau, Paul	Kau, Paul	Kau, Paul
Signature				
Project number				
Report number	0	1	2	3

Signatures

Prepared by



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Assistant Consultant

Reviewed by

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Associate

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1 INTRODUCTION

1.1 BACKGROUND AND PREVIOUS APPROVED DIAS

1.1.1 WSP (Asia) Limited (hereinafter "WSP") was commissioned by Profit Point Enterprises Limited to carry out a Drainage Impact Assessment (DIA) for the proposed Comprehensive Residential Development at Wo Shang Wai, Yuen Long.

1.1.2 This application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the draft Mai Po and Fairview Park Outline Zoning Plan (**"**OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio (**"**PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.3, with a maximum building height (**"**BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current **"**Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" (**"**OU(CDWRA)") zone.

1.1.3 The Applicant, Profit Point Enterprises Limited, proposes to increase the development intensity, and revise the layout and form of the housing developments in the Application Site, in response to the drastic changes in the development site context and planning circumstances of the area.

1.1.4 The Application Site is located at Wo Shang Wai, Yuen Long. It is generally bounded by Castle Peak Road – Mai Po and San Tin Highway to the east, fishponds to the north, residential developments, namely Royal Palms and Palm Springs to the south, and Wo Shang Wai Village to the southeast, as shown in **Figure 1**.

1.1.5 Under the approval condition (d) of the approved Section 16 Planning Application (Planning Application No. A/YL-MP/229) for proposed comprehensive development at Wo Shang Wai, DIAs were considered to have satisfactorily discharged the condition requirement in Town Planning Board's letters dated 13 March 2015, 12 May 2021 and 1 March 2024 (**Appendix A**).

1.1.6 The proposed comprehensive residential development comprises a revised mixture of residential buildings and ancillary residential facilities including swimming pools, car parks, club house and landscaped open spaces. The total site area is approximately 20.74ha. The revised MLP of the development is shown in **Appendix B.**

1.1.7 According to the latest MLP, the key data for the proposed development on the Application Site is summarized in **Table 1-1** below.

Table 1-1 Key Data for the Application Site

1. Site Data	
Application Site Area	207,408 m^2 (approx..)
Paved Area plus Pool Area (53.6%) [incl. Residential Houses, Club House & Roads]	111,292 m^2
As-Built Restored Wetland (22.9%)	47,400 m^2
Vegetated Area +(23.5%) [incl. Amenity Planting & Garden]	48,716 m^2
2. Residential Development	
Domestic Plot Ratio	1.28
Domestic GFA	266,079 m^2

2 OBJECTIVES OF THIS DRAINAGE IMPACT ASSESSMENT REPORT

2.1.1 The purpose of this DIA is to review the previous approved DIAs with respect to the revised MLP and the previous agreed drainage mitigation measures. This DIA also includes the followings:

a) Review the existing drainage condition and flooding susceptibility of the Application Site, which is a requirement introduced subsequent to the previous approval.

b) Outline the methodology for the assessment.

- Susceptibility to flooding of neighbouring areas of the Application Site;
- Exacerbation to existing flooding issue during the construction period;
- Exacerbation to existing flooding issue upon completion of the development; and
- Effect on existing drainage conditions.

c) Outline changes to the drainage characteristics and potential drainage impacts in the following aspects.

d) Propose drainage impact mitigation measures, if necessary, to mitigate the potential drainage impact due to the revision of the MLP.

e) Discuss the responsibility of the maintenance aspects of the proposed drainage system and drainage impact mitigation measures.

3 EXISTING DRAINAGE CHARACTERISTICS

3.1 EXISTING DRAINAGE CONDITION WITHIN THE APPLICATION SITE

3.1.1 The Application Site is located at two drainage basins, namely San Tin Basin and Ngau Tam Mei Basin as shown in **Figure 2**. However, as concluded in the previous approved DIAs, the runoff generated from the Application Site is discharged merely to San Tin Basin through a ditch along the Application Site's perimeter and thus no runoff is discharged to Ngau Tam Mei Basin. In this regard, the drainage impact to Ngau Tam Mei Basin will not be assessed.

3.1.2 The runoff from the western periphery of the Application Site is collected in a depression with lower elevation before being discharged into a tributary of the Mai Po River (thereafter named as the Mai Po Tributary) via a pipe. According to topographic data, the Mai Po Tributary is trapezoidal in shape with average dimensions of 2m deep by 10m base width. Mai Po Tributary joins Mai Po River at its downstream end. Mai Po River further merges with Shenzhen River and then discharges into Deep Bay.

3.1.3 No formal drainage system exists for runoff generated from the eastern portion of the Application Site. The runoff either infiltrates into the ground or discharges directly into the Mai Po Tributary. In additional to the site runoff, three 1350mm dia. pipes in the eastern portion of the Application Site. t serves conveying runoff from the vacant lots between Castle Peak Road and Royal Palms as shown in **Figure 3**.

3.1.4 San Tin basin is characterized by flat agricultural land with a large amount of fishponds at the downstream portion with some village developments along San Tin Highway. Hilly vegetated areas exist on the upland in the basin. The existing drainage features and the overland flow path within the Application Site are shown in **Figure 3**.

3.2 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – WO SHANG WAI VILLAGE

3.2.1 To the south of the Application Site is Wo Shang Wai Village (i.e. sub-catchment MP02A-a4 as shown in **Figure 4**). Wo Shang Wai Village is a low-lying area with ground level ranges from 2.4mPD to 2.8mPD. It is surrounded by Royal Palms, Palm Springs and the Application Site. According to drainage record plans and building record plans, runoff from Royal Palms and Palm Springs are intercepted and discharged to Ngau Tam Mei Basin. Runoff from the surroundings developments will not drain into Wo Shang Wai Village therefore it is independent from the surrounding developments.

3.2.2 As shown in **Appendix C**, the drainage system in Wo Shang Wai utilizes an existing flood storage pond and an associated pumping system. The system lifts stormwater through two 200mm dia. rising mains and discharges it into four 400mm dia. aboveground pipes that

extend eastward along the boundary of the Application Site. Subsequently, these pipes merge into two 200mm dia. underground pipes in the eastern portion of the Application Site, directing flow northward before final discharge into the Mai Po Tributary.

3.3 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS

3.3.1 The stormwater from the vacant lots between Castle Peak Road and Royal Palms is drained to the Mai Po Tributary via 3 x 1350mm dia. pipes through Application Site while runoff from the northern portion of Royal Palms is discharged to Ngau Tam Mei Basin. The runoff from the said vacant lots eventually discharges into Mai Po Tributary via the eastern ditch across the Application Site. The inlet of 3 x 1350mm dia. pipes through the Application Site can be seen on the south boundary of the Application Site's eastern portion, as shown in **Appendix C**.

3.4 EXISTING FLOW PATH THROUGH THE APPLICATION SITE – NORTH-EASTERN SIDE OF THE APPLICATION SITE

3.4.1 The runoff from the northeastern areas to the Application Site (i.e., sub-catchments MP02A-a7 and MP02A-a8 as shown in **Figure 4**) dips northward to the Mai Po Tributary.

3.5 FLOODING BLACKSPOTS AROUND THE APPLICATION SITE

3.5.1 According to the Drainage Services Department (DSD) – Location of DSD Flooding Blackspots in **Appendix D**, no flooding blackspots exists in the sub-catchment of the Mai Po River for which the Application Site is located in. The nearest flooding blackspot in the same basin as the proposed development is at Shek Wu Wai (ID No.1) of San Tin which was recorded to be a medium[1] flooding blackspot. Moreover, this village is located within the "San Tin Western Drainage Channel" catchment, which is independent from Mai Po Tributary and Mai Po River, therefore it will not be discussed in this DIA.

[1] Definition of Medium as per DSD - affecting area of more than 10 hectares or resulting in significant property damage or serious traffic disruption

4 POTENTIAL ADVERSE DRAINAGE IMPACTS

4.1.1 The potential adverse drainage impacts incurred by the proposed development in relation to the previous approved DIAs which have addressed the following:

- Loss in flood storage volume due to filling up the Application Site;
- Increase in total runoff and peak discharge due to change in land use and the corresponding increase in CN value; and
- Blockage of existing drainage flow paths through the Application Site.

4.1.2 The proposed mitigation measures recommended in the previous approved DIAs are detailed in **Section 8** of this report and the adequacy of the previous agreed mitigation measures is discussed in **Section 9**.

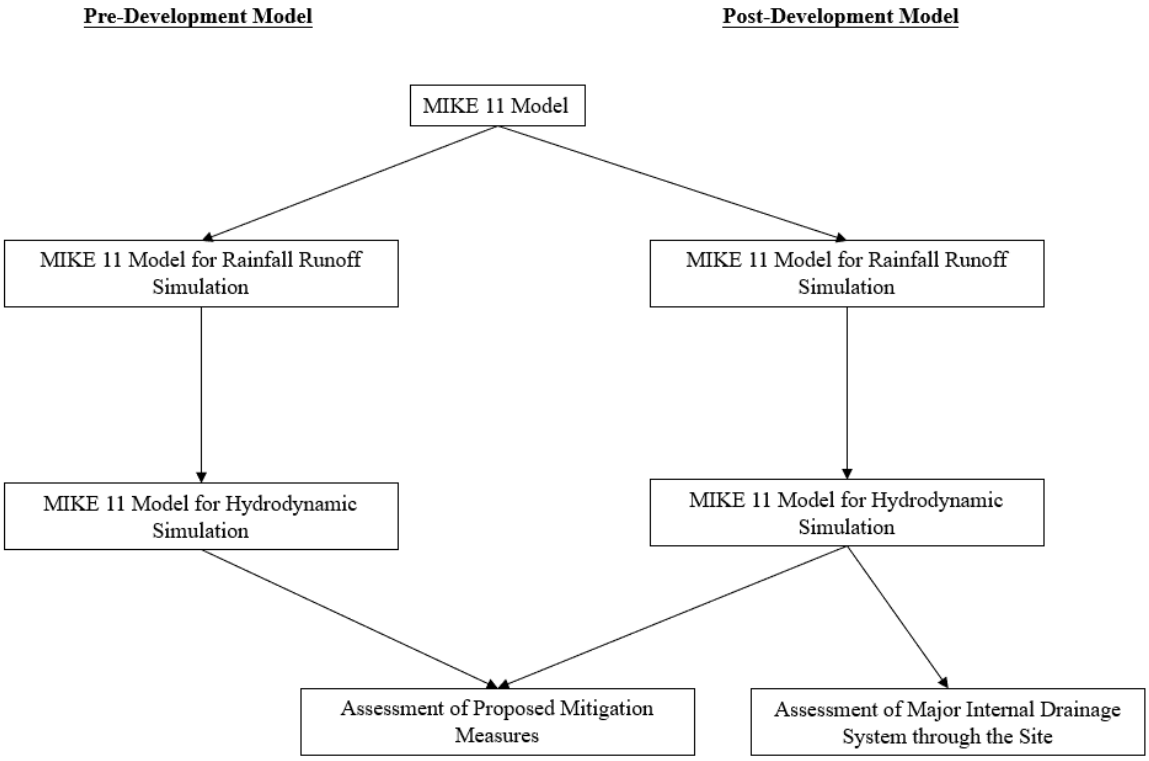
5 METHODOLOGY FOR ASSESSMENT

5.1 OVERVIEW OF METHODOLOGY

5.1.1 This DIA is carried out in accordance with the requirements of "Advice Note No. 1 – Application of the Drainage Impact Assessment Process to Private Sector Projects" issued by DSD, as well as the Stormwater Drainage Manual - Fifth Edition (SDM).

5.1.2 The methodology for the hydrological and hydraulic assessment has been established and agreed in the previous approved DIAs. In this regard, the same methodology and principle are adopted in this assessment for the sake of consistency.

5.1.3 The logic flow of the analysis which agreed in the previous approved DIAs is illustrated by the following flow chart diagram:



5.2 UPDATE THE MODEL SETTING

5.2.1 This assessment follows the approach of the previous approved DIAs, takes the previous approved model as a basis and refines to facilitate hydraulic assessment for the proposed development in the San Tin Basin.

5.2.2 Having reviewed the aerial photos and property information of San Tin Basin, the land use of this area is almost unchanged from last approved DIA in March 2024. The areas in the

Santin Basin, such as Wo Shang Wai, Rolling Hills, Noble Villas, Maple Gardens, Mai Po San Tsuen and Mai Po Lo Wai, are mostly developed 20 years ago, which is much earlier than the approval of last DIA. Meanwhile, the developments in the San Tin Basin mostly are low-density, which suggests the minor changes in runoff generation between pre-development and post-development. In addition, there should not be many changes to the Mai Po Tributary and Mai Po River since last approved DIA which was completed this year. Thus, the previous approved model is still reliable for this drainage impact assessment.

5.2.3 The catchment boundary with sub-catchment delineation for the pre-development and post-development scenarios are shown in **Figure 4** and **Figure 5**, respectively. Sub-catchments MP02A-a2 and MP02A-a3 under pre-development as shown in are delineated to MP02A-a9, MP02A-aa, -ab, -ac, -ad and -ae to simulate the drainage condition of the proposed development under post-development scenario. The sub-catchments under post-development scenario are refined based on the land use change within the Application Site as mentioned in the **Section 7** and **Appendix B**.

5.2.4 To simulate the flood plains, the approved assessment model used virtual side branches which have connections to river courses. The virtual side branches and the connections were named STS and STW in their prefixes, respectively.

5.2.5 For the pre-development model, due to the existing topography, the Application Site would become a flood plain under extreme rainfall and tidal events. To reflect the flood storage characteristics of the Application Site, the virtual side branches mentioned above is extended and connections are made to ch690 and ch490 in the pre-development model. These side branches and the connections at ch490 and ch690 are removed in the post-development scenario since the Application Site will be filled up by the proposed development and therefore will not be characterized as a flood plain.

5.3 RAINFALL – RUNOFF SIMULATION

5.3.1 In this DIA, a 4-hr synthetic rainfall profile, as shown in **Appendix E** was updated using the formulation mentioned in Section 4.3.5(b) in the DSD-SDM with parameters specified for HKO area referring to the Table 3a in the Stormwater Drainage Manual-Corrigendum No. 1/2024.

5.3.2 In addition, the potential drainage impact will consider the climate change effects up to end of 21st century. Referring to the Table 28 and 31 in the Stormwater Drainage Manual-Corrigendum No. 1/2022, 28.1 % rainfall increase due to climate change, including 16% rainfall increase and 12.1% design allowance, has been added into the 4-hr synthetic rainfall profiles.

5.3.3 The catchment MP02A-a2 and a3 under the pre-development scenario is re-delineated for the purpose of this development to develop the pre-development scenario to incorporate the latest information as mentioned below.

5.3.4 The increase in CN value due to the proposed development is reflected in the post-development model.

5.4 HYDRODYNAMIC SIMULATION

5.4.1 The hydrodynamic model performs the hydrodynamic run to assess the hydraulic performance of river courses and drains.

5.4.2 The boundary condition (i.e. Tide level) adopted in this assessment is referred to the Table 8, Table 29, Table 30b and Table 31 in the Stormwater Drainage Manual- Corrigendum No. 1/2022, as shown in the following table:

Table 5-1 Design Tide level at Tsim Bei Tsui

Return period (Years)	Design extreme sea level (mPD)	Mean Sea Level Rise due to Climate Change (mPD)	Storm Surge Increase in End of 21st century (mPD)	Design Allowance in End of 21st century (mPD)	Design extreme sea level considering climate change effect (mPD)
	A	B	C	D	E=A+B+C+D
2	3.07	0.47	0.09	0.20	3.83
10	3.52	0.47	0.15	0.23	4.37
50	4.09	0.47	0.20	0.25	5.01
200	4.78	0.47	0.26	0.27	5.78

5.5 SCENARIOS FOR IMPACT ASSESSMENT

5.5.1 It is confirmed in the previous approved DIAs that the impacts to river courses other than Mai Po Tributary and Mai Po River are very minimal and therefore only the impacts to Mai Po Tributary and Mai Po River are assessed in this assessment.

5.5.2 The high antecedent moisture conditions (AMC3[2]) are adopted in this assessment model in consistency with the previous approved DIAs. The worst-case scenario amongst the two conditions will be used in the analysis for the proposed mitigation measures.

5.5.3 Hydraulic impact incurred by rainfall profiles with areal reduction factors of 0.82 and 1.0 are analysed in consistency with the previous approved DIAs. Areal reduction factor of 1.0

[2] AMC3 = heavy rainfall occurred within last 5 days; saturated soil

was used for the San Tin Basin to estimate peak flood levels for all areas in the San Tin Basin. Whilst an aerial reduction factor of 0.82 was used for the entire Shenzhen River Basin including the catchments draining from Chinese Mainland to estimate peak flood levels for the Shenzhen River. The worst-case scenario from the two conditions will be used in the analysis for the proposed mitigation measures.

5.5.4 Hydraulic performance for 2, 10, 50 and 200yr Average Recurrence Interval (ARI) events for the Application Site, Mai Po Tributary and Mai Po River will be assessed in accordance with the requirement stipulated in the Advice Note No.1. A, B and C scenarios under respective ARI event are simulated according to the following table:

Table 5-2 Summary of Assessment Scenarios

ARI Event	Abbreviation	Areal Reduction Factor	Rainfall	Tide Level
2	2A	0.82	2 yr	2 yr
	2C	1.00	2 yr	2 yr
10	10A	0.82	10 yr	2 yr
	10B	0.82	2 yr	10 yr
	10C	1.00	10 yr	2 yr
50	50A	0.82	50 yr	10 yr
	50B	0.82	10 yr	50 yr
	50C	1.00	50 yr	10 yr
200	200A	0.82	200 yr	10 yr
	200B	0.82	10 yr	200 yr
	200C	1.00	200 yr	10 yr

Note: same as the previous approved DIAs

6 DESIGN ASSUMPTIONS AND PARAMETERS

6.1.1 Design assumptions and parameters agreed in the previous approved DIAs would be adopted in this assessment. The rationale of adopting the set of parameters in the assessment is reiterated in the sections below.

6.1.2 The manning's n to be adopted in this assessment is referred to the previously approved DIAs while the Colebrook White K_S roughness is referred to DSD-SDM. The surface roughness coefficients adopted in this assessment are summarized in:

Table 6-1 Surface's Roughness Coefficient

Surface Type	**Manning's n**	**CW's ks**
Engineered channels (Smooth Concrete surfacing)	0.015	N/A
Engineered channels (Rough Concrete surfacing)	0.020	N/A
Engineered channels (Smooth Natural bed)	0.020	N/A
Engineered channels (Rough Natural bed)	0.025	N/A
Natural Channel	0.035	0.6
One culvert system with rough natural bed in MAI PO River CH1625	0.040	1.5
Concrete Pipe (Fair Condition)	0.015	N/A
Concrete Pipe (Bad Condition)	0.016	3.0

Note: same as the previous approved DIAs

7 PROPOSED CHANGES TO THE DRAINAGE CHARACTERISTICS

7.1 CHANGES IN LAND USE

7.1.1 The Application Site is a vacant lot with a combination of greenfield, access road and other impervious areas. The approved developments will lead to increase in paved surface and thus the CN value. The current amendment scheme will largely maintain the impervious and pervious coverage. The CN value for the Application Site under post-development scenario is estimated to be 93. The land use coverage and the corresponding CN values are detailed in **Table 7-1**.

Table 7-1 CN Values of Pre & Post Developments for the Application Site

Land Use	Area (m^2)	CN Value
Pre-Development		
Vacant Lot (Northern portion of Application Site – MP02A-a2)	145,400	85
Vacant Lot (Southern Portion of Application Site – MP02A-a3)	62,000	85
Total	207,400	85
Post-Development (Previous Approved DIA in 2015)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	82,700	95
Vegetated Area	74,300	80
Pool Area	3,000	100
- Sub-total	160,000	88
Total	207,400	90.8
Post-Development (Previous Approved DIA in 2021)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100

Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	83,098	95
Vegetated Area	71,475	80
Pool Area	5,435	100
- Sub-total	160,008	88
Total	207,408	91.1
Post-Development (Previous Approved DIA in March 2024)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	97,776	95
Vegetated Area	62,232	80
Pool Area	730	100
- Sub-total	160,008	90
Total	**207,408**	**92**
Post-Development (Current Arrangement)		
Wetland Restoration Area (MP02A-a9)		
Open Water Surface	34,500	100
Vegetated Area	12,900	100
- Sub-total	47,400	100
Residential Area (MP02A-aa, ab, ac, ad and ae)		
Paved Area	106,189	95
Vegetated Area	48,716	80
Pool Area	5,103	100
- Sub-total	160,008	91
Total	**207,408**	**93**

7.1.2 CN value of abandoned ponds adopted in both the pre-development and post-development models is revised to 100 to reflect its hydrological characteristic. **Table 7-2 and Table 7-3** present the detailed CN values applied for both the pre- and post-development model.

Table 7-2 CN Values Applied for the Pre-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m²)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a2	Vacant Lot – Northern Portion of proposed Development	18.8%	145,400	85
MP02A-a3	Vacant Lot – Southern Portion of proposed Development	8.1%	62,000	85
MP02A-a4	WSW Village	1.8%	13,700	90
MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**93.4**

Table 7-3 CN Values Applied for the Post-Development Model

Catchment ID	Land Use	Percentage of Full Catchment	Area(m²)	CN Value
MP02A-a1	Abandoned Ponds	48.5%	373,800	100
MP02A-a4	WSW Village	1.8%	13,700	90

MP02A-a5	Vacant Lots between Castle Peak Rd & Royal Palms	10.8%	82,800	85
MP02A-a6	Vacant Lots between Castle Peak Rd & Royal Palms	2.2%	17,100	85
MP02A-a7	Vacant Lot	2.7%	20,800	85
MP02A-a8	Vacant Lot	2.7%	20,800	85
MP02A-a9	Wetland Restoration Area	6.2%	47,400	100
MP02A-aa	Western Residential Portion of the Application Site	3.6%	27,283	91
MP02A-ab	Southern Residential Portion of the Application Site	7.8%	57,174	91
MP02A-ac	Mid-Western Residential Portion of the Application Site	2.8%	23,698	91
MP02A-ad	Mid-Eastern Residential Portion of the Application Site	2.7%	22,387	91
MP02A-ae	Eastern Residential Portion of the Application Site	3.9%	29,444	91
Revised MP02A-a	**Total**	**100.0%**	**770,300**	**95**

Note: The land-use information for post-development is the same as the previous approved DIAs

7.1.3 The model network illustrating the chainage along Mai Po River is shown in **Figure 1**. The hydrological model parameters for the re-delineated MP02A-a for both the pre- and post-development models is attached in **Appendix F.**

8 PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1 OVERVIEW OF PROPOSED DRAINAGE ARRANGEMENT AND MITIGATION MEASURES

8.1.1 Following the previous approved DIAs, the proposed drainage system will mainly comprise of an approximate 350m long 3.5m(W) x 2.5m(H) box culvert and a drainage pipe network of pipe size ranging from 1050mm to 2100mm dia. as shown in **Figure 6**. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) as well as the runoff from the vacant lots between Castle Peak Road and Royal Palms while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ab, ac and ad).

8.1.2 The invert levels are 2.91mPD for the proposed terminal drainage pipe (DN2100), and 1.71mPD for the proposed terminal box culvert (3.5m in width x 2.5m in height), which are both higher than the invert level of Mai Po Tributary of 1.38mPD based on the previous approved DIA.

8.1.3 All these drains will be discharged to Mai Po Tributary at the northern site boundary. This drainage arrangement within the Application Site is indicated in **Figure 6**.

8.2 DETENTION BY THE AS-BUILT WETLAND RESTORATION AREA

8.2.1 Wetland Restoration Area (WRA) has been constructed, in accordance with the town planning approvals. It will attenuate the discharge from the WRA itself to mitigate the potential adverse drainage impact due to the CN values increase in the development. The drainage system of Wetland Restoration Area (i.e.MP02A-a9) is totally independent from the drainage system of the residential areas of the development.

8.2.2 The Wetland Restoration Area only collects runoff generated within itself. No runoff generated from residential areas of development is discharged to WRA or vice versa even during the severe rainstorm event.

8.2.3 To attenuate the discharge from Wetland Restoration Area, it is designed to be a large detention pond. The attenuation effect of the Wetland Restoration Area has been achieved by its large buffer volume in conjunction with the outlet structures that control the discharge flow rate.

8.2.4 The outlet structures compose of twin 225mm pipes and a 4m wide emergency bypass spillway with invert level at 4.2mPD and 4.65mPD respectively. The twin 225mm pipes are for control of normal water level and the spillway is for relieving excessive flow. The rating

curves for outlet structures and discharge hydrographs under various scenarios are shown in **Appendix G**. As illustrated on the hydrographs, the runoff from Wetland Restoration Area has been significantly attenuated and the peak discharges from WRA will be trimmed to about 18% of the peak inflow.

8.2.5 According to the assessment result, the freeboards of Wetland Restoration Area (i.e., measured from the embankment level at 5.0mPD) under 50yr and 200yr ARI events are both more than 200mm.

8.2.6 After passing of a 50yr ARI rainstorm, it would take approximate 1 day to drain back to normal water level which is at 4.2mPD. Penstocks will be installed, so that the drain-off process can speed up if necessary.

8.2.7 The key dimensions of the wetland restoration area are summarized in **Table 8-1**.

Table 8-1 Key Dimensions of Wetland Restoration Area

Key Dimensions	
Area	47,400 m^2
Maximum Width	120 m
Maximum Length	530 m
Average Depth	1.5 m

8.2.8 To prevent pollution and impacts on the WRA and its irrigation structures caused by surface runoff from the residential portion, a bund wall (or solid protective barrier) and a surface channel are proposed along the boundary between the residential area and WRA, as shown in **Figure 6**. The bund wall will stop the runoff from flowing into the WRA and ensure it is retained in the residential area until drained through the surface channel. The design of surface channel will be considered at the detailed design stages, and ensure there would not be runoff/flow into the WRA.

8.3 RE-PROVISION OF DRAINAGE PATH – WO SHANG WAI VILLAGE

8.3.1 The runoff within WSW Village is currently discharged to the Application Site via a storage pond and pumping system maintained by the local villagers, then discharges to Mai Po Tributary through 2×200mm dia. drainage pipes in the Application Site, as shown in **Figure 3**. Upon completion of the development, the existing pipes will be demolished and a designated drain with diameter 1050mm to 2100mm will be re-provided for conveying the flow from the outlets of the pump to Mai Po Tributary. This drainage pipe will also convey the runoff from western and central portions of the Application Site (MP02A-aa, ab, ac and ad). The arrangements of the inlets and outlets are the same as the previous approved DIAs.

8.3.2 The discharge from WSW Village will be collected by an inlet chamber within the Application Site. Openings will be provided at the existing invert level of the discharge pipes,

which is at +4.2mPD, for connection. The runoff will be conveyed to Mai Po Tributary by a designated drainage system mentioned above. Therefore, the proposed development would not change the discharge pattern of Wo Shang Wai Village drainage system as approved.

8.3.3 If the existing pumps at Wo Shang Wai Village become malfunction during severe rainstorm event, the runoff from Wo Shang Wai Village cannot discharge to the surrounding area and will be cumulated within the village. According to Table 4 of Stormwater Drainage Manual, a total of 446mm depth of rainfall will be incurred under a 200yr return period 4-hour rainfall event. In this connection, the water level at Wo Shang Wai Village will reach approximately +3.3mPD. However, the water will not overflow to the Application Site as there is a bund at the northern boundary of Wo Shang Wai Village which at the level of more than +5mPD, as shown in **Appendix C** and **L**. Therefore, based on the current conditions, overflow cannot enter the Application Site, and this status will remain unaffected by future development.

8.3.4 A flap valve will be installed at the outfall of the designated pipe to prevent backwater effect from Mai Po Tributary. Since no proposed measures will be carried out in Wo Shang Wai Village, the existing pumping configuration from WSW Village will be unchanged.

8.4 RE-PROVISION OF DRAINAGE PATH - VACANT LOTS BETWEEN CASTLE PEAK RD & ROYAL PALMS, SAME AS PREVIOUS APPROVED DIAS

8.4.1 A 3.5m(W) x 2.5m(H) box culvert is proposed in the previous approved DIAs to convey the runoff from the area between Royal Palms and Castle Peak Road – Mai Po (MP02A-a5), a section south of Royal Palms (MP02A-a6) and east parts of the Application Site. The box culvert will have a larger hydraulic capacity than the existing three 1350mm dia. pipes.

8.4.2 The box culvert is sized for the 1 in 50-year design return period according to the recommendation in Table 10 of the DSD-SDM. The box culvert has been designed to capture the discharge from the existing triple 1.35m diameter culvert as discussed in **Section 3.3**. This arrangement is the same as the previous approved DIAs. A trash grille and flap valve will be provided at the final discharge point of the box culvert that connects to Mai Po Tributary.

8.5 MISCELLANEOUS, SAME AS PREVIOUS APPROVED DIAS

8.5.1 Bank protection measures will be provided at the outfalls of the proposed drainage system to minimize the risk of scouring and erosion of the riverbed.

9 ASSESSMENT ON DRAINAGE IMPACT

9.1 ASSESSMENT OF MAI PO TRIBUTARY AND MAI PO RIVER

9.1.1 With the incorporation of the proposed mitigation measures stipulated in **Section 8** following the previous approved DIAs, hydraulic performance of the Application Site, Mai Po Tributary and Mai Po River is assessed according to the methodology stipulated in **Section 5**. The results of peak runoff, total runoff and max water level under 50ARI event are summarized in **Table 9-1**, **Table 9-2** and **Table 9-3**, respectively.

Table 9-1 Change in Peak Discharge from the Application Site

Rainfall return-periods (Yr)	Pre-development peak discharge (m^3/s)	Post-development peak discharge (m^3/s)	Change in peak discharge (m^3/s)
2yr	9.29	7.98	-1.31
10yr	12.30	10.33	-1.98
50yr	14.29	11.47	-2.81
200yr	15.65	12.90	-2.74

Note: Values based on scenario C, AMC 3

Table 9-2 Change in Total Runoff from the Application Site

Rainfall return-periods (Yr)	Total Runoff from Pre-Developed Application Site (m^3)	Total Runoff from Post-Developed Application Site (m^3)	Change in Total Runoff (m^3)
2yr	33,585	39,624	6,039
10yr	54,472	60,586	6,114
50yr	72,605	76,784	4,179
200yr	88,334	94,497	6,163

Note: Values based on scenario C, AMC 3

Table 9-3 Change in Water Level along Mai Po River and Mai Po Tributary under 50yr ARI

River chainage (m)	Water level(mPD) Pre-development			Water level(mPD) Post-development			Change in water level(m)		
	50A	50B	50C	50A	50B	50C	50A	50B	50C
0	3.778	3.934	3.835	3.771	3.937	3.835	-0.007	0.003	0.000
690	3.772	3.929	3.827	3.765	3.931	3.827	-0.007	0.002	0.000
980	3.766	3.926	3.822	3.761	3.929	3.822	-0.005	0.003	0.000
1150	3.756	3.923	3.812	3.750	3.925	3.811	-0.006	0.002	-0.001

1620	3.750	3.927	3.809	3.743	3.930	3.809	-0.007	0.003	0.000
1880	3.573	3.890	3.656	3.565	3.893	3.652	-0.008	0.003	-0.004

9.1.2 The change in water level along Mai Po Tributary and Mai Po River under 2yr, 10yr, 50yr and 200yr ARI events are summarized in **Appendix I**.

9.1.3 Although there will be increase in CN value causing increasing total runoff, by the detention effect of the as-built Wetland Restoration Area at the northern part of the Application Site independent from the drainage system of the residential areas, the peak discharge from the Application Site will be significantly attenuated, as shown in **Appendix H** and there will be no adverse drainage impacts to the Application Site, Mai Po Tributary and Mai Po River under 50yr ARI event. This arrangement is the same as the previous approved DIAs.

9.1.4 The water level at Mai Po River and Mai Po Tributary would not increase due to the change, as shown in **Table 9-3**. It is concluded that the recommendation made in the previous approved DIAs is adequate to mitigate the potential drainage impact due to the revised master layout.

9.2 ASSESSMENT OF DESIGNATED DRAIN FOR WESTERN PORTION

9.2.1 As revealed by the model simulation results in **Appendix J**, the water level at the outlet of the designated drain for Wo Shang Wai and the west portion of Application Site is much lower than the ground level of the Application Site (6.8mPD). In this regard, the designated drain will not incur adverse impact to the Application Site.

9.3 ASSESSMENT OF PROPOSED 3.5M(W) X 2.5M(H) BOX CULVERT

9.3.1 Since the current proposal following the previous approved DIAs will have a larger hydraulic capacity than the existing triple pipes, there will be no adverse drainage impact to Application Site. The freeboard of the outlet of the box culvert is shown in **Appendix K**.

9.4 ASSESSMENT OF IMPACT OF ADDITIONAL TREATED EFFLUENTS

9.4.1 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,779.16m^3/day of treated water after tertiary treatment of Membrane Bioreactor process by a temporary on-site sewage treatment plant which will be discharged to Mai Po Tributary. Assume the worst case that this water will

be discharged to Mai Po Tributary in 4 hours per day (same as the rainfall duration under assessment), so the additional flow rate of the treated water is 0.26m^3/s. The flow rate of the treated water from the on-site sewage treatment plant has been included in the simulation model.

10 TEMPORARY DRAINAGE ARRANGEMENT

10.1.1 Large scale site formation works will be included in the construction stage of the proposed development. During the rainstorm events, construction site runoff would come from all over the works site. The principal drainage impacts which are associated with construction of the works have been identified as follows:

- Erosion of ground materials;
- Sediment transportation to existing downstream drainage system, and
- Obstruction to drainage systems.

10.1.2 Construction runoff would cause impact to the stormwater drainage system. Runoff with concrete and cement-derived material would cause blockage of drainage channels and increase of suspended solid levels in the downstream drainage system. Sediment deposition rate would be increased and hence lower the capacity of the downstream drainage.

10.1.3 Since large area of soil will be exposed during the construction, in order to eliminate the source of contamination, the exposed soil, especially for the open stockpiles area, shall be covered properly by suitable material such as geotextile or tarpaulin to minimize the amount of soil being washed into the downstream drainage system.

10.1.4 The construction runoff which is contaminated by suspended solids, dust and waste shall be properly treated before discharging to the public drainage system. Sedimentation tank, sand/silt traps or other desilting facilities shall be provided to collect debris and silt and allow sedimentation before discharge. Channels / earth bunds / sand bag barriers shall be provided on site to properly direct the runoff to the desilting facilities. Those desilting facilities should be adequately designed and be inspected and cleaned out in a regular basis to maintain its functionality.

10.1.5 Moreover, temporary drainage system designed with sufficient capacity should be provided to prevent the flood risk within the Application Site. For example, perimeter channels should be provided at site boundary to intercept surface runoff from outside the Application Site so that overland flow across the Application Site can be avoided.

10.1.6 Further guidelines and site practices outlined in EPD's Practice Note ProPECC PN1/94, DSD Technical Circular No. 14/2000 – Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage System, and DSD Practice Note No. 1/2004 – Design Rainfall Depth for Temporary Works within the Dry Season shall be followed as far as practicable to minimize the adverse drainage impact caused by the construction works.

11 MAINTENANCE RESPONSIBILITIES

11.1.1 Following the previous approved DIAs, the Applicant will be responsible for the maintenance of all surface channels, underground drainage system and stormwater retention facilities within the Application Site, including designated drainage facilities for conveying runoff generated from Wo Shang Wai Village and the area between Royal Palms and Castle Peak Road – Mai Po.

11.1.2 The designated drainage system serving Wo Shang Wai Village within the Application Site will be maintained by the Applicant while the storage pond and the pumps within Wo Shang Wai Village will be maintained by the villagers.

11.1.3 The maintenance responsibility of all drainage facilities outside the Application Site will remain unchanged.

12 SUMMARY AND CONCLUSIONS

12.1.1 The previous approved residential development comprises of residential buildings, a communal garden area, a restored wetland and residential facilities. The total site area is approximately 207,408m².

12.1.2 To offset the increase in pavement area after development, a Wetland Restoration Area has been built, which has a sufficient detention effect to mitigate the potential drainage impacts. The drainage system of the Wetland Restoration Area (i.e.MP02A-a9) is totally independent on the drainage system of the residential areas of the proposed development.

12.1.3 The permanent drainage system for the proposed development will comprise of an approximately 300m (L) x 2.5m(H) x 3.5m(W) box culvert and a drainage pipe network of pipe sizes ranging from 1050mm to 2100mm in diameter. The box culvert will drain the eastern portion of the Application Site (MP02A-ae) and the runoff from the vacant lots between Castle Peak Road and Royal Palms, while the pipe network will convey the runoff from Wo Shang Wai Village (MP02A-a4) and western and central portions of the Application Site (MP02A-aa, ab, ac and ad).

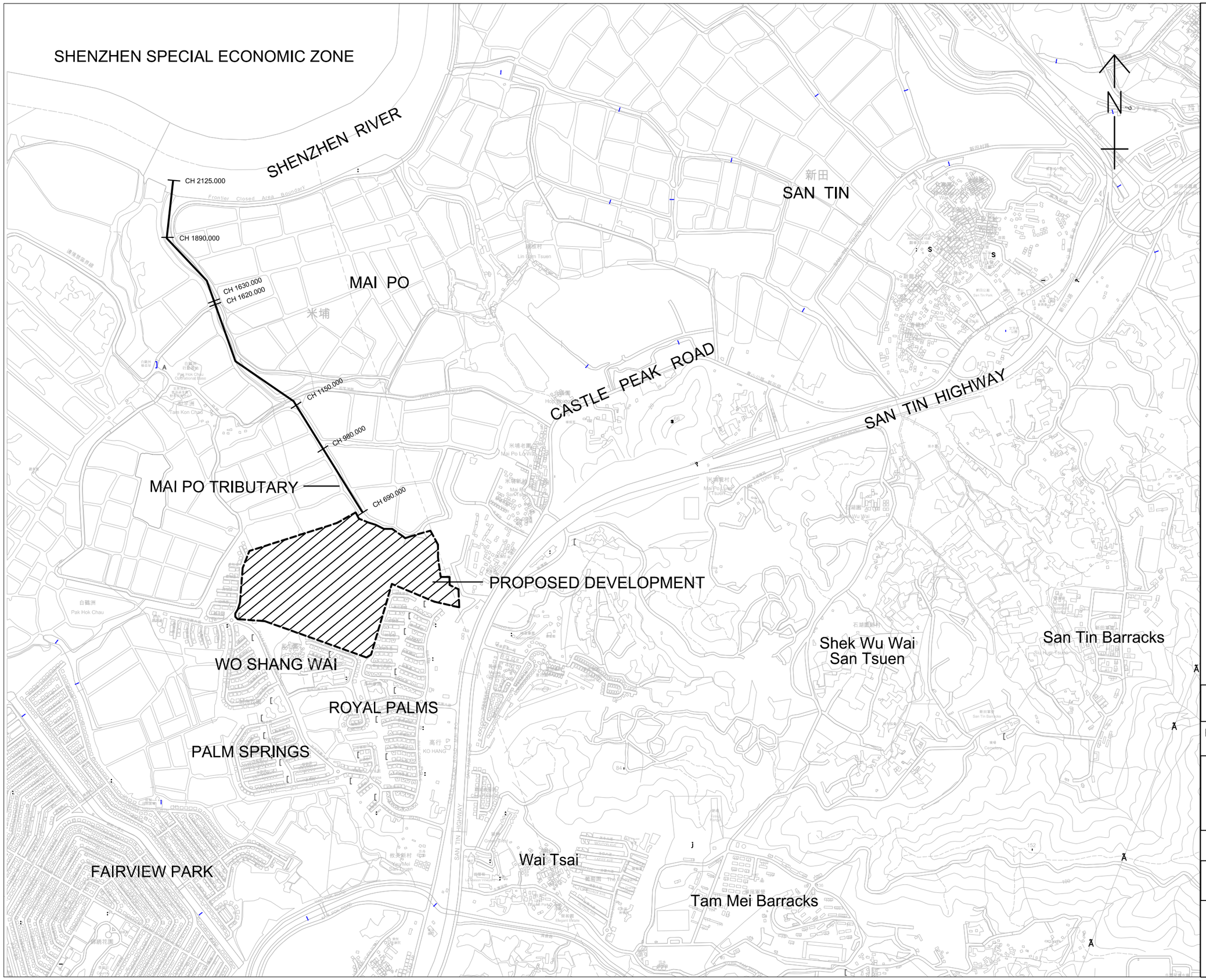
12.1.4 The DIA for the previously approved Section 16 Planning Application was approved for all the groundwork. The mitigation measures outlined in **Section 8** above are in line with the previous approved DIAs. Subsequent to the currently proposed revision of the Master Layout Plan, the DIA has been updated, and the same mitigation measures are incorporated. These proposed mitigation measures are sufficient to mitigate the potential drainage impacts of the change in master layout. It is concluded that the completion of the proposed development will not aggravate the flooding conditions around the Application Site.

12.1.5 Under an optional scenario as proposed in the Sewage Impact Assessment to manage the sewage generation from the proposed development, 3,779.16m^3/day of treated water from a temporary on-site sewage treatment plant within the Application Site will be discharged to Mai Po Tributary. Even under the worst case that this water will be discharged to Mai Po Tributary in 4 hours per day, the flow rate of the treated water of 0.26m^3/s from the on-site sewage treatment plant is included in the simulation and has no adverse impact on assessment results and water level of Mai Po River.

12.1.6 Temporary drainage arrangement within the site will be implemented during construction stage to avoid imposing unacceptable flood risk to the adjacent areas.

12.1.7 The Applicant will take up the maintenance responsibilities for the proposed drainage system inside the Application Site including the proposed main trunk box-culvert and designated drainage system for WSW Village and outfall structures.

Figures



LEGEND

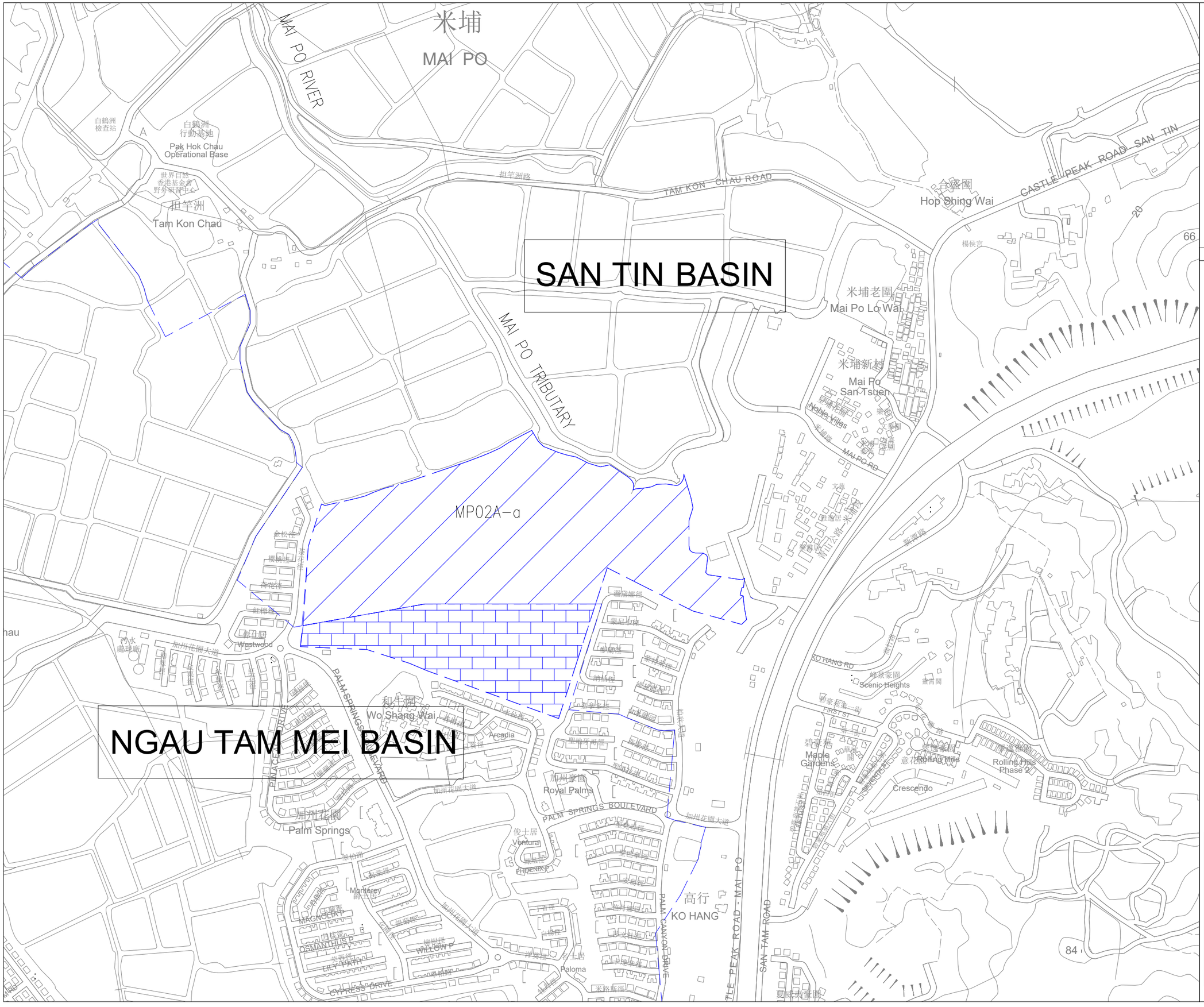
	PROPOSED DEVELOPMENT
CH690	RIVER CHAINAGE OF MAI PO RIVER DEFINED IN MIKE 11 MODEL

WSP HONG KONG LIMITED

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG

LOCATION PLAN OF PROPOSED DEVELOPMENT

FIGURE 1



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LOCATION PLAN

LEGENDS:

- SUB–CATCHMENT MP02A–a AS PER NORTHERN NEW TERRITORY DRAINAGE MASTER PLAN
- APPLICATION SITE WITHIN SAN TIN BASIN
- APPLICATION SITE WITHIN NGAU TAM MEI BASIN

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB–CATCHMENT PLAN OF MP02A–a

Drawing no.		Rev.
Figure 2		0
Drawn: JX	Date: AUG2024	Checked: – / Approved: –
Scale: 1:3000	Status:	

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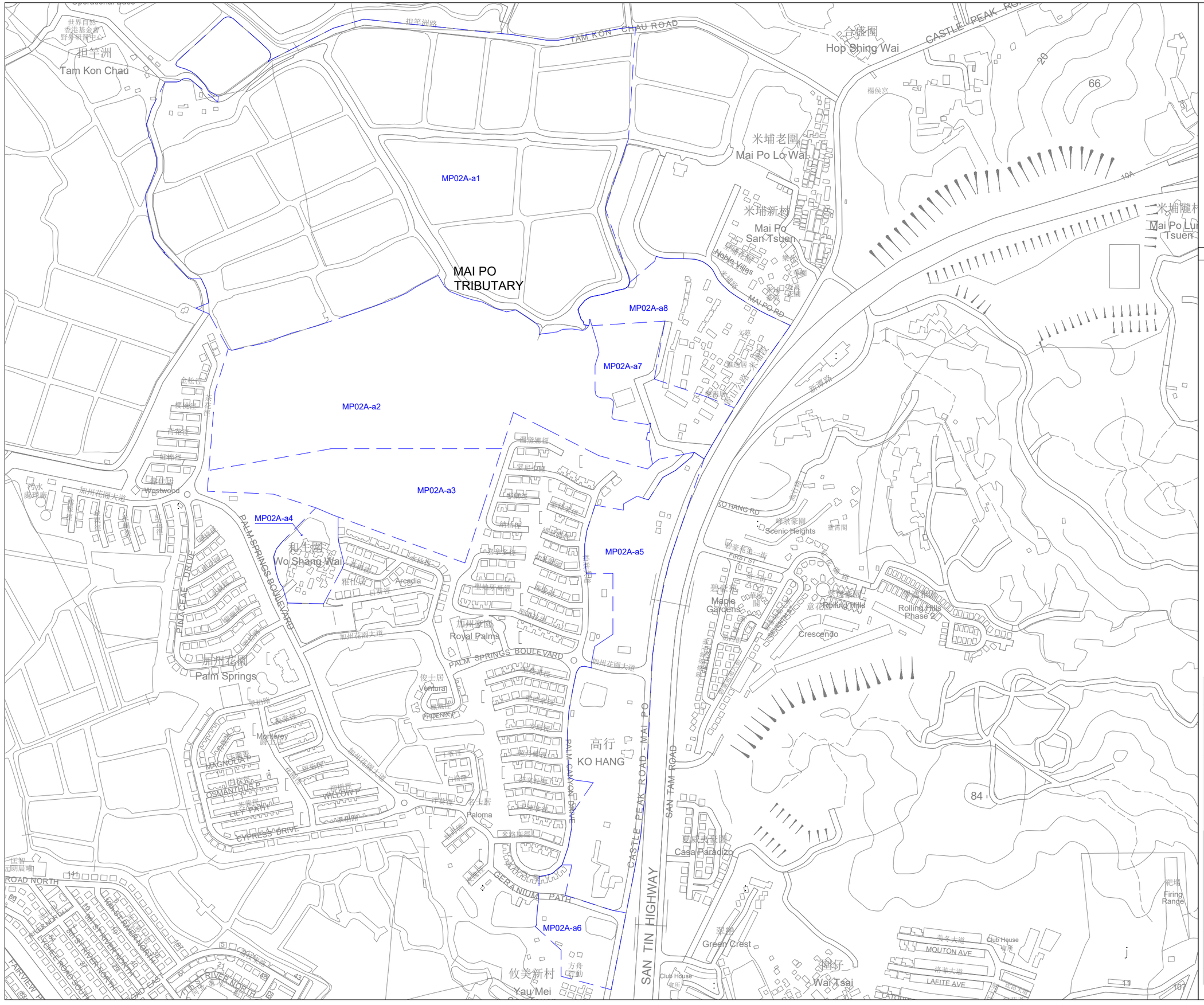

N

LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR PRE-DEVELOPMENT MODEL

Drawing no.		Rev.
Figure 4		0
Drawn: JX	Date: AUG2024	Checked: –	Approved: –
Scale: 1:3000		Status:	

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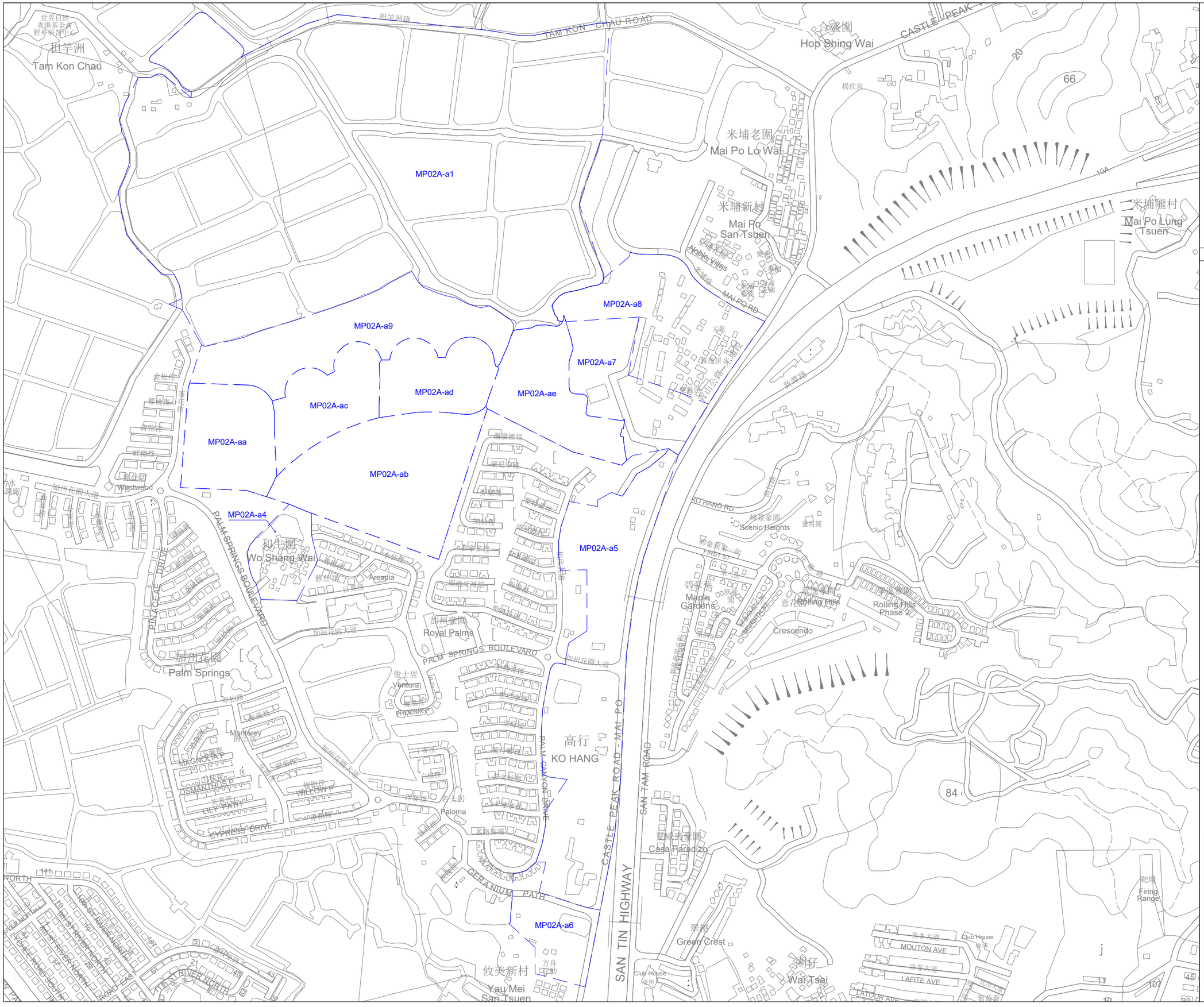

LOCATION PLAN

LEGENDS:

SUB-CATCHMENT BOUNDARY

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

SUB-CATCHMENT PLAN OF MP02A-a FOR POST-DEVELOPMENT MODEL

Drawing no.			Rev.
Figure 5			–
Drawn	Date	Checked	Approved
JX	–	–	–
Scale		Status	
1: 3000			

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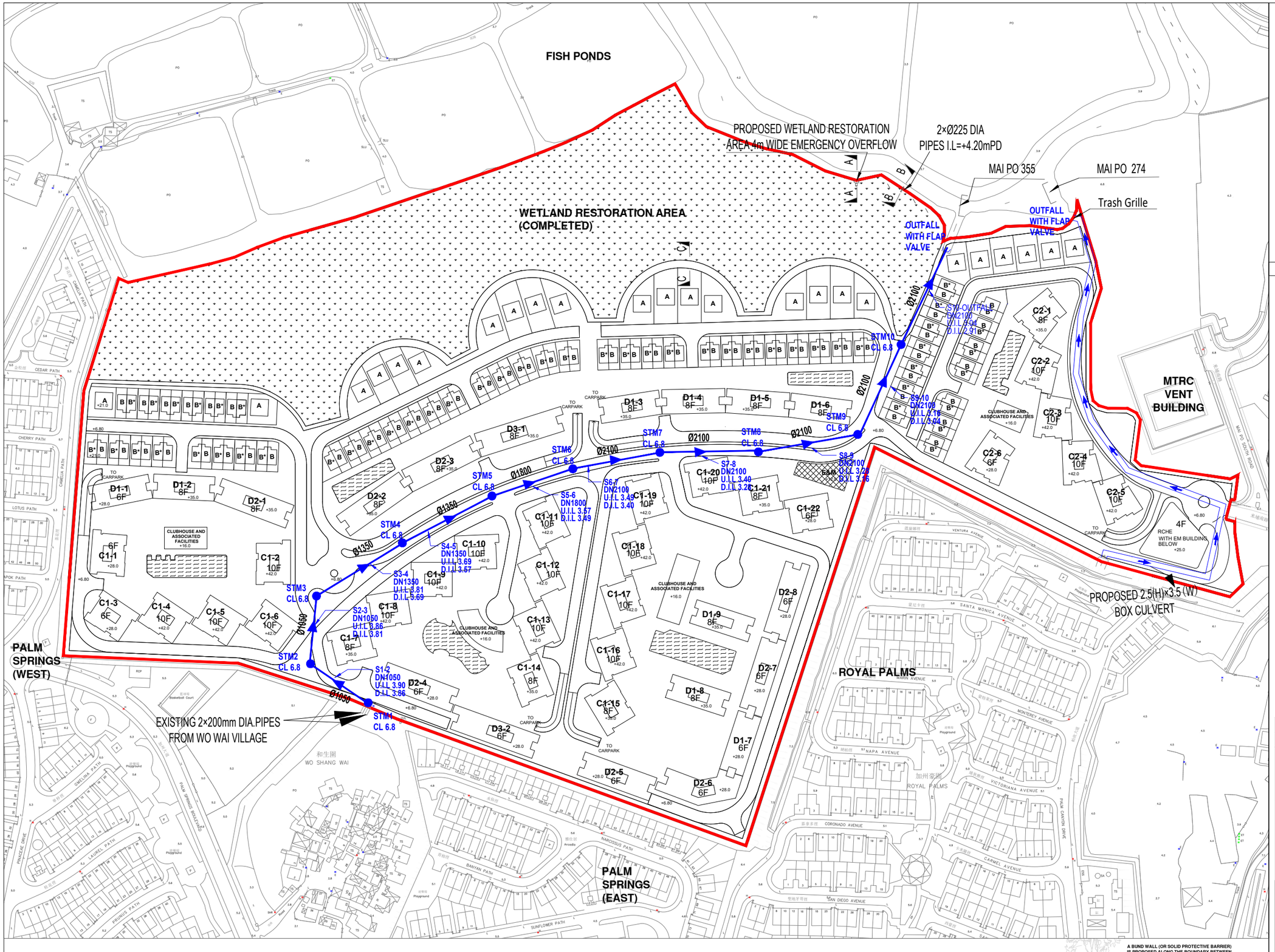

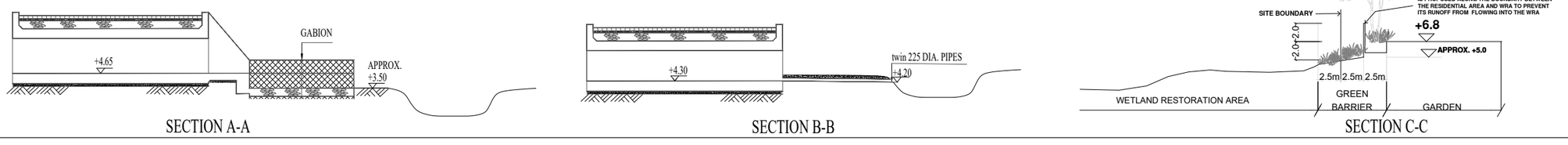

N

LOCATION PLAN

LEGENDS:

- APPLICATION SITE BOUNDARY
- PROPOSED MANHOLE
- Ø1800 — PROPOSED DRAINAGE SYSTEM
- PROPOSED 2.5(H)×3.5(W) BOX CULVERT
- S1-2 — STORM PIPE NUMBER
- U.I.L 3.28 — PIPE DIAMETER / UPSTREAM INVERT LEVEL (mPD)
- D.I.L 3.16 — DOWNSTREAM INVERT LEVEL (mPD)
- STM1 — STORM MANHOLE NUMBER
- CL 6.8 — COVER IEVEL (mPD)

Rev	Description	By	Date

Consultant

wsp

Project title

DRAINAGE IMPACT ASSESSMENT

To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101

Drawing title

PROPOSED DRAINAGE

Drawing no. Figure 6 | Rev.

Drawn	Date	Checked	Approved

Scale 1:1200 | Status

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Appendices

Appendix A

Approval Letters of Previous DIAs
in 2015, 2021 and 2024

規劃署

粉嶺、上水及元朗東規劃處
新界沙田上禾輋路1號
沙田政府合署12樓

By Post and Fax (2587 7068)
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
12/F., Sha Tin Government Offices,
1 Sheung Wo Che Road, Sha Tin, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/229

電話號碼 Tel. No. : 2158 6284

傳真機號碼 Fax No. : 3105 0057

17 December 2015

Masterplan Limited
Room 3516B, 35/F
China Merchants Tower, Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Mr. Ian Brownlee)

Dear Sir,

Planning Application No. A/YL-MP/229
Compliance with Approval Condition (d)

I refer to your submissions dated 13.4.2015, 6.7.2015 and 10.7.2015 for compliance with the approval condition (d) of the captioned application on "the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the Town Planning Board". The relevant departments have been consulted on your submission. Your submission is considered:

☑ Acceptable. The captioned condition **has been complied with**. Please find detailed comments of the Chief Engineer/Mainland North, Drainage Services Department (CE/MN, DSD), District Lands Officer/Yuen Long, Lands Department (DLO/YL, LandsD), Director of Agriculture, Fisheries and Conservation (DAFC) and Director of Environmental Protection (DEP) at **Appendix**.

☐ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement the accepted proposal for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Simon CHEUNG (Tel: 2158 6289) direct.

Yours faithfully,

(K.T. NG)
for District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

Encl.

城市規劃委員會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳 真 Fax: 2877 0245 / 2522 8426
電 話 Tel: 2231 4810
來函檔號 Your Reference:
覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/229

By Registered Post & Fax (2587 7068)

13 March 2015

Masterplan Ltd.
Rm 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: I.T. Brownlee)

Dear Sir/Madam,

Proposed Filling and Excavation of Land for House Development with Wetland Habitat in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots No. 43 S.A RP, 50 S.A and 50 RP in D.D. 101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 20.1.2015.

After giving consideration to the application, the Town Planning Board (the TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 27.2.2019; and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (q) below to the satisfaction of the Director of Planning or of the TPB;

(b) the interface arrangement for the Express Rail Link (XRL) project in terms of the permanent land take for Express Rail Link tunnels and structures and temporary land take for related construction to the satisfaction of the Director of Highways or of the TPB;

(c) the submission and implementation of a revised Landscape Master Plan including a tree preservation proposal to the satisfaction of the Director of Planning or of the TPB;

(d) the submission of a revised Drainage Impact Assessment (DIA), including flood relief mitigation measures, to the satisfaction of the Director of Drainage Services or of the TPB;

(e) in relation to (d) above, the implementation of a drainage proposal and other necessary flood relief mitigation measures identified in the revised DIA to the satisfaction of the Director of Drainage Services or of the TPB;

(f) the implementation of mitigation measures identified therein in the revised Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(g) the submission and implementation of a maintenance and management plan which covers implementation details and the estimated annual recurrent costs with breakdown required for maintaining the restored wetland area to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(h) the submission and implementation of a funding arrangement proposal for ensuring the long-term maintenance and management of the restored wetland area to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(i) as proposed by you, land exchange and/or lease modification for the proposed development if considered and approved by the Director of Lands, should not be executed prior to the compliance with condition (h) to the satisfaction of the Director of Environmental Protection and the Director of Agriculture, Fisheries and Conservation, or of the TPB;

(j) the design and provision of improvement measures at the junction of Palm Springs Boulevard and Castle Peak Road – Mai Po section to the satisfaction of the Commissioner for Transport or of the TPB;

(k) the design and provision of vehicle parking, motorcycle parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(l) the design and provision of the access connection between the development and the public road to the satisfaction of the Commissioner for Transport or of the TPB;

(m) the provision of emergency vehicular access, water supplies for fire-fighting and fire service installations to the satisfaction of the Director of Fire Services or of the TPB;

(n) the design and provision of mitigation measures to alleviate the visual impact of the noise barriers to the satisfaction of the Director of Planning or of the TPB;

(o) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB;

(p) the implementation of mitigation measures identified in the revised SIA to the satisfaction of the Director of Environmental Protection or of the TPB; and

(q) the implementation of sewage disposal arrangement including the interim on-site sewerage treatment plant, the reuse of treated effluent and the irrigation system, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you of the following:

(a) to note the suggestion of Members on the provision of a tree belt at the interface of the development portion and the wetland restoration area of the scheme to create a buffer area in between. As part of the Landscape Master Plan, you should liaise with the Planning Department regarding the design and implementation of the tree belt;

(b) the approval of the application does not imply that the proposed building design elements can fulfil the requirements under the Sustainable Building Design Guidelines and the relevant requirements under the lease, and that the proposed gross floor area (GFA) concession for the proposed development will be approved/granted by the Building Authority (BA). You should approach the Buildings Department (BD) and the Lands Department (LandsD) direct to obtain the necessary approval. If the building design elements and the GFA concession are not approved/granted by the BA and the Lands Authority and major changes to the current scheme are required, a fresh planning application to the TPB may be required;

(c) to note the comments of the District Lands Officer/Yuen Long, LandsD that with reference to Figure A3 of the Wetland Restoration and Creation Scheme, the Wetland Restoration Area boundary is modified. A proposed land exchange is being processed for the lots within the site based on the previous Application No. A/YL-MP/185. Should the TPB approve the application which cause amendments to the proposed land exchange, you are required to apply to LandsD for the proposed development in current scheme. However, there is no guarantee that such application (including the granting of any additional government land (GL)) will be approved. Such application will be dealt with by his department acting in the capacity as the landlord at his discretion, and if it is approved under such discretion, the approval would be subject to such terms and conditions including among others, the payment of premium and administrative fee as may be imposed by his department. The proposed storm water drain will connect to outfall beyond the site boundary. Should such drains encroach upon private land and GL, you should clearly indicate the whole alignment of such storm water drain connection, in particular the one connecting the existing outfall to Mai Po Tributary, and then obtain prior approval/consent from the relevant authorities before carrying out of the works. According to the layout plan of the preliminary interim sewage system design, there is no GL involved. However, you should consult his department if there is any works to be carried out on GL, if unavoidable;

(d) to note the comments of the Director of Environmental Protection (DEP) that this is a revised residential development scheme different from the layout shown in the Environmental Permit No. EP-311/2008/D issued under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). The proposed on-site wastewater treatment does not conform with Condition 5.13 of the Environmental Permit. You should be reminded to go through the statutory EIAO process should the current development scheme goes ahead;

(e) to note the comments of the Commissioner for Transport that you should take account of the segregation of vehicles and pedestrian in the detailed design during submission of the general building plan stage. He has no objection to the proposed basement carpark but the Transport Department's comment will be provided at the detailed design stage;

(f) to note the comments of the Chief Engineer/Railway Development, Railway Development Office, Highways Department that the site, in particular the site portion within Lot 43 S.A RP in D.D. 101, falls within the railway protection boundary of the Hong Kong Section of the XRL, which is now under construction. You should consult MTR Corporation Limited on the full details of the proposal and comply with their requirements with respect to the construction, operation, maintenance and safety of the XRL;

(g) to note the comments of the Chief Building Surveyor/New Territories West, BD that the access road linking the site and the Castle Peak Road shall be completed before the Occupation Permit application. In view of the size of the site, any internal streets/roads required under the Buildings Ordinance (BO) s.16(1)(p) may have to be deducted from site area for plot ratio/site coverage calculations under the BO. Recreational facilities and the proposed noise barriers, unless exempted, are accountable for GFA calculation under the BO. Filtration plant rooms for swimming pool at private houses are accountable for GFA calculation under the BO. Each phase of the proposed development should be self-sustainable under the BO. Your attention is drawn to the requirements on the provision of emergency vehicle access to all buildings to be erected on the site under Building (Planning) Regulations (B(P)R) 41D. The proposed open space should not be less than the requirements as stipulated in the second schedule of B(P)R. Application for exemption of carparking spaces from GFA calculation under the BO will be considered on the basis of the PNAP APP-2 during plan submission stage. The new quality and sustainable built environment (QBE) requirements are applicable to the site. In accordance with the Government's committed policy to implement building design to foster a QBE, the sustainable building design requirements (including building separation, building setback and greenery coverage) should be included, where possible, in the planning approval;

(h) to note the comments of the Chief Engineer/Mainland North, Drainage Services Department that he would reserve his comments until specific drainage proposal is submitted. You should be reminded that the SIA for the current application needs to meet the full satisfaction of DEP;

(i) to note the comments of the Chief Town Planner/Urban Design and Landscape, Planning Department (PlanD) that regarding communal open space calculation, you should be advised that the ancillary pedestrian route should be "within" the open space to be counted as part of the open space as per the Hong Kong Planning Standards and Guidelines (HKPSG). You should maximize the provision of greening, especially at-grade tree and shrub planting along roadside and clubhouses to improve the landscape and visual amenity of the development;

(j) to note the comments of the Chief Engineer/Development (2), Water Supplies Department (WSD) that for the provision of water supply to the development, you may need to extend your inside services to the nearest suitable government water mains for connection. You shall resolve any land matter (such as private lots) associated with the provision of water supply and shall be responsible for the construction, operation and maintenance of the inside services within the private lots to WSD's standard. Fresh water from government mains shall not be used for watering plant nurseries or landscape features purposes except with the written consent of the Water Authority. Consent to use fresh water from the mains for such purposes may be given on concessionary supply basis if an alternative supply is impracticable and evidence to that effect is offered to and accepted by the Water Authority. Such permission will be withdrawn if in the opinion of the Water Authority the supply situation requires it; and

(k) to note the comments of the Director of Electrical and Mechanical Services that for electricity safety, you shall approach the electricity supplier for the requisition of cable plans to find out whether there is any underground cable (and/or overhead line) within or in the vicinity of the site. For the site within the preferred working corridor of high voltage overhead lines at transmission voltage level 132kV and above as stipulated in the HKPSG published by PlanD, prior consultation and arrangement with the electricity supplier is necessary. Prior to establishing any structure within the site, you and/or your contractors shall liaise with the electricity supplier and, if necessary, ask the electricity supplier to divert the underground cable (and/or overhead line) away from the vicinity of the proposed structure. The "Code of Practice on Working near Electricity Supply Lines" established under the Electricity Supply Lines (Protection) Regulation shall be observed by you and your contractors when carrying out works in the vicinity of the electricity supply lines. For town gas safety, there is a high pressure town gas pipeline running along San Tin Highway and the site is in close proximity to the existing high pressure gas pipeline. He considers that given the application is a low density residential development (i.e. plot ratio is 0.4) and the minimum proximity distance of the proposed houses to the concerned gas pipeline is about 150m, it should not be a mandatory requirement for you to submit a risk assessment. Nevertheless, given that there is a town gas pipeline near to the proposed development, the project proponent should maintain liaison/coordination with the Hong Kong and China Gas Company Limited in respect of the exact location of existing or planned gas pipe routes/gas installations in the vicinity of the proposed works area and the minimum setback distance away from the gas pipes/gas installations if any excavation work is required during the design and construction stages of the development. The project proponent shall also note the requirements of the Electrical and Mechanical Services Department's 'Code of Practice on Avoiding Danger from Gas Pipes'.

If you wish to seek an extension of the validity of this permission, you may submit an application to the TPB for renewal of the permission no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider any application for renewal of permission if the time limit for commencement of development specified in the permission has already

expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35B and 36A for details. The Guidelines and application forms are available at the TPB's website (www.info.gov.hk/tpb/), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved scheme that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36A for details.

A copy of the TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) and the relevant extract of minutes of the TPB meeting held on 27.2.2015 are enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 8.4.2015). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. K.T. Ng of Fanling, Sheung Shui & Yuen Long East District Planning Office at 2158 6284. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Michael CHIU)
for Secretary, Town Planning Board

MC/DY/el

規劃署

粉嶺、上水及元朗東規劃處
新界荃灣青山公路388號
中染大廈22樓2202室

By Fax (2587 7068) and Post
Planning Department

Fanling, Sheung Shui &
Yuen Long East
District Planning Office
Unit 2202, 22/F., CDW Building,
388 Castle Peak Road, Tsuen Wan, N.T.

本函檔號 Your Reference

本署檔號 Our Reference ( ) in TPB/A/YL-MP/291

電話號碼 Tel. No.: 3168 4072

傳真機號碼 Fax No.: 3168 4074

12 May 2021

Masterplan Limited
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre, 200 Connaught Road Central
Hong Kong
(Attn: Mr. Ian BROWNLEE)

Dear Mr. BROWNLEE,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" zone, Lots 43 S.A RP, 50 S.A and 50 RP in D.D.101, Wo Shang Wai, Mai Po, Yuen Long
(Planning Application No. A/YL-MP/291)
Compliance with Approval Condition (c)

I refer to your submission dated 27.4.2021 for compliance with the captioned approval condition regarding the submission of a revised Drainage Impact Assessment (DIA). The relevant department has been consulted on your submission. Your submission is considered:

☐ Acceptable. The captioned condition **has been complied with**.

☑ Acceptable. Since the captioned condition requires both the submission and implementation of the proposal, it **has not been fully complied with**. Please proceed to implement and maintain the flood mitigation measures and provision of drainage facilities identified in the DIA for full compliance with the approval condition.

☐ Not acceptable. The captioned condition **has not been complied with**.

Should you have any queries on the comments, please contact Mr. Joshua YUEN (Tel: 2300 1235) of DSD directly.

Yours sincerely,

(Anthony LUK)
District Planning Officer/
Fanling, Sheung Shui and Yuen Long East
Planning Department

c.c.
CE/MN, DSD (Attn: Mr. Joshua YUEN)
CTP/TPB(2)

Internal
Site Record

AL/AC/AP

城 市 規 劃 委 員 會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳　真 Fax: 2877 0245 / 2522 8426
電　話 Tel: 2231 4810
來函檔號 Your Reference:

覆函請註明本會檔號
In reply please quote this ref.: TPB/A/YL-MP/344

By Post & Fax (2587 7068)

1 March 2024

Masterplan Ltd.
Room 3516B, 35/F, China Merchants Tower
Shun Tak Centre
200 Connaught Road Central
Hong Kong
(Attn.: Benson Poon)

Dear Sir/Madam,

Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme) in "Other Specified Uses" annotated "Comprehensive Development to include Wetland Restoration Area" Zone, Lots 50 S.A and 77 in D.D.101, Wo Shang Wai, Mai Po, Yuen Long

I refer to my letter to you dated 15.2.2024.

After giving consideration to the application, the Town Planning Board (TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 16.2.2028, and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the submission and implementation of a revised Master Layout Plan to take into account conditions (b) to (i) below to the satisfaction of the Director of Planning or of the TPB;

(b) the submission and implementation of a Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB;

(c) the implementation of drainage proposal identified in the accepted Drainage Impact Assessment to the satisfaction of the Director of Drainage Services or of the TPB;

(d) the implementation of the mitigation measures identified in the Ecological Impact Assessment to the satisfaction of the Director of Agriculture, Fisheries and Conservation or of the TPB;

(e) the design and provision of vehicular access, parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(f) the design and provision of improvement measures at the junction of Castle Peak Road - San Tin and Shek Wu Wai Road before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(g) the design and provision of improvement measures at the junction of Fairview Park Interchange, if deemed required by Transport Department, before the occupation of the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(h) the submission of a revised Sewerage Impact Assessment (SIA) to the satisfaction of the Director of Environmental Protection or of the TPB; and

(i) the implementation of sewage disposal arrangement identified in the revised SIA including the on-site sewerage treatment plant and the reuse of treated effluent, as proposed by you, to the satisfaction of the Director of Environmental Protection or of the TPB.

The TPB also agreed to advise you to note the advisory clauses as set out at the Appendix attached.

Regarding the determination on commencement of an approved development, please refer to TPB Guidelines No. 35D for details. If you wish to seek an extension of the validity of this permission, you may submit an application under 16A of the Town Planning Ordinance to the TPB no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider the application if the time limit for commencement of development specified in the permission has already expired at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35D and 36C for details. The Guidelines and application forms are available at the TPB's website (https://www.tpb.gov.hk/en/resources/index.html), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved development that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36C for details.

The TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) is available at this link (https://www.tpb.gov.hk/en/meetings/RNTPC/Agenda/736_rnt_agenda.html) and the relevant extract of minutes of the TPB meeting held on 16.2.2024 is enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 22.3.2024). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Mr. Kimson Chiu of Fanling, Sheung Shui & Yuen Long East District Planning Office at 3168 4033. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Leticia LEUNG)
for Secretary, Town Planning Board

LL/CN/cl

List of Government Department Contacts

(Application No. A/YL-MP/344)

部門 Department	辦事處 Office	聯絡人姓名 Name of Contact Person	電話號碼 Telephone No.	傳真號碼 Facsimile No.
漁農自然護理署 Agriculture, Fisheries and Conservation Department	自然護理組(元朗) Nature Conservation Section (Yuen Long)	黃金欣博士 Dr. WONG Kam Yan, Azaria	2150 6932	2377 4427
渠務署 Drainage Services Department	新界北渠務部 Mainland North Division	梁長政先生 Mr. LEONG Cheung Ching	2300 1432	2770 4761
環境保護署 Environmental Protection Department	環境評估科 Environmental Assessment Division	陳麗薇女士 Ms. CHAN Lai Mei, Jolitta	2835 1112	2591 0558
運輸署 Transport Department	交通工程(新界西)部 Traffic Engineering (NTW) Division	梁志江先生 Mr. LEUNG Chi Kong, Donald	2399 2778	2381 3799

Appendix B

Master Layout Plan of the Proposed Development

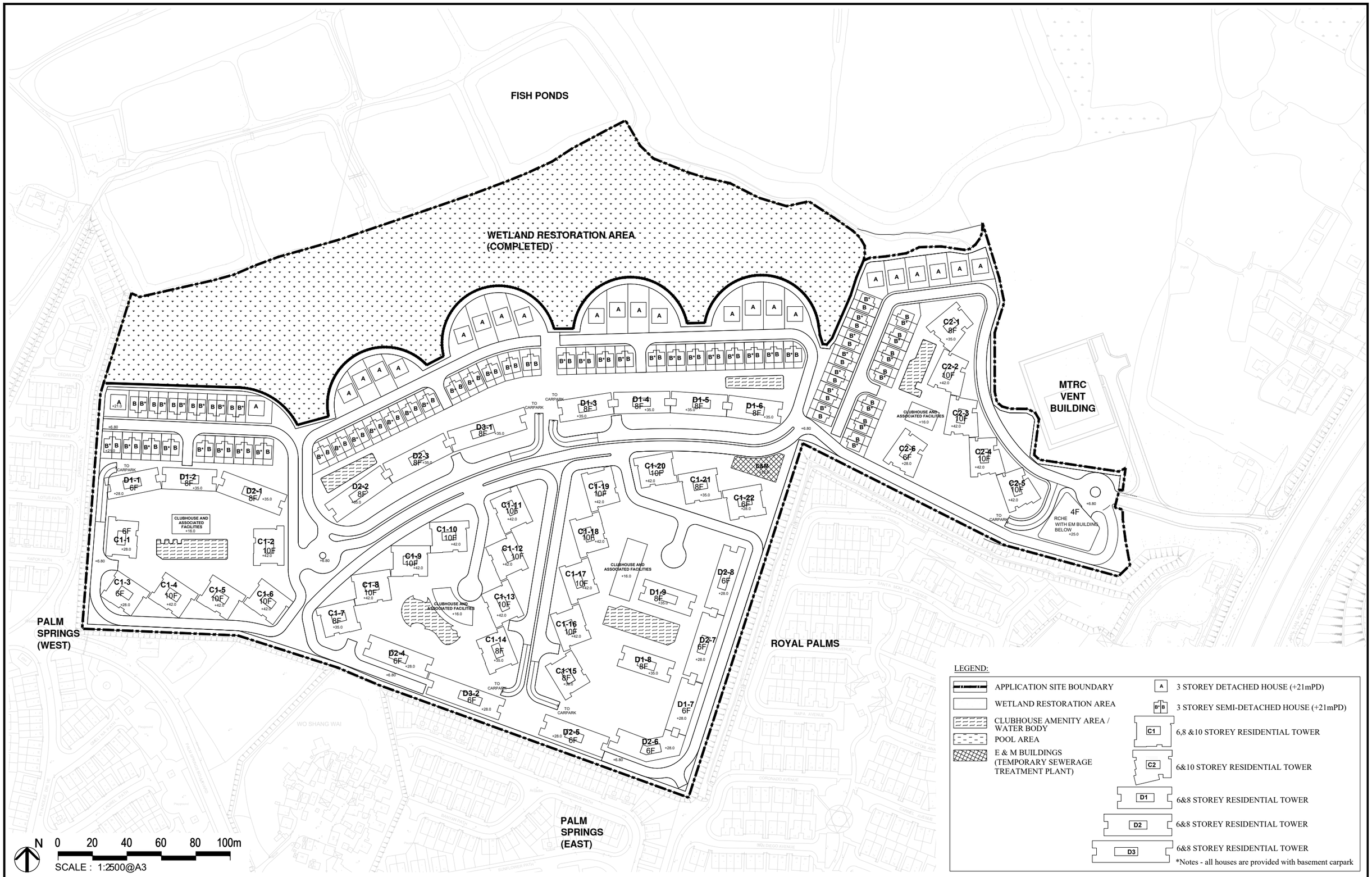


Figure 3: Revised Master Layout Plan in this Amendment Application

LWK +PARTNERS

1:2500 in A3
DWG. No. : 3809-003

Appendix C

Site Visit Photo



Figure 1: Fishpond in WSW village and pump panel


Figure 2: Current inlet of rising mains to Application Site



Figure 3: Bund along Application Site Boundary



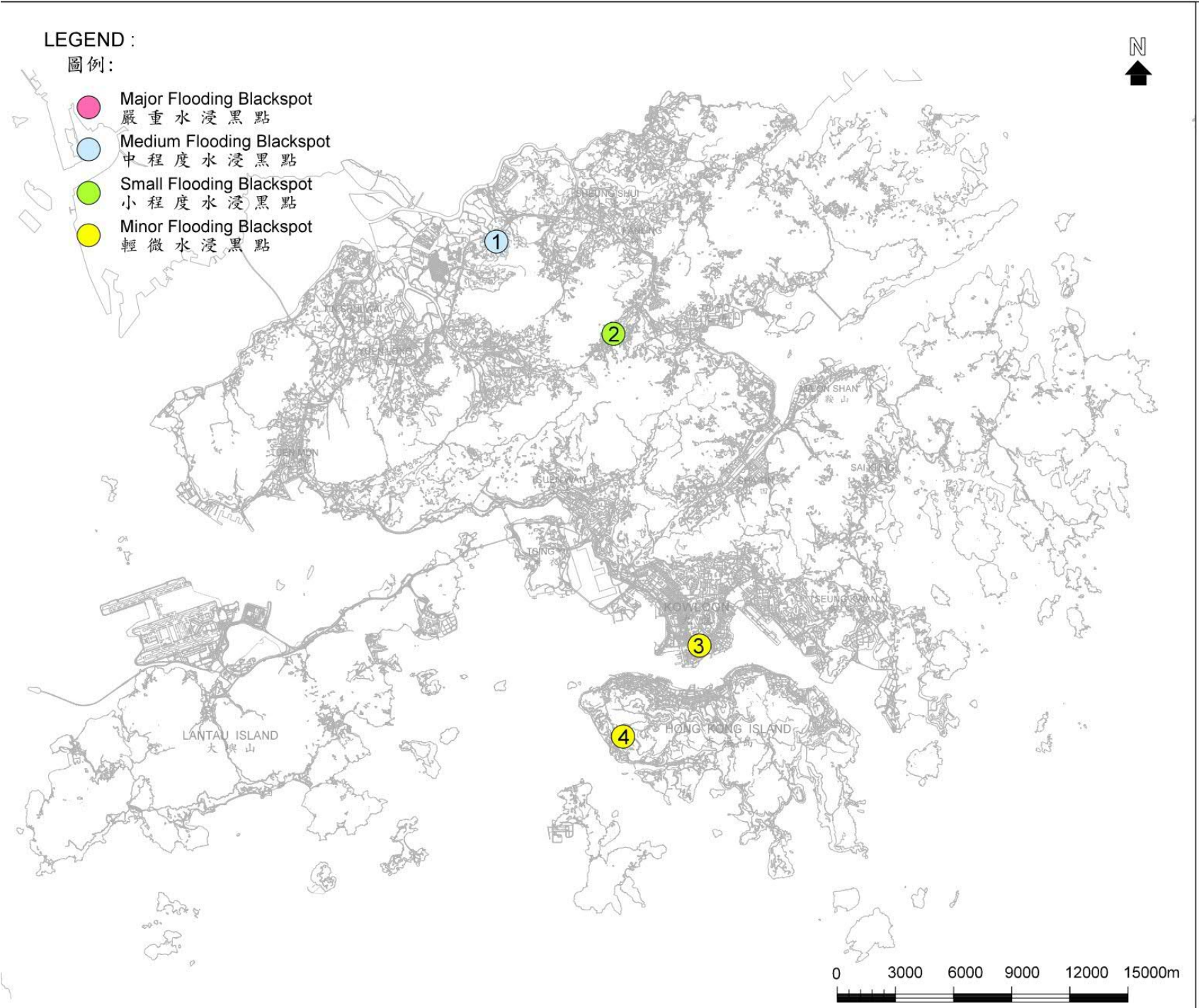
Figure 4: Outlet of triple 1350mm dia. pipes before Application Site



Figure 5: Inlet of triple 1350mm dia. Pipes to east portion of Application Site

Appendix D

Location of DSD Flooding Blackspots
(Information Extracted from DSD Website)



Flooding Blackspots
水浸黑點

No. 編號	Location 地點
1	Shek Wu Wai, San Tin 新田石湖圍
2	Lam Tsuen Valley Basin 林村谷盆地
3	Chatham Road South (Granville Road to Austin Avenue) 漆咸道南 (加連威老道和柯士甸路之間)
4	Pok Fu Lam Village 薄扶林村

Remarks :

The DSD blackspots list and location map are produced based on previous flooding records and complaints received by DSD for monitoring the maintenance and mitigation measures to alleviate flooding at the blackspots. Locations susceptible to flooding problems dominated by tidal influence were not included. The blackspots list and maps should not be used as an indication of the actual or hidden flood risk at any particular location in Hong Kong.

備註：

渠務署水浸黑點名單及位置圖是根據我們以往的水浸記錄及收到的水浸投訴編制而成，用以監察該地點維修及防洪措施的進展，一些純粹因潮漲引發水浸的地點並未包括在內。水浸黑點名單及位置圖並不適用於顯示本港任何地方的實際或隱藏水浸風險。

Drawing title

Flooding Blackspots as at March 2024
水浸黑點(2024年3月情況)

Drawing no.	Scale	Date
DLD 4012D	A4 (1:300000)	Mar 2024

Office
LAND DRAINAGE DIVISION

DRAINAGE SERVICES DEPARTMENT
HONG KONG

Appendix E

Synthetic Rainfall Profile and
Its Calculation Example

Design 4-hr Rainfall Profile

Rainfall intensity is calculated according to Section 4.3.5 of SDM as below

Rain Storm Return / Period Storm Constant	2yr	10yr	50yr	200yr
a=	446.1	485	505.5	508.8
b=	3.38	3.11	3.29	3.46
c=	0.463	0.397	0.355	0.322

Rainfall Intensity(mm/hr) I =

$$F(t) = \begin{cases} \dfrac{a\left[b + 2(1-c)t\right]}{(2t+b)^{(c+1)}} & , \quad 0 \le t \le \dfrac{t_d}{2} \\ F(-t) & , \quad -\dfrac{t_d}{2} \le t \le 0 \end{cases}$$

Rainfall Depth (mm) =28.1%*[Rainfall Intensity/60]

t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)				t	Time Series	Rainfall Depth (mm)			
		2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr			2yr	10yr	50yr	200yr
120	0:00:00	0.41	0.71	1.00	1.26	70	0:50:00	0.52	0.88	1.21	1.51	20	1:40:00	0.95	1.47	1.90	2.27	30	2:30:00	0.78	1.24	1.64	1.99	80	3:20:00	0.49	0.84	1.15	1.44
119	0:01:00	0.41	0.71	1.00	1.27	69	0:51:00	0.53	0.89	1.22	1.51	19	1:41:00	0.98	1.50	1.94	2.31	31	2:31:00	0.77	1.23	1.62	1.96	81	3:21:00	0.49	0.83	1.15	1.44
118	0:02:00	0.41	0.72	1.00	1.27	68	0:52:00	0.53	0.89	1.22	1.52	18	1:42:00	1.00	1.53	1.98	2.35	32	2:32:00	0.76	1.21	1.60	1.94	82	3:22:00	0.49	0.83	1.14	1.43
117	0:03:00	0.41	0.72	1.01	1.27	67	0:53:00	0.53	0.90	1.23	1.53	17	1:43:00	1.03	1.57	2.02	2.39	33	2:33:00	0.75	1.20	1.59	1.92	83	3:23:00	0.48	0.82	1.14	1.42
116	0:04:00	0.41	0.72	1.01	1.28	66	0:54:00	0.54	0.90	1.24	1.53	16	1:44:00	1.06	1.61	2.07	2.44	34	2:34:00	0.74	1.18	1.57	1.91	84	3:24:00	0.48	0.82	1.13	1.42
115	0:05:00	0.41	0.72	1.01	1.28	65	0:55:00	0.54	0.91	1.24	1.54	15	1:45:00	1.10	1.65	2.11	2.50	35	2:35:00	0.73	1.17	1.55	1.89	85	3:25:00	0.48	0.82	1.13	1.41
114	0:06:00	0.42	0.73	1.02	1.28	64	0:56:00	0.55	0.92	1.25	1.55	14	1:46:00	1.13	1.70	2.17	2.55	36	2:36:00	0.72	1.15	1.54	1.87	86	3:26:00	0.48	0.81	1.12	1.41
113	0:07:00	0.42	0.73	1.02	1.29	63	0:57:00	0.55	0.92	1.26	1.56	13	1:47:00	1.18	1.75	2.23	2.62	37	2:37:00	0.71	1.14	1.52	1.85	87	3:27:00	0.47	0.81	1.12	1.40
112	0:08:00	0.42	0.73	1.02	1.29	62	0:58:00	0.55	0.93	1.26	1.57	12	1:48:00	1.22	1.81	2.30	2.69	38	2:38:00	0.70	1.13	1.51	1.84	88	3:28:00	0.47	0.81	1.11	1.40
111	0:09:00	0.42	0.73	1.03	1.30	61	0:59:00	0.56	0.93	1.27	1.57	11	1:49:00	1.28	1.88	2.37	2.76	39	2:39:00	0.69	1.12	1.49	1.82	89	3:29:00	0.47	0.80	1.11	1.39
110	0:10:00	0.42	0.74	1.03	1.30	60	1:00:00	0.56	0.94	1.28	1.58	10	1:50:00	1.34	1.95	2.45	2.85	40	2:40:00	0.68	1.11	1.48	1.81	90	3:30:00	0.47	0.80	1.11	1.39
109	0:11:00	0.43	0.74	1.03	1.30	59	1:01:00	0.57	0.95	1.29	1.59	9	1:51:00	1.41	2.04	2.55	2.95	41	2:41:00	0.67	1.10	1.47	1.79	91	3:31:00	0.46	0.79	1.10	1.38
108	0:12:00	0.43	0.74	1.04	1.31	58	1:02:00	0.57	0.95	1.29	1.60	8	1:52:00	1.49	2.14	2.66	3.07	42	2:42:00	0.67	1.08	1.45	1.78	92	3:32:00	0.46	0.79	1.10	1.38
107	0:13:00	0.43	0.74	1.04	1.31	57	1:03:00	0.58	0.96	1.30	1.61	7	1:53:00	1.59	2.26	2.80	3.21	43	2:43:00	0.66	1.07	1.44	1.76	93	3:33:00	0.46	0.79	1.09	1.37
106	0:14:00	0.43	0.75	1.04	1.32	56	1:04:00	0.58	0.97	1.31	1.62	6	1:54:00	1.72	2.41	2.96	3.37	44	2:44:00	0.65	1.06	1.43	1.75	94	3:34:00	0.46	0.78	1.09	1.37
105	0:15:00	0.43	0.75	1.05	1.32	55	1:05:00	0.59	0.97	1.32	1.63	5	1:55:00	1.87	2.60	3.16	3.58	45	2:45:00	0.65	1.05	1.42	1.74	95	3:35:00	0.45	0.78	1.08	1.36
104	0:16:00	0.43	0.75	1.05	1.32	54	1:06:00	0.59	0.98	1.33	1.64	4	1:56:00	2.08	2.84	3.42	3.84	46	2:46:00	0.64	1.05	1.41	1.73	96	3:36:00	0.45	0.78	1.08	1.36
103	0:17:00	0.44	0.76	1.05	1.33	53	1:07:00	0.60	0.99	1.34	1.65	3	1:57:00	2.38	3.18	3.77	4.19	47	2:47:00	0.63	1.04	1.40	1.71	97	3:37:00	0.45	0.77	1.08	1.35
102	0:18:00	0.44	0.76	1.06	1.33	52	1:08:00	0.60	1.00	1.35	1.66	2	1:58:00	2.83	3.69	4.29	4.71	48	2:48:00	0.63	1.03	1.39	1.70	98	3:38:00	0.45	0.77	1.07	1.35
101	0:19:00	0.44	0.76	1.06	1.34	51	1:09:00	0.61	1.00	1.36	1.67	1	1:59:00	3.62	4.58	5.17	5.55	49	2:49:00	0.62	1.02	1.38	1.69	99	3:39:00	0.44	0.77	1.07	1.35
100	0:20:00	0.44	0.76	1.06	1.34	50	1:10:00	0.61	1.01	1.37	1.68	0	2:00:00	5.42	6.60	7.07	7.28	50	2:50:00	0.61	1.01	1.37	1.68	100	3:40:00	0.44	0.76	1.06	1.34
99	0:21:00	0.44	0.77	1.07	1.35	49	1:11:00	0.62	1.02	1.38	1.69	1	2:01:00	3.62	4.58	5.17	5.55	51	2:51:00	0.61	1.00	1.36	1.67	101	3:41:00	0.44	0.76	1.06	1.34
98	0:22:00	0.45	0.77	1.07	1.35	48	1:12:00	0.63	1.03	1.39	1.70	2	2:02:00	2.83	3.69	4.29	4.71	52	2:52:00	0.60	1.00	1.35	1.66	102	3:42:00	0.44	0.76	1.06	1.33
97	0:23:00	0.45	0.77	1.08	1.35	47	1:13:00	0.63	1.04	1.40	1.71	3	2:03:00	2.38	3.18	3.77	4.19	53	2:53:00	0.60	0.99	1.34	1.65	103	3:43:00	0.44	0.76	1.05	1.33
96	0:24:00	0.45	0.78	1.08	1.36	46	1:14:00	0.64	1.05	1.41	1.73	4	2:04:00	2.08	2.84	3.42	3.84	54	2:54:00	0.59	0.98	1.33	1.64	104	3:44:00	0.43	0.75	1.05	1.32
95	0:25:00	0.45	0.78	1.08	1.36	45	1:15:00	0.65	1.05	1.42	1.74	5	2:05:00	1.87	2.60	3.16	3.58	55	2:55:00	0.59	0.97	1.32	1.63	105	3:45:00	0.43	0.75	1.05	1.32
94	0:26:00	0.46	0.78	1.09	1.37	44	1:16:00	0.65	1.06	1.43	1.75	6	2:06:00	1.72	2.41	2.96	3.37	56	2:56:00	0.58	0.97	1.31	1.62	106	3:46:00	0.43	0.75	1.04	1.32
93	0:27:00	0.46	0.79	1.09	1.37	43	1:17:00	0.66	1.07	1.44	1.76	7	2:07:00	1.59	2.26	2.80	3.21	57	2:57:00	0.58	0.96	1.30	1.61	107	3:47:00	0.43	0.74	1.04	1.31
92	0:28:00	0.46	0.79	1.10	1.38	42	1:18:00	0.67	1.08	1.45	1.78	8	2:08:00	1.49	2.14	2.66	3.07	58	2:58:00	0.57	0.95	1.29	1.60	108	3:48:00	0.43	0.74	1.04	1.31
91	0:29:00	0.46	0.79	1.10	1.38	41	1:19:00	0.67	1.10	1.47	1.79	9	2:09:00	1.41	2.04	2.55	2.95	59	2:59:00	0.57	0.95	1.29	1.59	109	3:49:00	0.43	0.74	1.03	1.30
90	0:30:00	0.47	0.80	1.11	1.39	40	1:20:00	0.68	1.11	1.48	1.81	10	2:10:00	1.34	1.95	2.45	2.85	60	3:00:00	0.56	0.94	1.28	1.58	110	3:50:00	0.42	0.74	1.03	1.30
89	0:31:00	0.47	0.80	1.11	1.39	39	1:21:00	0.69	1.12	1.49	1.82	11	2:11:00	1.28	1.88	2.37	2.76	61	3:01:00	0.56	0.93	1.27	1.57	111	3:51:00	0.42	0.73	1.03	1.30
88	0:32:00	0.47	0.81	1.11	1.40	38	1:22:00	0.70	1.13	1.51	1.84	12	2:12:00	1.22	1.81	2.30	2.69	62	3:02:00	0.55	0.93	1.26	1.57	112	3:52:00	0.42	0.73	1.02	1.29
87	0:33:00	0.47	0.81	1.12	1.40	37	1:23:00	0.71	1.14	1.52	1.85	13	2:13:00	1.18	1.75	2.23	2.62	63	3:03:00	0.55	0.92	1.26	1.56	113	3:53:00	0.42	0.73	1.02	1.29
86	0:34:00	0.48	0.81	1.12	1.41	36	1:24:00	0.72	1.15	1.54	1.87	14	2:14:00	1.13	1.70	2.17	2.55	64	3:04:00	0.55	0.92	1.25	1.55	114	3:54:00	0.42	0.73	1.02	1.28
85	0:35:00	0.48	0.82	1.13	1.41	35	1:25:00	0.73	1.17	1.55	1.89	15	2:15:00	1.10	1.65	2.11	2.50	65	3:05:00	0.54	0.91	1.24	1.54	115	3:55:00	0.41	0.72	1.01	1.28
84	0:36:00	0.48	0.82	1.13	1.42	34	1:26:00	0.74	1.18	1.57	1.91	16	2:16:00	1.06	1.61	2.07	2.44	66	3:06:00	0.54	0.90	1.24	1.53	116	3:56:00	0.41	0.72	1.01	1.28
83	0:37:00	0.48	0.82	1.14	1.42	33	1:27:00	0.75	1.20	1.59	1.92	17	2:17:00	1.03	1.57	2.02	2.39	67	3:07:00	0.53	0.90	1.23	1.53	117	3:57:00	0.41	0.72	1.01	1.27
82	0:38:00	0.49	0.83	1.14	1.43	32	1:28:00	0.76	1.21	1.60	1.94	18	2:18:00	1.00	1.53	1.98	2.35	68	3:08:00	0.53	0.89	1.22	1.52	118	3:58:00	0.41	0.72	1.00	1.27
81	0:39:00	0.49	0.83	1.15	1.44	31	1:29:00	0.77	1.23	1.62	1.96	19	2:19:00	0.98	1.50	1.94	2.31	69	3:09:00	0.53	0.89	1.22	1.51	119	3:59:00	0.41	0.71	1.00	1.27
80	0:40:00	0.49	0.84	1.15	1.44	30	1:30:00	0.78	1.24	1.64	1.99	20	2:20:00	0.95	1.47	1.90	2.27	70	3:10:00	0.52	0.88	1.21	1.51	120	4:00:00	0.41	0.71	1.00	1.26
79	0:41:00	0.49	0.84	1.16	1.45	29	1:31:00	0.80	1.26	1.66	2.01	21	2:21:00	0.93	1.44	1.87	2.23	71	3:11:00	0.52	0.88	1.20	1.50						
78	0:42:00	0.50	0.85	1.16	1.45	28	1:32:00	0.81	1.28	1.68	2.03	22	2:22:00	0.91	1.41	1.84	2.20	72	3:12:00	0.52	0.87	1.20	1.49						
77	0:43:00	0.50	0.85	1.17	1.46	27	1:33:00	0.82	1.30	1.71	2.06	23	2:23:00	0.89	1.39	1.81	2.17	73	3:13:00	0.51	0.87	1.19	1.48						
76	0:44:00	0.50	0.85	1.17	1.47	26	1:34:00	0.84	1.32	1.73	2.08	24	2:24:00	0.87	1.36	1.78	2.14	74	3:14:00	0.51	0.86	1.19	1.48						
75	0:45:00	0.51	0.86	1.18	1.47	25	1:35:00	0.86	1.34	1.75	2.11	25	2:25:00	0.86	1.34	1.75	2.11	75	3:15:00	0.51	0.86	1.18	1.47	**4-hr Total Rainfall Depth(mm)**		**180.44**	**281.91**	**369.83**	**446.05**
74	0:46:00	0.51	0.86	1.19	1.48	24	1:36:00	0.87	1.36	1.78	2.14	26	2:26:00	0.84	1.32	1.73	2.08	76	3:16:00	0.50	0.85	1.17	1.47						
73	0:47:00	0.51	0.87	1.19	1.48	23	1:37:00	0.89	1.39	1.81	2.17	27	2:27:00	0.82	1.30	1.71	2.06	77	3:17:00	0.50	0.85	1.17	1.46						
72	0:48:00	0.52	0.87	1.20	1.49	22	1:38:00	0.91	1.41	1.84	2.20	28	2:28:00	0.81	1.28	1.68	2.03	78	3:18:00	0.50	0.85	1.16	1.45						
71	0:49:00	0.52	0.88	1.20	1.50	21	1:39:00	0.93	1.44	1.87	2.23	29	2:29:00	0.80	1.26	1.66	2.01	79	3:19:00	0.49	0.84	1.16	1.45						

Noted:

i. The storm constants are based on the SDM Corrigendum No. 1/2024

ii. The climate change effect is adopted in accordance with the DSD-SDM. A total increase of 28.1% in rainfall is added to above four design rainfall profiles, including 16% increase due to climate change up to end of 21st Century as per Table 28 of the SDM Corrigendum No. 1/2022 and 12.1% increase for design allowance as per Table 31 of the SDM Corrigendum No. 1/2022.

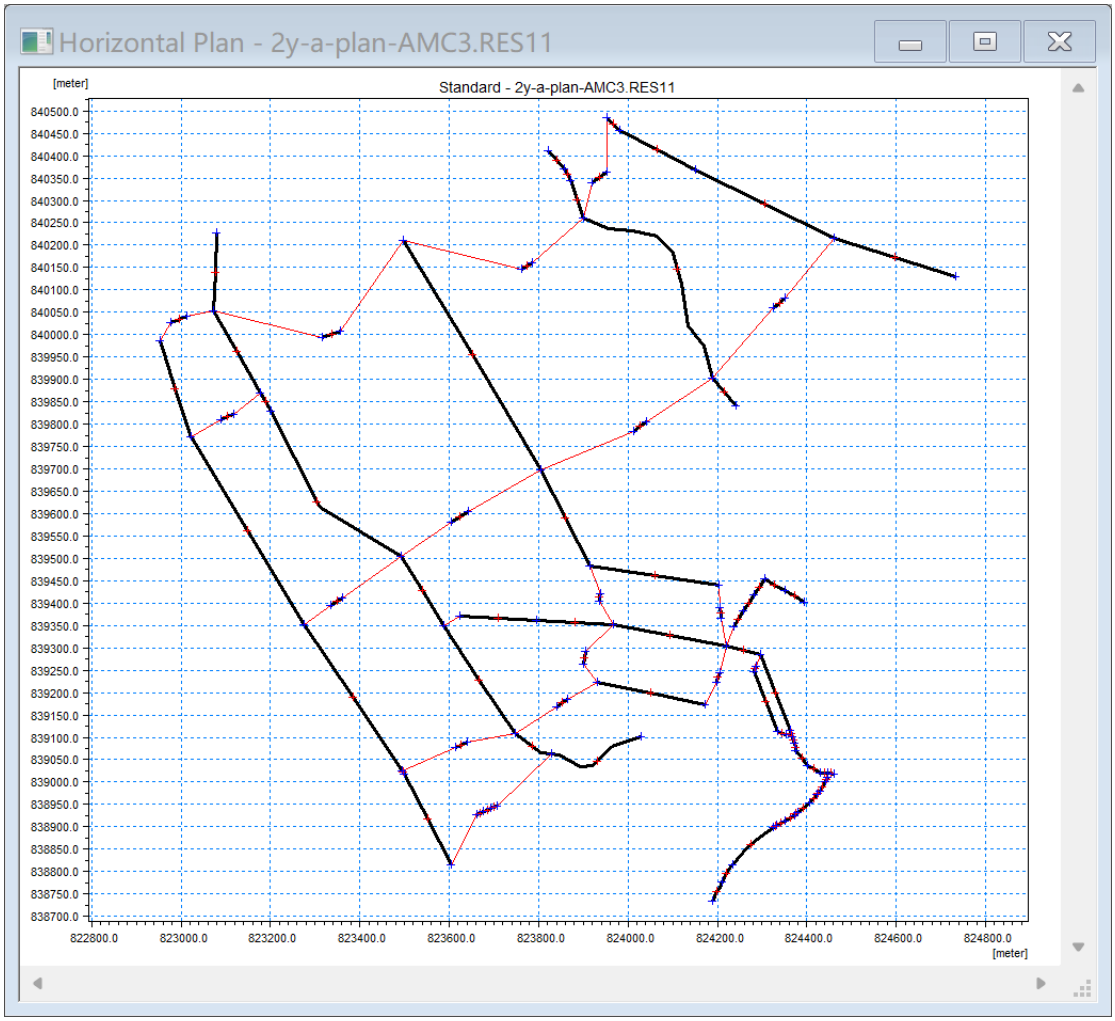
Calculational Examples：1 in 2yr 0:00:00(t=120) Rainfall Depth =28.1%*[446.1*[3.38+2*(1-0.463)*120]/(2*120+3.38)$^{0.463+1}$]/60=0.41 (mm)

Appendix F

Catchment Characteristic Input for
MP02A-A1 to A8 and AA-AE
(Information Extracted from Mike11 RR Model)
&
Modelling settings in Mike 11 for Wetland
Restoration Area

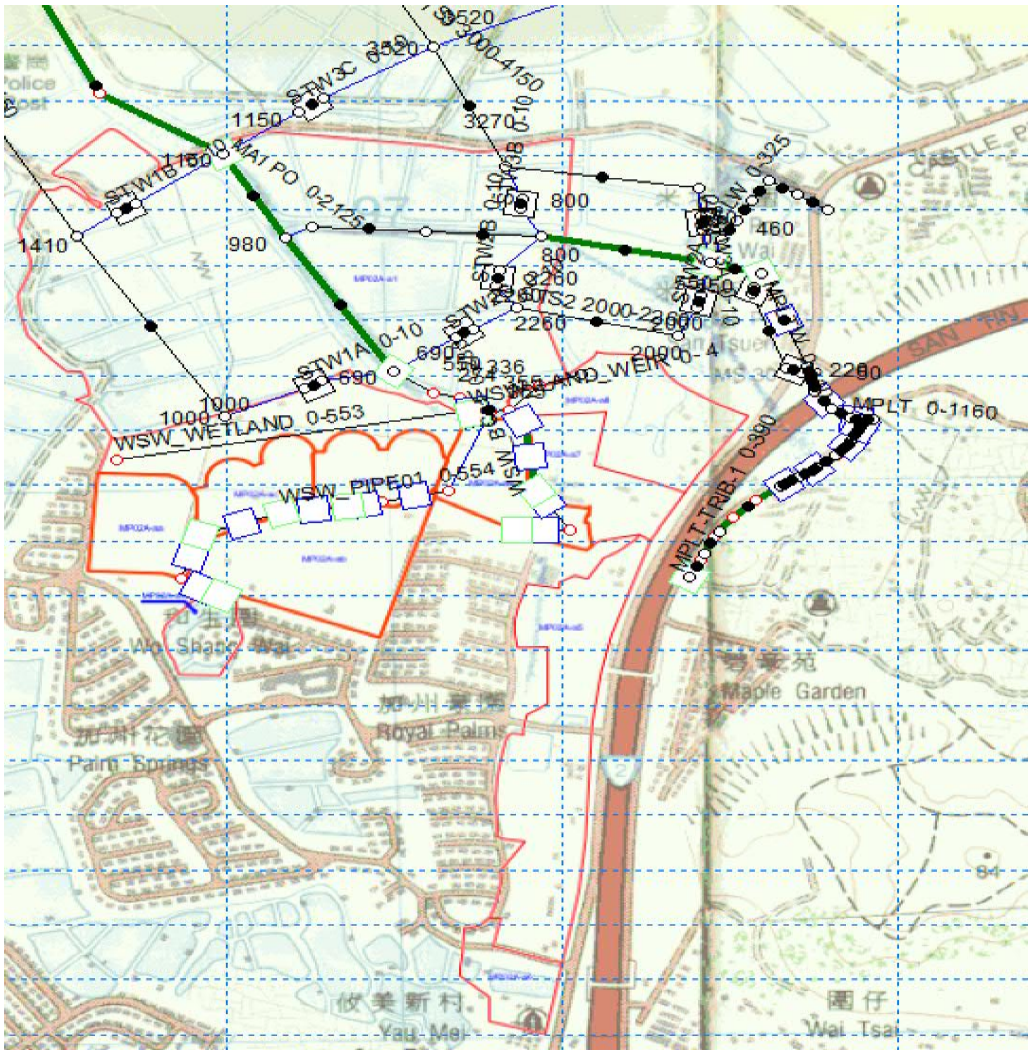
Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Drainage Network



Catchment Characteristic Input in Mike 11 Hydraulic Model

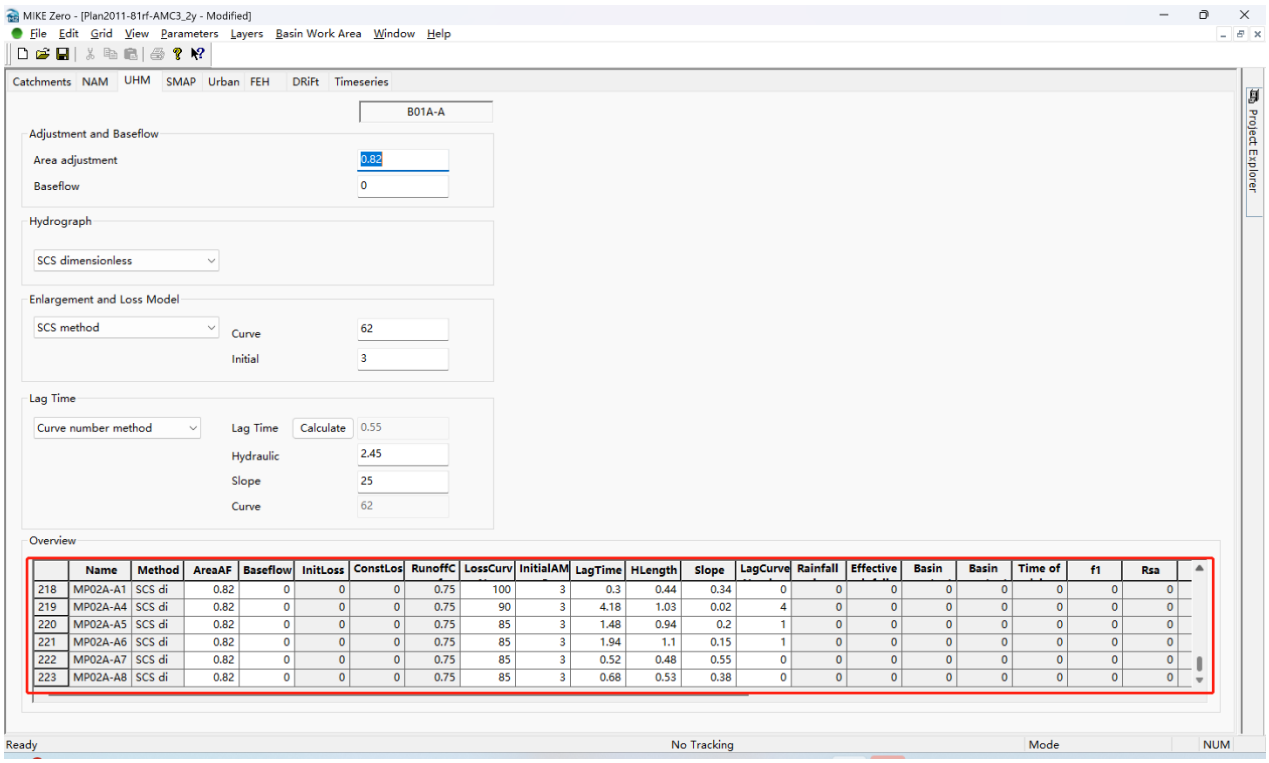
Post-Development Drainage Network



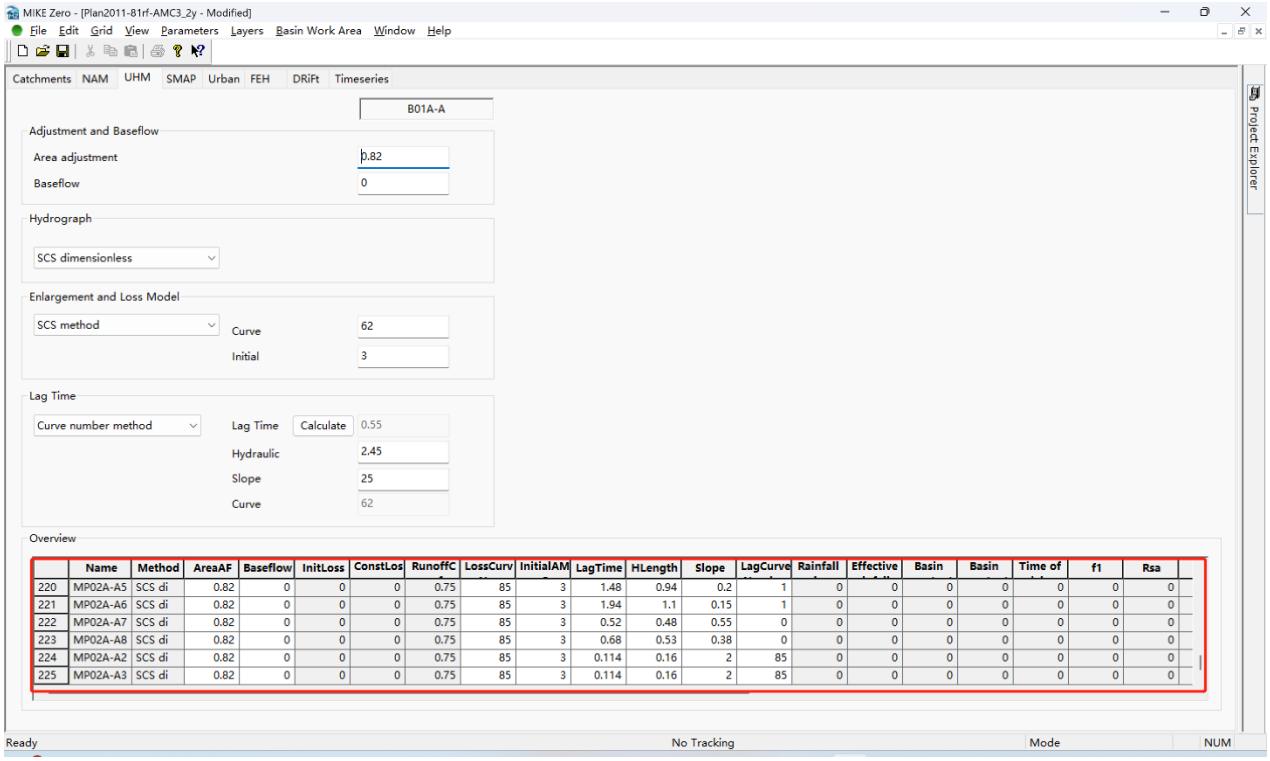
Catchment Characteristic Input in Mike 11 Hydraulic Model

Pre-Development Condition of Catchment MP02A-A1 to A8

(Areal reduction factors of 0.82 and AMC 3 as example)



	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin	Basin	Time of	f1	Rsa
218	MP02A-A1	SCS di	0.82	0	0	0	0.75	100	3	0.3	0.44	0.34	0	0	0	0	0	0	0	0
219	MP02A-A4	SCS di	0.82	0	0	0	0.75	90	3	4.18	1.03	0.02	4	0	0	0	0	0	0	0
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0	0	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0	0	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0	0	0	0	0

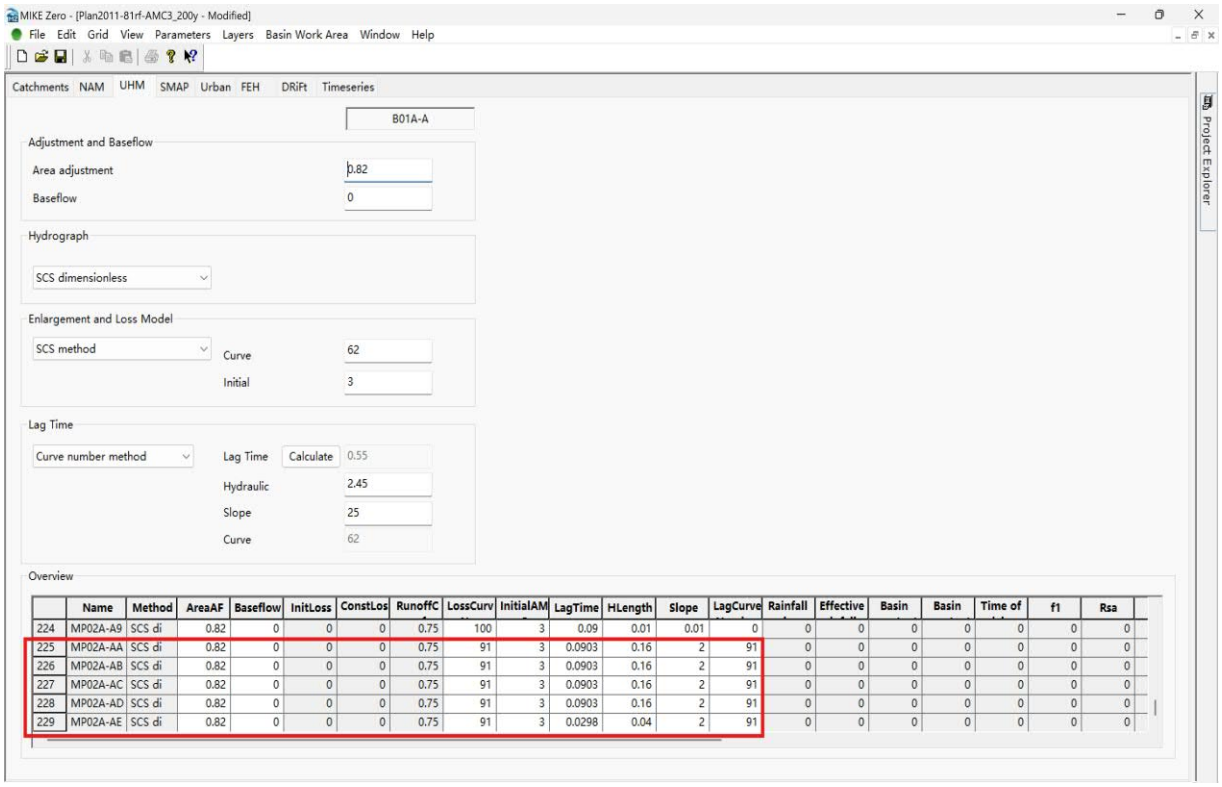


	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin	Basin	Time of	f1	Rsa
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0	0	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0	0	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0	0	0	0	0
224	MP02A-A2	SCS di	0.82	0	0	0	0.75	85	3	0.114	0.16	2	85	0	0	0	0	0	0	0
225	MP02A-A3	SCS di	0.82	0	0	0	0.75	85	3	0.114	0.16	2	85	0	0	0	0	0	0	0

Catchment Characteristic Input in Mike 11 Hydraulic Model

Post-Development Condition of Catchment MP02A-AA to AE

(Areal reduction factors of 0.82 and AMC 3 as example)

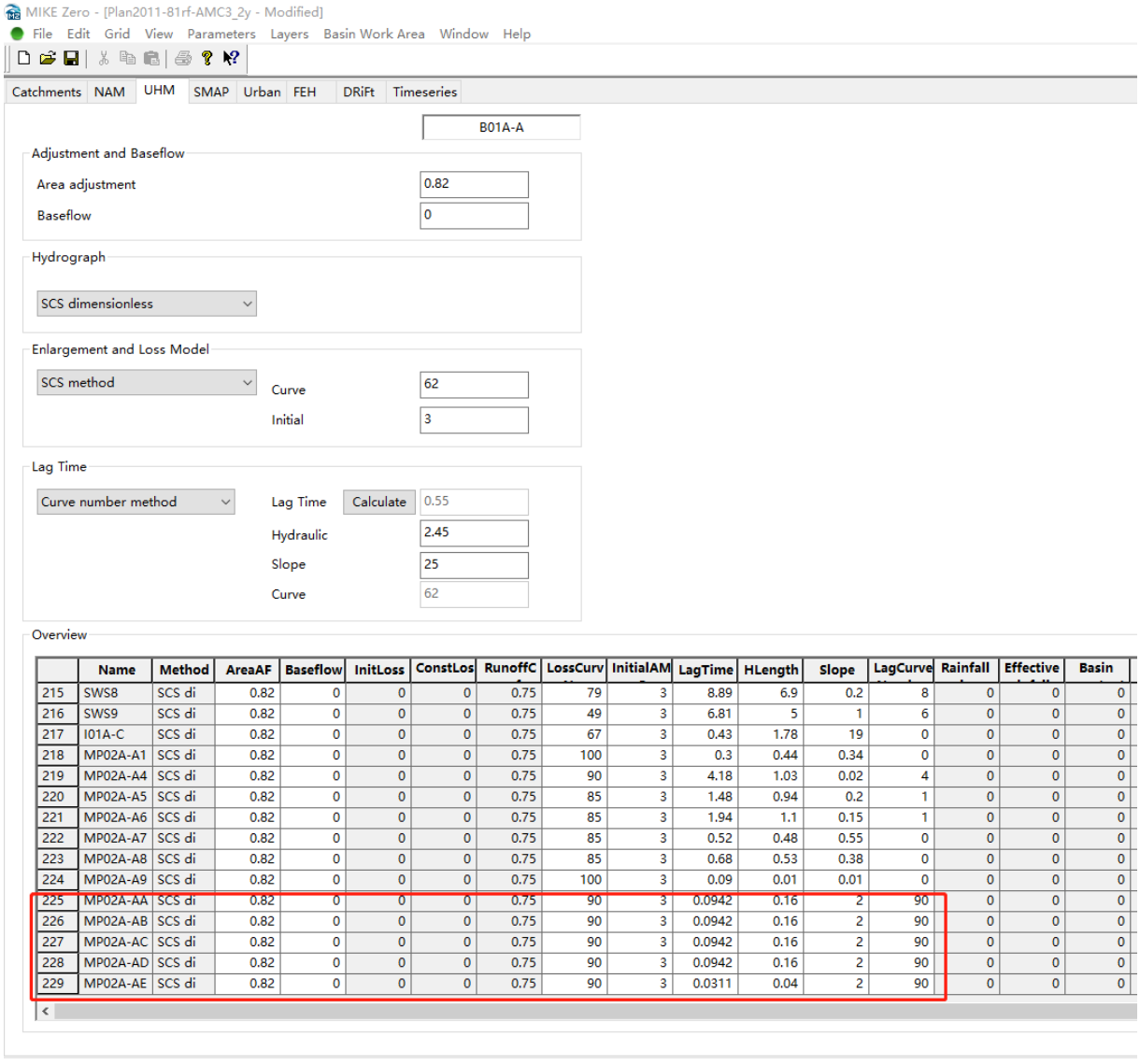


	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin	Basin	Time of	f1	Rsa
224	MP02A-A9	SCS di	0.82	0	0	0	0.75	100	3	0.09	0.01	0.01	0	0	0	0	0	0	0	0
225	MP02A-AA	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
226	MP02A-AB	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
227	MP02A-AC	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
228	MP02A-AD	SCS di	0.82	0	0	0	0.75	91	3	0.0903	0.16	2	91	0	0	0	0	0	0	0
229	MP02A-AE	SCS di	0.82	0	0	0	0.75	91	3	0.0298	0.04	2	91	0	0	0	0	0	0	0

Catchment Characteristic Input in Mike 11 Hydraulic Model in Previous Approved DIA in March 2024

Post-Development Condition of Catchment MP02A-AA to AE

(Areal reduction factors of 0.82 and AMC 3 as example)



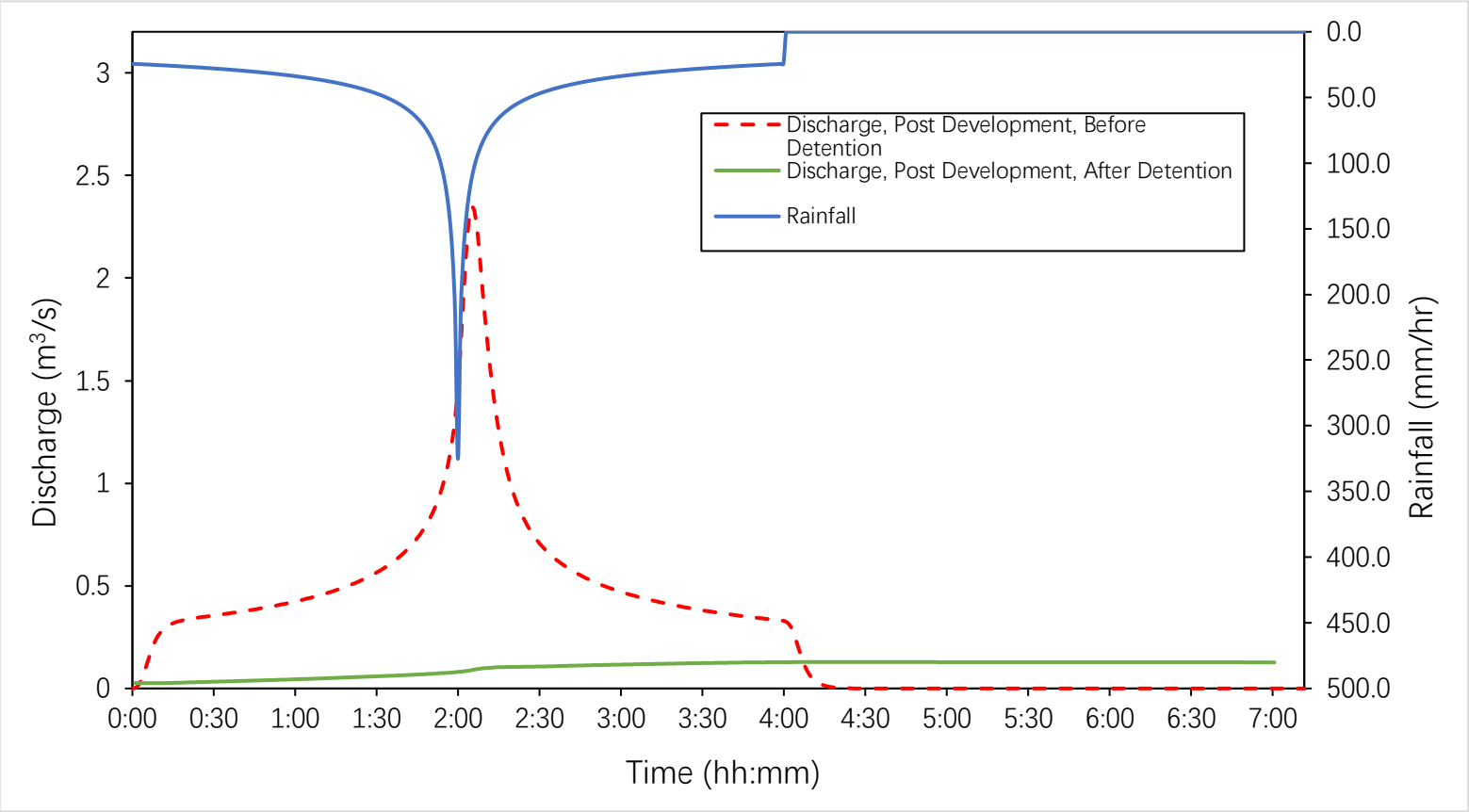
	Name	Method	AreaAF	Baseflow	InitLoss	ConstLos	RunoffC	LossCurv	InitialAM	LagTime	HLength	Slope	LagCurve	Rainfall	Effective	Basin
215	SWS8	SCS di	0.82	0	0	0	0.75	79	3	8.89	6.9	0.2	8	0	0	0
216	SWS9	SCS di	0.82	0	0	0	0.75	49	3	6.81	5	1	6	0	0	0
217	I01A-C	SCS di	0.82	0	0	0	0.75	67	3	0.43	1.78	19	0	0	0	0
218	MP02A-A1	SCS di	0.82	0	0	0	0.75	100	3	0.3	0.44	0.34	0	0	0	0
219	MP02A-A4	SCS di	0.82	0	0	0	0.75	90	3	4.18	1.03	0.02	4	0	0	0
220	MP02A-A5	SCS di	0.82	0	0	0	0.75	85	3	1.48	0.94	0.2	1	0	0	0
221	MP02A-A6	SCS di	0.82	0	0	0	0.75	85	3	1.94	1.1	0.15	1	0	0	0
222	MP02A-A7	SCS di	0.82	0	0	0	0.75	85	3	0.52	0.48	0.55	0	0	0	0
223	MP02A-A8	SCS di	0.82	0	0	0	0.75	85	3	0.68	0.53	0.38	0	0	0	0
224	MP02A-A9	SCS di	0.82	0	0	0	0.75	100	3	0.09	0.01	0.01	0	0	0	0
225	MP02A-AA	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
226	MP02A-AB	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
227	MP02A-AC	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
228	MP02A-AD	SCS di	0.82	0	0	0	0.75	90	3	0.0942	0.16	2	90	0	0	0
229	MP02A-AE	SCS di	0.82	0	0	0	0.75	90	3	0.0311	0.04	2	90	0	0	0

Appendix G

Hydrograph of Wetland Restoration Area

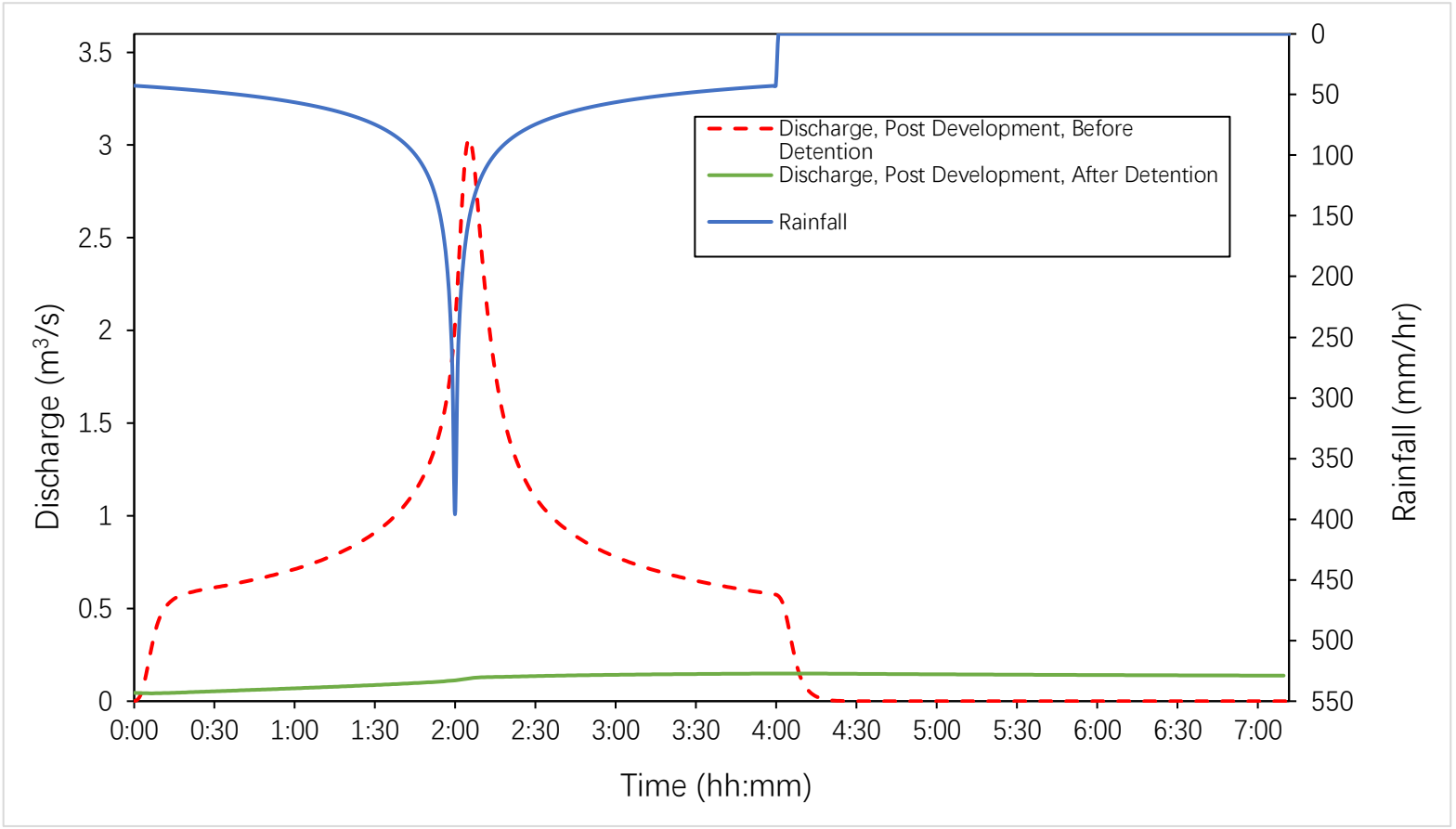
Hydrograph of Wetland Restoration Area

2yr Rainstorm Event, AMC3, RF=1.0



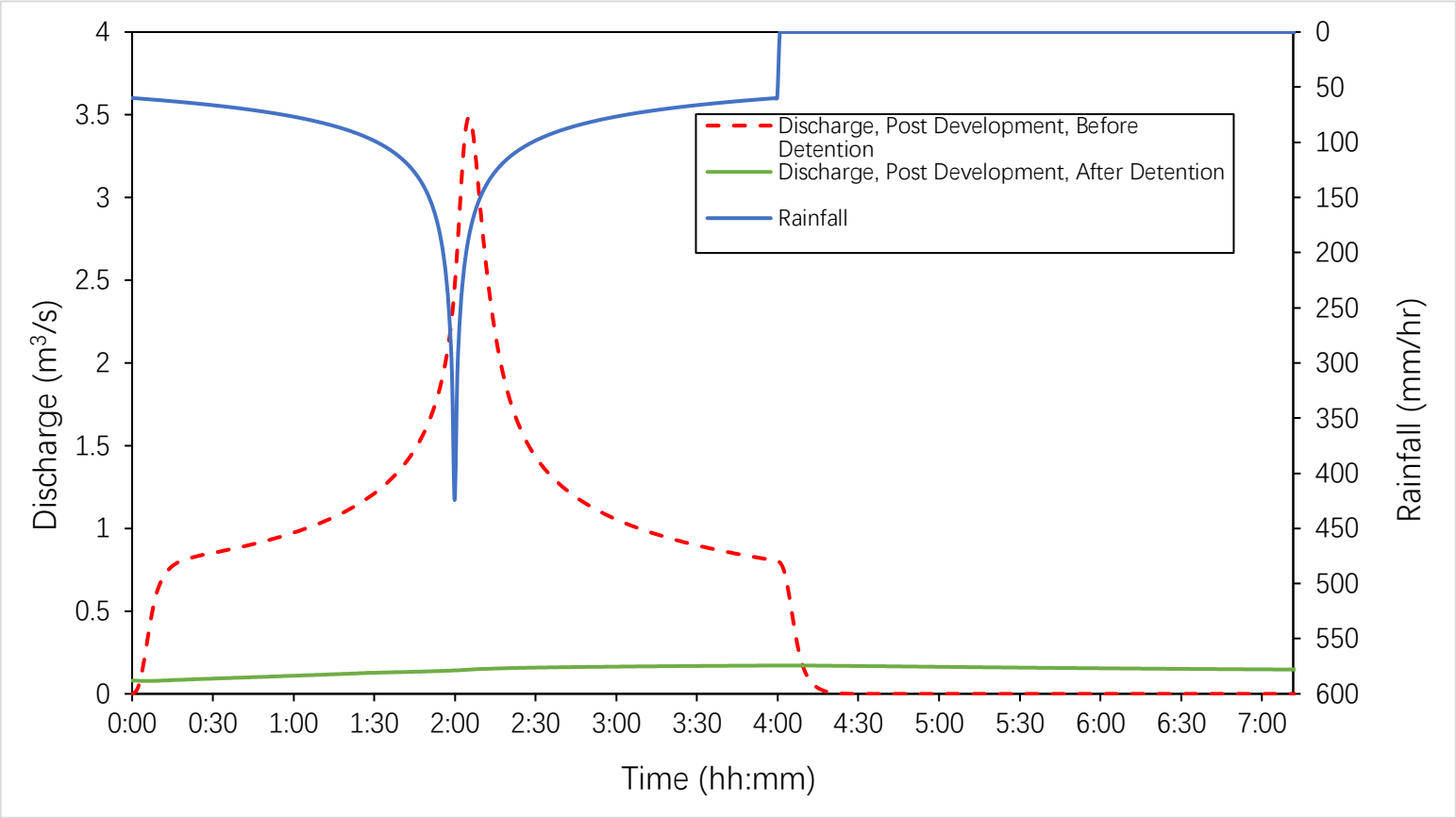
Hydrograph of Wetland Restoration Area

10yr Rainstorm Event, AMC3, RF=1.0



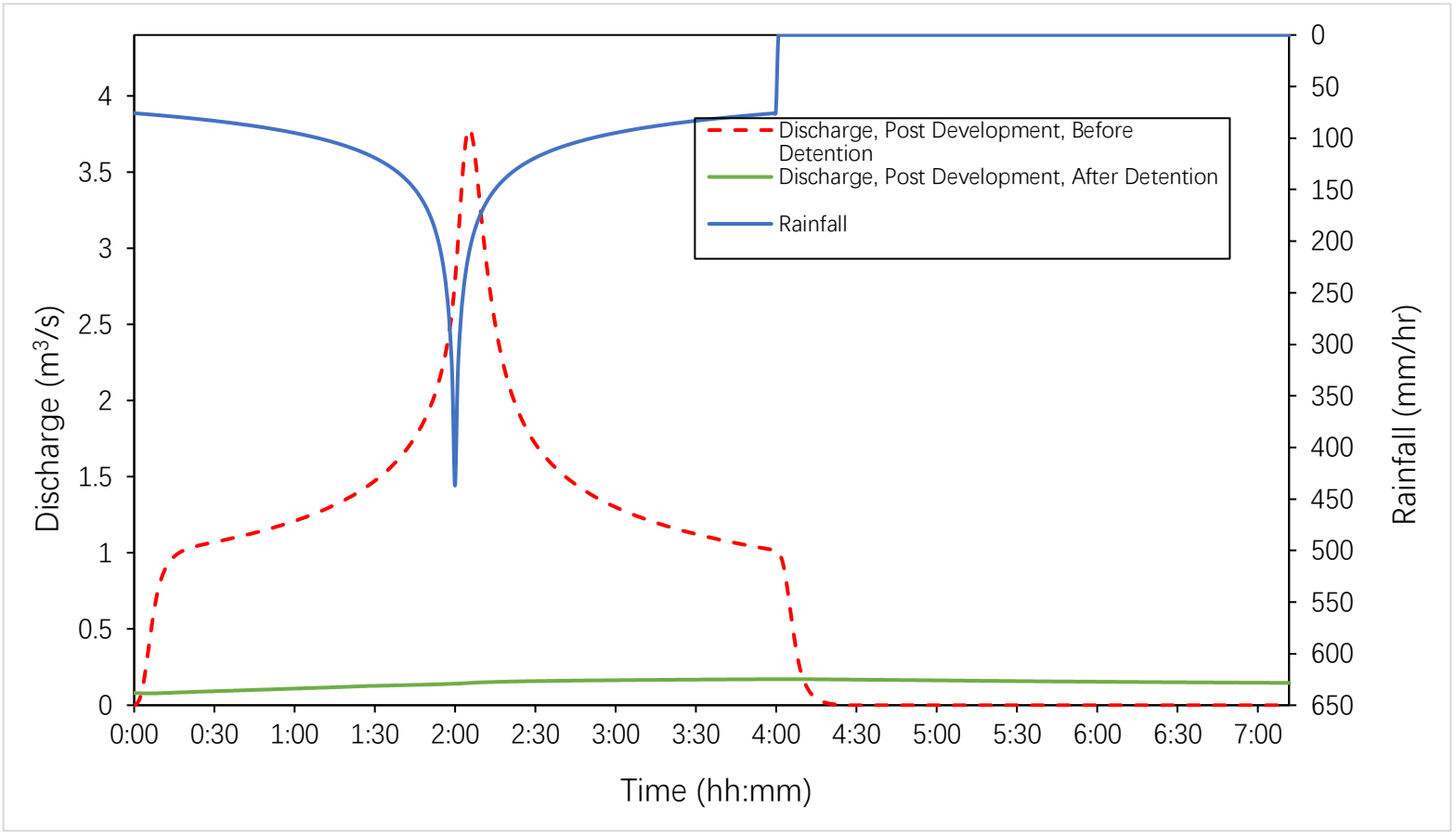
Hydrograph of Wetland Restoration Area

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Wetland Restoration Area

200yr Rainstorm Event, AMC3, RF=1.0

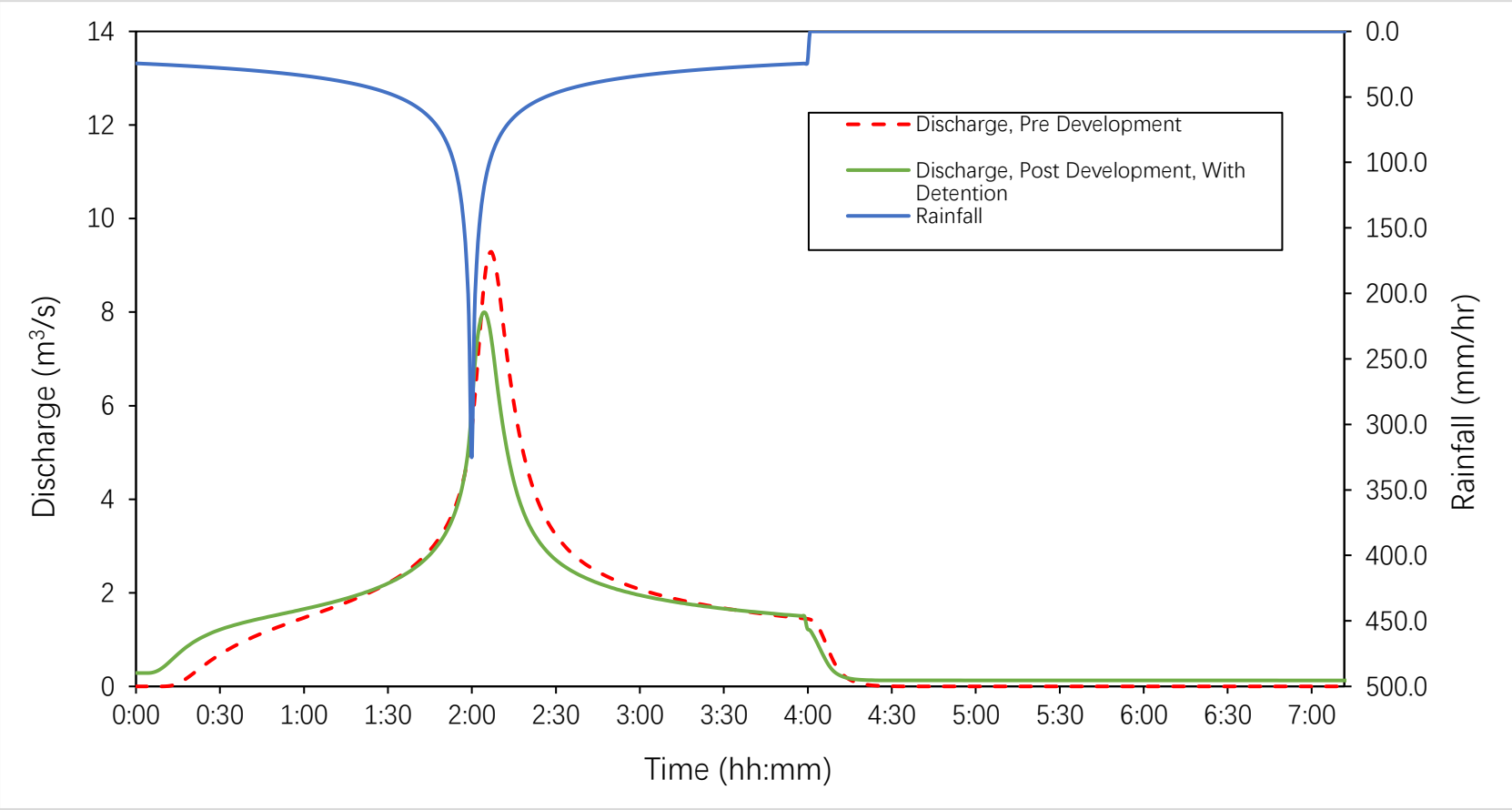


Appendix H

Hydrograph of the Proposed Development

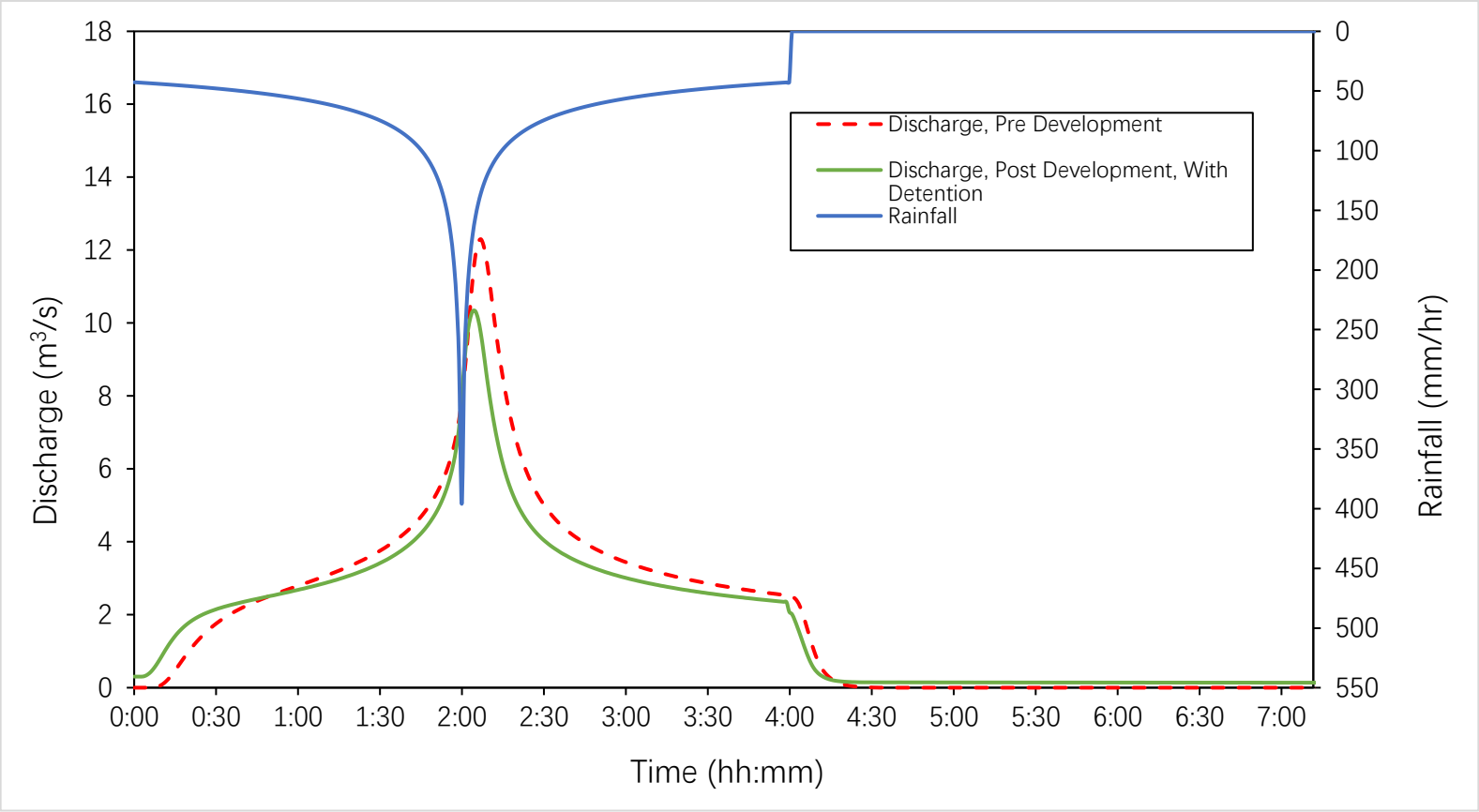
Hydrograph of Proposed Development

2yr Rainstorm Event, AMC3, RF=1.0



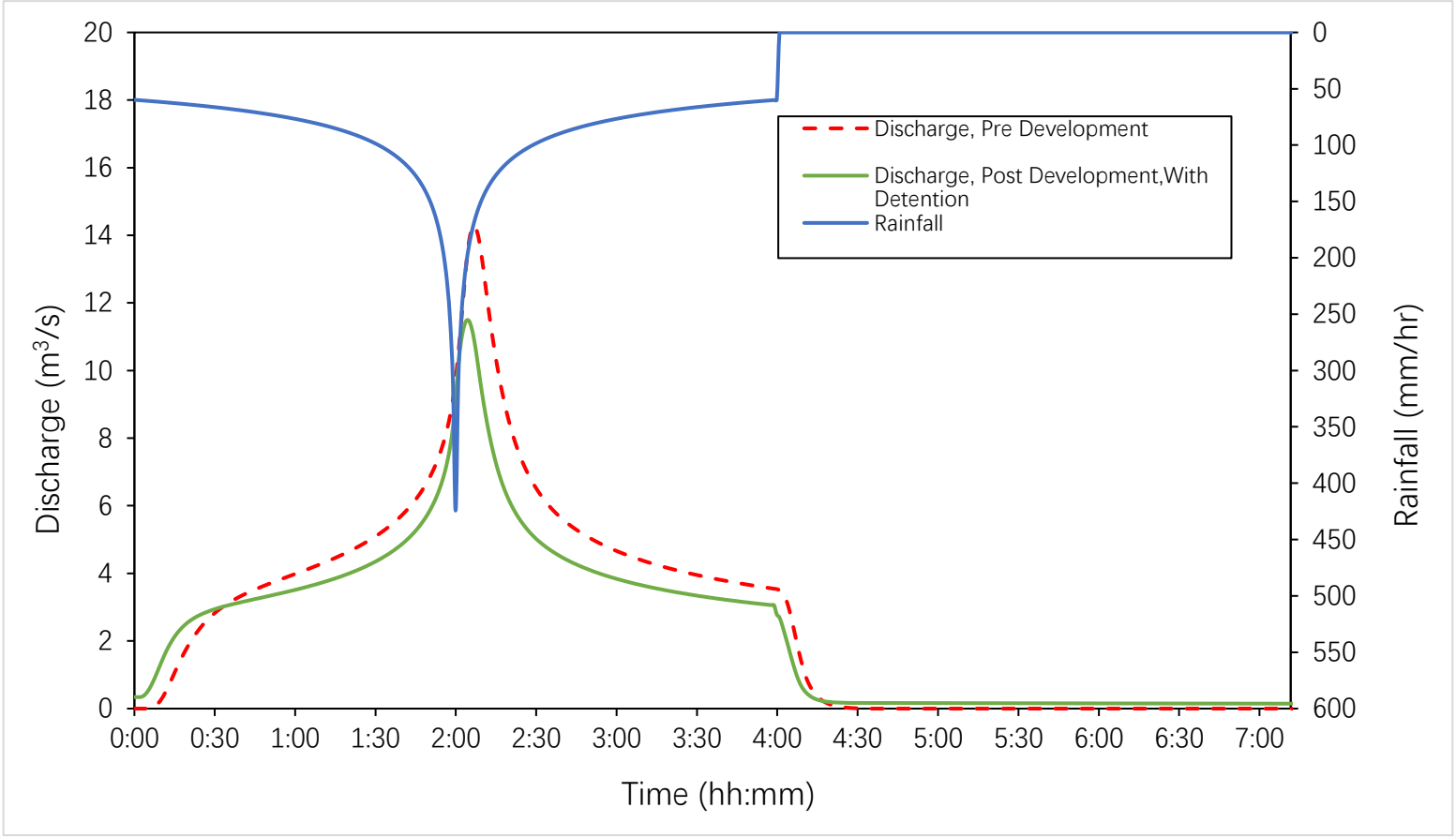
Hydrograph of Proposed Development

10yr Rainstorm Event, AMC3, RF=1.0



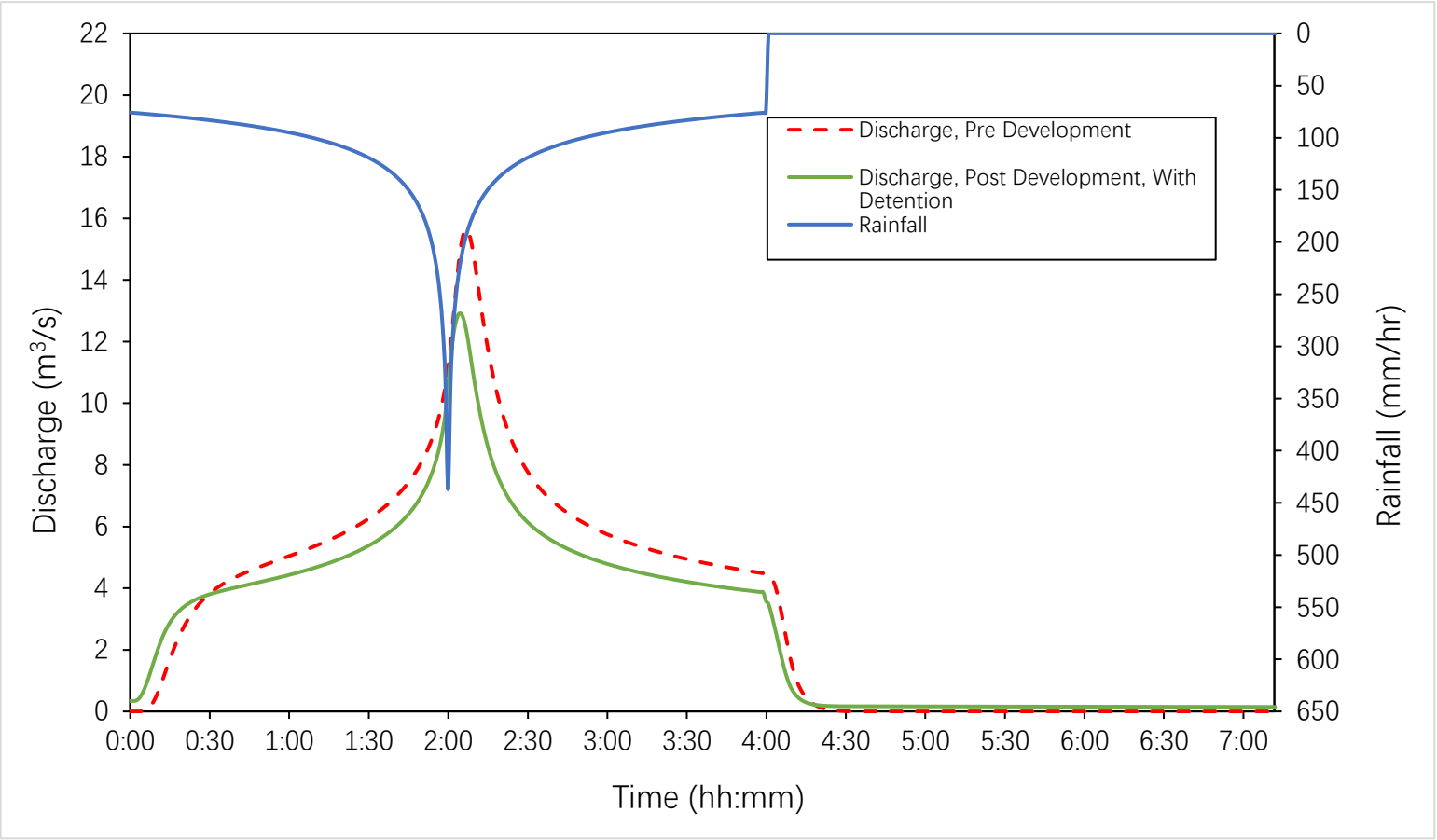
Hydrograph of Proposed Development

50yr Rainstorm Event, AMC3, RF=1.0



Hydrograph of Proposed Development

200yr Rainstorm Event, AMC3, RF=1.0



Appendix I

Summary of Hydrodynamic Modelling Results

(AMC3, Scenario C)

Pre-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c(m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.568	4.572	3.742	4.398	3.835	4.305	3.890	4.250
MAI PO 490	3.562	4.578	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 490	3.562	4.578	3.738	4.402	3.830	4.310	3.883	4.257
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 690	3.562	4.578	3.734	4.406	3.827	4.313	3.880	4.260
MAI PO 980	3.556	4.584	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 980	3.556	4.584	3.730	4.410	3.822	4.318	3.875	4.265
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1150	3.522	4.618	3.716	4.424	3.812	4.328	3.865	4.275
MAI PO 1620	3.280	4.860	3.687	4.453	3.809	4.331	3.867	4.273
MAI PO 1630	3.039	5.101	3.444	4.696	3.725	4.415	3.818	4.322
MAI PO 1630	3.039	5.101	3.444	4.696	3.725	4.415	3.818	4.322
MAI PO 1880	2.736	5.404	3.306	4.834	3.656	4.484	3.756	4.384
MAI PO 1180	2.736	5.404	3.306	4.834	3.656	4.484	3.756	4.384
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Post-Development (AMC3)								
River Chainage/ Max Water Level (m)	2c (mPD)	Freeboard for 2c (m)	10c (mPD)	Freeboard for 10c(m)	50c (mPD)	Freeboard for 50c(m)	200c (mPD)	Freeboard for 200c(m)
MAI PO 0	3.548	4.592	3.732	4.408	3.835	4.305	3.890	4.250
MAI PO 274	3.548	4.592	3.732	4.408	3.836	4.304	3.889	4.251
MAI PO 274	3.548	4.592	3.732	4.408	3.836	4.304	3.889	4.251
MAI PO 336	3.548	4.592	3.732	4.408	3.834	4.306	3.889	4.251
MAI PO 336	3.548	4.592	3.732	4.408	3.834	4.306	3.889	4.251
MAI PO 355	3.548	4.592	3.731	4.409	3.834	4.306	3.888	4.252
MAI PO 355	3.548	4.592	3.731	4.409	3.834	4.306	3.888	4.252
MAI PO 690	3.545	4.595	3.727	4.413	3.827	4.313	3.878	4.262
MAI PO 690	3.545	4.595	3.727	4.413	3.827	4.313	3.878	4.262
MAI PO 980	3.537	4.603	3.722	4.418	3.822	4.318	3.874	4.266
MAI PO 980	3.537	4.603	3.722	4.418	3.822	4.318	3.874	4.266
MAI PO 1150	3.425	4.715	3.707	4.433	3.811	4.329	3.864	4.276
MAI PO 1150	3.425	4.715	3.707	4.433	3.811	4.329	3.864	4.276
MAI PO 1620	3.299	4.841	3.676	4.464	3.809	4.331	3.867	4.273
MAI PO 1630	3.048	5.092	3.430	4.710	3.722	4.418	3.816	4.324
MAI PO 1630	3.048	5.092	3.430	4.710	3.722	4.418	3.816	4.324
MAI PO 1880	2.744	5.396	3.287	4.853	3.652	4.488	3.755	4.385
MAI PO 1880	2.744	5.396	3.287	4.853	3.652	4.488	3.755	4.385
MAI PO 2125	2.366	5.774	3.098	5.042	3.396	4.744	3.400	4.740

Note:

1) The Lowest Levee Level from River Chainage from MAI PO 0 to MAIPO 2125 is 8.14mPD.
2) Freeboard = The Lowest Levee Level - Max Water Level

Appendix J

Hydraulic Analysis of the Proposed Drainage Pipe Network

Hydraulic Analysis of the Proposed Drainage Pipe Network at

Mai Po 355 (WSW_PIPE01), the location is shown in Figure 6

Extracted from MIKE11 model

Freeboard of Drainage Pipe at Mai Po 355 (WSW_PIPE01 554)

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.504	3.296
2C	3.548	3.252
10A	3.684	3.116
10B	3.712	3.088
10C	3.732	3.068
50A	3.771	3.029
50B	3.936	2.864
50C	3.834	2.966
200A	3.824	2.976
200B	4.145	2.655
200C	3.888	2.912

Note:

1) The average ground level of the drainage manhole is approximate 6.8mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix K

Hydraulic Analysis of the Proposed
3.5m(W) x 2.5m(H) Box Culvert

Hydraulic Analysis of the Proposed 3.5m(W) × 2.5m(H) Box Culvert at MAI PO 274 (WSW_BC01 283), the location is shown in Figure 6

Extracted from MIKE11 model

Freeboard of Box Culvert at MAI PO 274 (WSW_BC01 283)

Design ARI Events	Max water level (mPD)	Freeboard (m)
2A	3.504	3.296
2C	3.546	3.254
10A	3.685	3.115
10B	3.712	3.088
10C	3.732	3.068
50A	3.771	3.029
50B	3.937	2.863
50C	3.836	2.964
200A	3.826	2.974
200B	4.145	2.655
200C	3.889	2.911

Note:

1) The average ground level of the box culvert is approximate 6.8mPD.

2) Freeboard = Ground Level - Max Water Level

Appendix L

Current Spot Level



823400.000 E
823600.000 E
823800.000 E
824000.000 E
839000.000 N
838800.000 N
838600.000 N
Open Storage
CAMELIA PATH
CEDAR PATH
CHERRY PATH
LOTUS PATH
KAPOK PATH
Westwood
WO SHANG WAI
PALM SPRINGS BOULEVARD
GMELINA PATH
LAUREL PATH
PRUNUS PATH
PINACEAE DRIVE
BANYAN PATH
NARCISSUS PATH
SUNFLOWER PATH
Arcadia
VENTURA AVENUE
SANTA MONICA AVENUE
MARIN AVENUE
MONTEREY AVENUE
NAPA AVENUE
VICTORIANA AVENUE
CORONADO AVENUE
CARMEL AVENUE
SAN DIEGO AVENUE
SAN SIMEON AVENUE
PALM CANYON DRIVE
CASTLE PEAK ROAD - MAI PO
Playground
Track

Subject **Re: Request for Confirmation on Person-Per-Flat Ratio for Application Y/YL-MP/9**
From Michelle Li [redacted]
To Karen Kei Yee CHAN/PLAND <kkychan2@pland.gov.hk>
Cc Pak Him CHIU/PLAND <phchiu@pland.gov.hk>, Timothy Yuet Sang CHAN/PLAND <tyschan@pland.gov.hk>, Benson Poon [redacted], Ian BROWNLEE [redacted], Valerie [redacted]
Date Wednesday, August 27 2025 12:36 PM

- WSW PPFR of Similar Developments in the District_ML.pdf (1.3 MB)

Dear Karen,

Our traffic consultant talked to TD's engineer again and he still thinks that using ppfr 2.8 for our site is inappropriate. Attached please find our justifications and research on approved applications.

I would be grateful if you could kindly assist by discussing this matter with the TD officer.

Kind regards,
Michelle Li

Masterplan Limited
Rm 3516B, 35/F, China Merchants Tower,
Shun Tak Centre,
200 Connaught Road Central,
Hong Kong

Direct Line: [redacted]

> -------- Original Message --------
> **From:** Karen Kei Yee CHAN/PLAND
> **To:** Michelle Li
> **Cc:** Pak Him CHIU/PLAND , Timothy Yuet Sang CHAN/PLAND , Benson Poon , Ian BROWNLEE , Valerie
> **Sent:** Thu, 31 Jul 2025 07:03:07 +0000
> **Subject:** Re: Request for Confirmation on Person-Per-Flat Ratio for Application Y/YL-MP/9
>
> Dear Michelle,
>
> We are not in a position to comment on the person-per-flat ratio. As discussed, you are advised to provide written justifications to TD to explain the rationale behind the adopted person-per-flat ratio.
>
> Regards,
> Karen CHAN
> TP/YLE2
>
> FS&YLE DPO, PlanD
>
> Tel. 3168 4041
>
> PlanD Logo 35A Logo fb ig
>
> **From:** Michelle Li [redacted]
> **Sent:** Wednesday, July 30, 2025 1:37 PM
> **To:** Karen Kei Yee CHAN/PLAND <kkychan2@pland.gov.hk>
> **Cc:** Benson Poon [redacted]; Pak Him CHIU/PLAND <phchiu@pland.gov.hk>; Timothy Yuet Sang CHAN/PLAND <tyschan@pland.gov.hk>; Ian BROWNLEE <[redacted]; Valerie

Government Policies supporting larger living spaces to improve overall liveability

Hong Kong's average living space per person in private housing remains relatively small compared to other major Asian cities, hence, the government has introduced policies and standards to promote larger living spaces. Hong Kong 2030+ incorporates assumptions of 10% to 20% enhancement in average sizes of new flats compared to previous standards, aiming to improve liveability in the high-density city. There are also additional policies including transfer schemes like the Territory-wide Overcrowding Relief Exercise (TWOR) and the Living Space Improvement Transfer Scheme (LSITS).

PPFR according to By-Census 2021

Source: https://www.census2021.gov.hk/en/district_profiles.html

- Yuen Long District: 2.8
- San Tin Constituency Area: 2.8
- Small TPU 542: 2.8



PPFR of Similar Comprehensive Developments in the District

Application No.	Type	Zoning	Date Approved	Average Unit Size (sq.m.)	Person-Per-Flat Ratio (PPFR)
A/YL-MP/344 (previously approved application)	Private Housing	OU CD(WRA)	February 2024	104.8sqm	2.8
A/YL-MP/291 (previously approved application)	Private Housing	OU CD(WRA)	July 2020	309.5sqm	3.0
A/YL-KTN/663	Park Yoho - Existing Private Housing	CDA	2020	60.46sqm	2.7
A/YL-NSW/242	Private Housing	OU CD(WEA) & SSSI(1)	2021	Houses: 340sqm Apartments: 108.8sqm	2.58
A/YL-MP/287	Private Housing	R(D)	2020	116sqm	3.0
A/YL-MP/247	Private Housing	OU CD(WPA)	2016 2020 EOT	154.3sqm	3.28

16/09/2025

Reference number CHK50800610

TO AMEND THE NOTES OF THE "COMPREHENSIVE DEVELOPMENT TO INCLUDE WETLAND RESTORATION AREA" ZONE FOR A PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

TRAFFIC IMPACT ASSESSMENT

SYSTRA MVA

IDENTIFICATION TABLE	
Client/Project owner	Profit Point Enterprises Limited
Project	To Amend the Notes of the "Comprehensive Development to include Wetland Restoration Area" Zone for a Proposed Comprehensive Development at Wo Shang Wai, Yuen Long, Lots 77 and 50 S.A in DD101
Study	Traffic Impact Assessment
Type of document	final Report_v6
Date	16/09/2025
File name	final rpt_WSW 12A TIA_v6_20250916.docx
Reference number	CHK50800610

MVA Hong Kong Limited
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T. +852 2529 7037 • F. +852 2527 8490 • E. info@mvaasia.com • www.mvaasia.com

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1. INTRODUCTION

1.1 Background

1.1.1 The subject site is located in Lots 77 and 50 S.A in D.D.101, Wo Shang Wai, Mai Po, Yuen Long. It is sited on the north of Royal Palms and Palm Springs residential developments. **Drawing 2.1** shows the location of the subject site.

1.1.2 The site falls within an area zoned as Other Specified Uses (Comprehensive Development to include wetland restoration area) on the Approved Mai Po and Fairview Park OZP (OZP No. S/YL-MP/8). The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses.

1.1.3 According to the latest development schedule of San Tin Technopole (STT), the first population intake will start from Year 2031, while the bulk population intake of the Main Phase will start from Year 2034, around the same planned completion year of the Mass Transit Railway (MTR) Northern Link (NOL). The relevant site formation and engineering infrastructure (road works) for STT Development Phase 1 (under PWP Item Nos. 7899CL and 7852CL-2 (Part)) was gazetted on 1 March 2024 and these road works are planned for completion by Year 2031 and the proposed development traffic is expected to be served by the new STT Phase 1 road network (the gazetted new roads) with full road network completion by design year 2034.

1.1.4 A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the Approved Mai Po and Fairview Park OZP No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site. This traffic impact assessment is to investigate the potential traffic impact on the adjacent local road network and transport facilities by this upzoning proposal. Upon previous submission of the TIA report, comments were received from Transport Department (TD) and this revised TIA report was prepared to reflect the latest development programme and to address TD's comments.

1.2 Study Objectives

1.2.1 The objectives of this TIA study are summarised as follows:

- Present the proposed development schedule and its internal transport provisions;
- Review the current traffic conditions in the vicinity;
- Estimate the traffic generation/attraction of the proposed development;
- Produce traffic forecasts for the local road network at the adopted design year;
- Investigate the traffic impact on the local road network upon operation of the proposed development; and,
- Suggest any traffic improvement measures, if considered necessary, to alleviate the potential traffic problem.

1.3 Report Structure

1.3.1 Following this introductory chapter, there are five further chapters;

- Chapter 2 – Proposed Development, introduces the proposed development scheme;
- Chapter 3 – Existing Traffic Context, reviews the current traffic condition in the vicinity;
- Chapter 4 – Traffic Forecasting, describes the traffic forecasting methodology;
- Chapter 5 – Traffic Impact Assessment, describes the assessments conducted;
- Chapter 6 – Conclusions, summarises and concludes the study findings.

2. PROPOSED DEVELOPMENT

2.1 Proposed Development Schedule

2.1.1 Under the current proposed MLP, the number of residential units will be increased from 789 in the approved scheme in Section 16 application to 3,562, with provision of a 3,800 m^2 100-bed Residential Care Homes for the Elderly (RCHE). The current scheme will provide 3,562 units with average house size of 74.7 m^2.

2.1.2 The domestic GFA, flat mix, plot ratio will be changed, compared with those in the previous approved S16 application. **Table 2.1** summarises the changes in flat mix of the previous approved and current proposed scheme.

Table 2.1 Comparison of Flat Mix in Previous Approved Scheme and Current Proposed Scheme

	Previous Approved MLP (Application no. A/YL-MP/344)	Current Proposed MLP	Difference
Domestic GFA	82,963 m^2	266,079 m^2	+183,116 m^2
Domestic Plot Ratio	0.4	1.28	+0.88
No. of Units	789 Units	3,562 Units	+2,773 Units
Average House Size	105.1 m^2	74.7 m^2	-30.4 m^2
Non-domestic Plot Ratio	-	0.02	+0.02
Non-domestic GFA	-	3,800 m^2	+3,800 m^2

2.1.3 As indicated in **Table 2.1**, the current proposed MLP has an increase of 2,773 units with the change of both domestic and plot ratio, and leading to a decrease of average house size, with the provision of a RCHE.

2.1.4 It is anticipated that the proposed development will be completed by year 2031.

2.2 Vehicular Access

2.2.1 Same as the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po, which is abutting the site. The location of the vehicular access is illustrated in **Drawing 2.1**. With the gazetted new roads for STT to be completed on or before Year 2031, it is anticipated that the development traffic will mainly access via Fairview Park Boulevard Interchange and the new Shek Wu Wai Interchange, Road L11 onto Castle Peak Road – San Tin and Castle Peak Road - Mai Po, with minority of traffic heading to/from Sheung Shui, as indicated in **Drawing 3.1**.

2.3 Internal Transport Facility

2.3.1 The provision of the internal transport facilities in the current proposed MLP is determined based on the latest Hong Kong Planning Standards and Guidelines (HKPSG). **Table 2.2** summarises the proposed provision of the internal transport facilities for the current proposed MLP, as shown in **Drawing 2.2**. Since there is no specific requirement stipulated in Hong Kong Planning Standards & Guidelines (HKPSG) for the RCHE, the provision of car parking spaces and

the loading/unloading facilities are proposed with reference to the adjacent RCHEs in operation by survey conducted in mid-July 2025 and parking ratios of the applications of similar social welfare developments as listed in **Table 2.3**, as well as the operation need for the loading/unloading facilities.

Table 2.2 Proposed Provision of the Internal Transport Facilities

Internal Transport Facilities	Previous Approved MLP (Application no. A/YL-MP/344) – 789 Units		Current Proposed MLP – 3,562 Units (128 houses included) with RCHE		
	Proposed Requirement	Proposed Provision	Parameters	Proposed Requirement under HKPSG	Proposed Provision
Residential Parking Provision					
Residential Carparking Space	2 spaces per house(1)	1,578	128 Houses	2 spaces per house(2)	256
	-		3,056 units	1 space per 3.03 units for 40<FS≤70(7)	1,009
			378 units	1 space per 1.52 units for 70<FS≤100(7)	249
	Sub -total	1,578		Sub-total	1,514
Visitor Parking Space	5 spaces(1)	5	47 blocks (1 block for 31-45 units; 6 blocks for 46-60 units; 20 blocks for 61 – 75 units; 20 blocks for 75 units above)	Residential units per block / Visitor Parking per block: 30 or below / 1; 31 – 45 / 2; 46 – 60 / 3; 61 – 75 / 4; above 75 / 5	1*2+6*3 +20*4+20*5 =200(4)
Accessible Parking Space	6 accessible car parking space for car parking space in lot above 450 by Building Authority	6	1,714 private car parking spaces	6 accessible car parking space for car parking space in lot above 450 by Building Authority	6
Motorcycle Parking Space	37 spaces(1)	37	3,434 units	1 per 83 units(5)	42
Loading/unloading Bay	1 bay per 800 units(3)	1	47 blocks	1 bay per each housing block(5)	47
Bicycle Parking Spaces	-	-	3,434 units	1 space per 5 flats for residents; 1 space per 45 flats for visitors(8)	764
RCHE Parking Provision(6)					
Ancillary Private Car Parking Space	-	-	100-bed	1 space per 34 beds	3
Loading/Unloading Bay for HGV	-	-	100-bed	1 space per 150 beds	1
Ambulance Lay-by			100-bed	1 space per 150 beds	1
Light-bus Lay-by	-	-	100-bed	1 space per 150 beds	1

Remarks: (1) Requirement included in the approved land exchange application.
(2) Assume 2 parking spaces per house.
(3) Requirement adopted in previous approved S.16 application.
(4) According to the flatmix of latest MLP.
(5) According to the latest comments from Transport Department.
(6) For RCHE parking provision referring to **Table 2.3**.
(7) R3 of 1.10 adopted for residential car parking spaces.
(8) According to Annex B of TIA Checklist for Development Project.

2.3.2 The proposed provision of car parking provision for RCHE has been reviewed with reference to the survey conducted in mid-July 2025 at adjacent RCHEs and various approved planning application of the similar social welfare development, as listed in **Table 2.3**.

Table 2.3 Car Parking and Loading/unloading Facilities Provision in Other RCHE Developments

Name/ Application No.	Site Location	No. of Bed	No. of Car Parking Spaces	Derived Parking Ratio	No. of HGV Loading/ Unloading Bay	Derived HGV Loading/ Unloading Bay Ratio	No. of Ambulance Lay-by	Derived Ambulance Lay-by Ratio	No. of Light-bus Lay-by	Derived Light-bus Lay-by Ratio
The Christian God's Love Care Home	Tai Yuen House, Chuk Yuen Tsuen, Tam Mei Sect., Castle Peak Road, Yuen Long, New Territories	196	4(1)	1 per 49 beds	/	/	/	/	/	/
Hongtai Home For The Aged Limited	101-104 Sheung Chuk Yuen), Yuen Long, New Territories	102	3(2)	1 per 34 beds	/	/	/	/	/	/
A/YL/256	Lots 1695 S.E ss.1 RP, 1695 S.F ss.1 and 1695 S.H RP (Part) in D.D. 120, Tai Kei Leng, Yuen Long	170	3	1 per 57 beds	1	1 per 170 beds	1	1 per 170 beds	1	1 per 170 beds
Y/NE-KTS/16	Lot No. 953 RP (Part) in D.D. 92 and adjoining Government Land, Kam Hang Road, Kwu Tung South	150	4	1 per 38 beds	1	1 per 150 beds	1	1 per 150 beds	1	1 per 150 beds

Remarks: (1) There is no floor marking for the parking spaces, 4 parking spaces are based on site observation.
(2) There is only floor marking for 1 parking space, another 2 parking spaces are based on site observation.

2.3.3 **Table 2.3** shows that the ratios of car parking provision in the RCHE in operation and similar applications are ranged from 1 space per 34 places to 1 space per 57 places, and therefore the proposed 3 nos. of car parking spaces for the Proposed Development are considered reasonable.

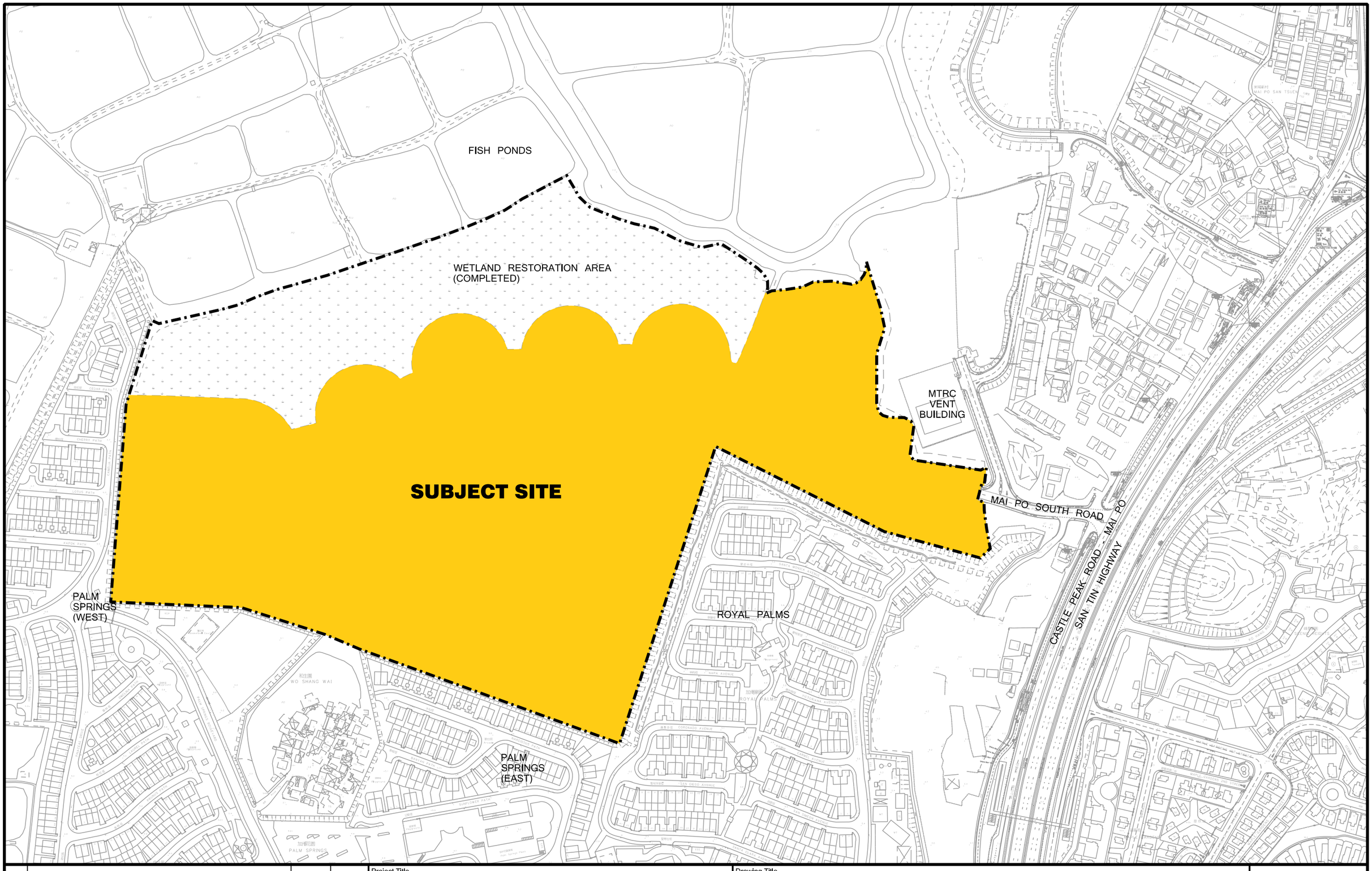
2.3.4 Apart from the car parking spaces, spaces for loading/unloading of goods vehicles and ambulance are also proposed to serve the necessary operation need. To allow flexibility for future operation, it is proposed that the loading/unloading spaces would be shared used with the loading/unloading or parking of private light bus.

2.3.5 Since some of the units of the proposed development is smaller than 70m^2 in flat size, there will be provision of the bicycle parking spaces.

2.3.6 The loading/unloading activities for houses would be conducted in internal roads near houses, with assistance by management staff.

2.3.7 The actual carparking provisions may be subject to agreement by the authority.

2.3.8 The allocation of related parking provision will be studied and reviewed in later detailed design stage. Drop-bar gate will be provided within the site for access control. Sufficient waiting spaces between the drop-bar gate and public road will be provided for vehicle queueing within the development. The location of the drop-bar gate will be provided at later detailed design stage.



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

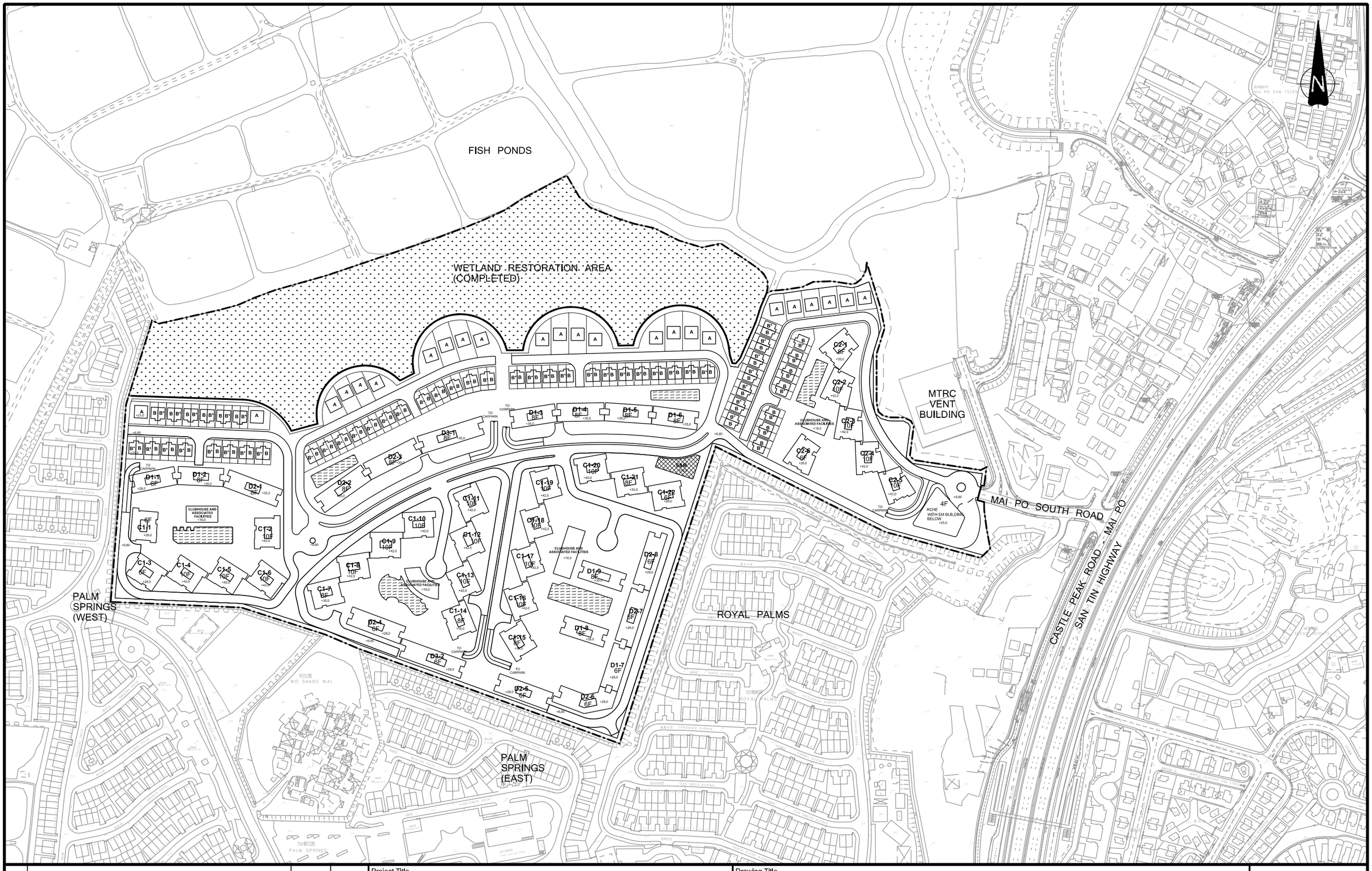
SITE LOCATION

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**2.1**	A

SYSTRA MVA

CHK50800610/TIA/F21-A.DGN/KCM/21JAN25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MLP UPDATED	CFC	15AUG25
A	MLP UPDATED	CFC	21JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED MASTER LAYOUT PLAN

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:3000(A3)	JUL 2024	2.2	B

SYSTRA MVA

CHK50800610/TIA/F22-B.DGN/KCM/15AUG25

Original Size : A3

3. EXISTING TRAFFIC CONTEXT

3.1 Surrounding Road Network

3.1.1 As indicated in **Drawing 2.1**, the site is bounded by Mai Po South Road to the east, fishponds to the north and Royal Palms & Palm Springs residential development to the south. The development traffic from San Tin Highway to Mai Po South Road connecting the site are either via Castle Peak Road – Mai Po Section from the south or Castle Peak Road – San Tin Section from the north.

3.1.2 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway. At the existing Shek Wu Wai Interchange (SWWI), apart from improvement of existing slip roads at its western side connecting to San Tin Highway, a pair of new slip roads is proposed at the eastern side of SWWI to facilitate traffic movement. Also, the existing junction of Castle Peak Road – San Tin / Shek Wu Wai Road would be upgraded from priority junction to 4-arm signalized junction. With the above consideration of enhanced road network, the future ingress and egress routes of the subject site are illustrated in **Drawing 3.1**.

3.1.3 San Tin Highway is a dual 3-lane expressway. It forms a section of Route 9 of the strategic highway network connecting Fanling Highway in the north and Yuen Long Highway/Tai Lam Tunnel in the south.

3.1.4 San Tam Road and Castle Peak Road - Mai Po are both single 2-lane carriageways running parallel to San Tin Highway serving the adjacent local developments.

3.1.5 Mai Po South Road is about 7.3m wide with 2m footpaths on both sides. It mainly serves as an access to MTRC ventilation building.

3.1.6 The existing nearby road network is subject to major changes upon completion of the new roads planned under STT project, with new roads connecting to the future upgraded Shek Wu Wai Interchange.

3.2 Current Junction Operational Performance

3.2.1 With the consideration of the road network upgrade due to San Tin Technopole project, a total of 11 local junctions and 6 screenlines, as indicated in **Drawing 3.2**, have been identified for assessment purpose in this study. For the strategic road San Tin Highway, as there will be upcoming planned transport infrastructures and enhanced railway network, including the Northern Metropolis Highway and the Northern Link, the traffic condition and efficiency would be significantly improved in the strategic level. The identified junctions are listed in **Table 3.1**, and their existing layouts are shown in **Drawings 3.3** to **Drawings 3.14**.

Table 3.1 Identified Local Key Junctions and Road Links

Ref.(1)	Junction/Road Links	Type	Drawing No.
A1	Shek Wu Wai Road / San Tin Highway Slip Road (2)	Priority	3.3
A2	Shek Wu Wai Road / Mai Po Lung Road (2)	Priority	3.4
B	Castle Peak Road – San Tin / Shek Wu Wai Road (2)	Priority	3.5
C	Castle Peak Road – Mai Po/San Tam Road	Priority	3.6
D	Castle Peak Road – Mai Po/ Royal Palms Boulevard	Priority	3.7
E	Castle Peak Road – Mai Po/Geranium Path	Priority	3.8
F	Castle Peak Road – Tam Mi/Yau Pok Road	Priority	3.9
G	Castle Peak Road – Tam Mi/Kam Pok Road	Priority	3.10
H	Fairview Park Interchange	Roundabout	3.11
I	Castle Peak Road – Mai Po/Mai Po South Road	Priority	3.12
J	Castle Peak Road – San Tin/Kwun Tung Road (3)	Priority	3.13
K	San Tin Interchange (3)	Roundabout	3.14
Screenline L1	Mai Po South Road	Single 2-lane carriageway	3.2
Screenline L2	Castle Peak Road – Mai Po (South to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L3	Castle Peak Road – Mai Po (North to Mai Po South Road)	Single 2-lane carriageway	3.2
Screenline L4	Castle Peak Road – Tam Mi	Single 2-lane carriageway	3.2
Screenline L5	San Tin Highway	Dual 3-lane expressway	3.2
Screenline L6	San Tin Highway	Dual 3-lane expressway	3.2

Remark: (1) Refer to **Drawing 3.2** for junction reference.
(2) Junctions will be upgraded by San Tin Technopole project.
(3) Subject to the planned road network, the traffic flow induced by subject site would not pass through the concerned junctions in the Design Year of 2034.

Traffic Surveys

3.2.2 A series of manual classified traffic surveys have been conducted at the identified junctions to establish the current traffic condition in the vicinity. The surveys were carried out during the morning and evening peak hour periods on a typical weekday in April 2024. The observed traffic data indicates that the morning peak hour and evening peak hour occurred from 8:00am to 9:00am and 5:00pm to 6:00pm. The observed peak periods are adopted for forecasting and assessment purposes in this study.

3.2.3 Subject to previous TD comment, since the observed traffic flow in traffic survey in a typical weekday in April 2024 was considered under normal traffic condition, the traffic flow in arm G in Fairview Park Interchange under previous approved Planning Application A/YL-MP/344 was adopted in the assessment in conservative approach. The observed peak hour traffic flows are shown in **Drawing 3.15**.

3.2.4 Junction capacity and Volume/Capacity Ratio (V/C Ratio) assessments have been conducted for the identified junctions and road links with respect to the observed traffic flows to evaluate their current operational performance during the weekday peak hours and the results are as shown in **Table 3.2** and **Table 3.3**. The junction calculation sheets are attached in **Annex A**.

Table 3.2 Current Junction Operational Performance

Ref. (1)	Junction	RC/RFC (2)	
		AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.38	0.38
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.48	0.29
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.75	0.63
C	Castle Peak Road – Mai Po/ San Tam Road	0.19	0.12
D	Castle Peak Road – Mai Po/ Royal Palms Boulevard	0.56	0.31
E	Castle Peak Road – Mai Po/ Geranium Path	0.02	0.02
F	Castle Peak Road – Tam Mi/ Yau Pok Road	0.03	0.03
G	Castle Peak Road – Tam Mi/ Kam Pok Road	0.12	0.10
H	Fairview Park Interchange	0.56	0.64
I	Castle Peak Road – Mai Po/ Mai Po South Road	0.01	0.02
J	Castle Peak Road – San Tin/Kwun Tung Road	0.54	0.72
K	San Tin Interchange	0.49	0.41

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

Table 3.3 Current Road Links Performance

Ref.(1)	Road Link	Directions	Design Capacity, (veh/hr)	Design Capacity, (pcu/hr) (4)	2024 Traffic Flow			
					Traffic Flow (pcu/hr)		V/C (5)	
					AM	PM	AM	PM
L1	Mai Po South Road	EB	700(2)	910	0	10	0.00	0.01
		WB	700(2)	910	15	10	0.02	0.01
L2	Castle Peak Road – Mai Po	NB	700(2)	910	185	210	0.20	0.23
		SB	700(2)	910	185	155	0.20	0.17
L3	Castle Peak Road – Mai Po	NB	700(2)	910	240	240	0.26	0.26
		SB	700(2)	910	220	185	0.24	0.20
L4	Castle Peak Road – Tam Mi	NB	700(2)	910	420	390	0.46	0.43
		SB	700(2)	910	475	350	0.52	0.38
L5	San Tin Highway	NB	4,700(3)	6,100	4,720	4,280	0.77	0.70
		SB	4,700(3)	6,100	4,630	4,635	0.76	0.76
L6	San Tin Highway	NB	4,700(3)	6,100	4,400	3,955	0.72	0.65
		SB	4,700(3)	6,100	4,225	4,360	0.69	0.71

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction.
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction.
(4) PCU factor of 1.3 adopted.
(5) V/C = volume to capacity ratio.

3.2.5 The results in **Table 3.2** and **Table 3.3** have indicated that all identified junctions and road links are currently operating with ample capacity during the typical weekday morning and evening peak hours.

3.3 Nearby Public Transport

3.3.1 The current road-based public transport services are available at Castle Peak Road and San Tam Road, with service stops located within 500-metre walking distance from the subject site, as shown in **Drawing 3.16** and as summarized in **Table 3.4** below.

Table 3.4 Existing Nearby Public Transport Services

Route No.	Destination	Frequency (min)
Franchised Bus		
76K	Sheung Shui (Ching Ho) – Long Ping Estate	20 - 30
Green Minibus (GMB)		
75	Yuen Long (Fook Hong Street) – Lok Ma Chau Spur Line PTI	10 - 20
76	Yuen Long (Fook Hong Street) – Siu Hom Tsuen	15 - 20
78	Lok Ma Chau (San Tin) PTI – Pat Heung Road (near Tai Lam Bus-Bus Interchange)	20 - 25
Public Light Bus (PLB)		
17	Sheung Shui – Yuen Long	Flexible (1)

Remarks: (1) Peak hour frequency is observed to be 3-5 minutes.

Public Transport Utilization

3.3.2 A traffic survey was also conducted on a typical weekday in April 2024 to identify the peak hour public transport utilization at the existing nearest bus stops near Royal Palms at Castle Peak Road and Maple Garden at San Tam Road. The survey results are summarized in **Table 3.5**.

Table 3.5 Observed Peak Hour Public Transport Utilization

Bound	Mode	Route No.	Observed No. of Vehicles	Total Service Capacity (pax)(1)	Observed Occupancy (pax)	Occupancy Rate (%)
AM Peak (07:00 – 09:00)						
Yuen Long	Bus	76K	5	450	119	26%
	GMB	75	12	198	166	84%
		76	5	83	68	82%
		78	4	76	30	39%
	PLB	17	49	817	579	71%
			Total	**1,624**	**962**	**59%**
Sheung Shui / San Tin	Bus	76K	4	360	47	13%
	GMB	75	14	233	157	67%
		76	4	67	45	67%
		78	5	92	42	46%
	PLB	17	41	674	449	67%
			Total	**1,426**	**740**	**52%**
PM Peak (17:30 – 19:30)						
Yuen Long	Bus	76K	4	360	135	38%
	GMB	75	18	309	297	96%

		76	6	96	70	73%
		78	4	76	32	42%
	PLB	17	43	718	653	91%
			Total	**1,559**	**1,187**	**76%**
Sheung Shui / San Tin	Bus	76K	6	540	47	9%
	GMB	75	10	172	139	81%
		76	6	96	92	96%
		78	4	76	33	43%
	PLB	17	40	667	535	80%
			Total	**1,551**	**846**	**55%**

Remarks: (1) The bus carrying capacity is assumed to be taken at 75% of 120, which equals to 90.

3.3.3 From **Table 3.5**, it can be noted that the passenger demands are mostly served by KMB 76K, GMB 75 and PLB 17. The bus service has an extensive service coverage running between Yuen Long and Sheung Shui, however its service level is still relatively low at a peak hour frequency of 20-30 minutes. For the PLB 17, it is a public light bus service with no designated routing, headway and fares.

3.3.4 Based on the number of boarding and alighting passengers from the survey, it is noted that the directional split of local residents in the vicinity is about 65% towards Yuen Long and 35% towards Sheung Shui in AM peak periods, while 68% towards Yuen Long and 32% towards Sheung Shui in PM peak periods.

3.4 Pedestrian Flow and Queuing Space Assessment

3.4.1 A pedestrian flows survey was also conducted on a typical weekday in October 2024, the operational performance of identified footpaths and concerned queuing area of bus stops at Castle Peak Road – Mai Po and San Tam Road in term of average flow of Level of Services (LOS), as stipulated in Highway Capacity Manual 2000 and Transport Planning & Design Manual (TPDM), has been assessed. The peak hour pedestrian flows in 2024 are shown in **Drawing 3.17**, and the results are summarized in below **Table 3.6** and **Table 3.7**.

Table 3.6 2024 Observed Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2024 Observed Peak Hourly Flow (ped/hr)		2024 Observed Peak Flow Rate (ped/min/m) (3)		LOS (4)	
			AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	11	9	0.17	0.14	A	A
Fp2	2.3	1.3	20	41	0.26	0.53	A	A
Fp3	1.5	0.5	22	37	0.73	1.23	A	A
Fp4	1.7	0.7	5	6	0.12	0.14	A	A
Fp5	1.5	0.5	4	4	0.13	0.13	A	A

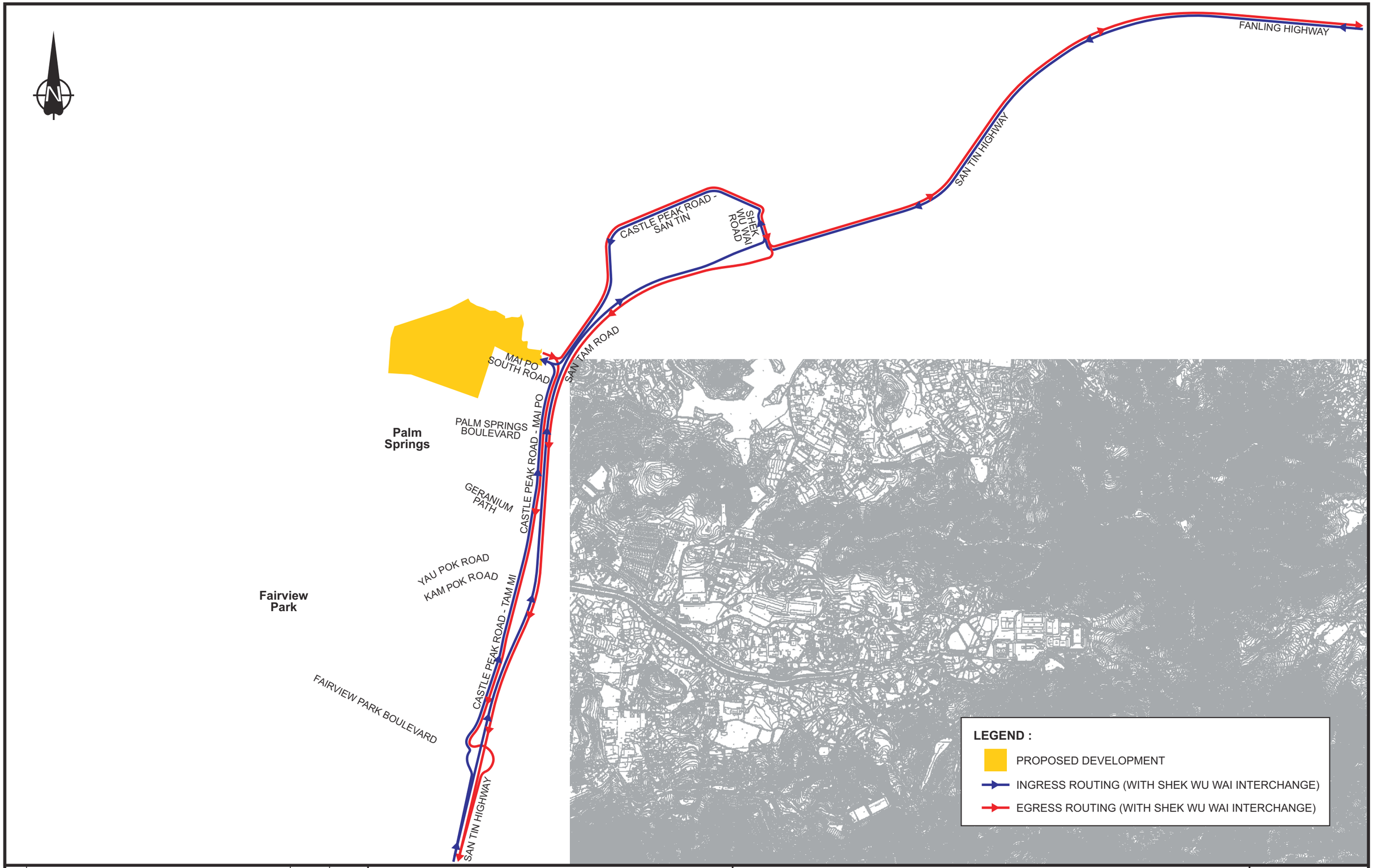
Remarks: (1) Refer to **Drawing 3.17** for locations and operational performance of identified footpaths.
(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath).
(3) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width.
(4) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.

Table 3.7 2024 Observed Queuing Area Level-Of-Service Assessment at Bus Stops

Ref. (1)	2024 Observed Peak Hourly Passenger Flow at Bus Stop (pax/hr)	2024 Observed Maximum Queue at Queuing Area (pax)	Queuing Area (m^2)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	2	1 (i.e. 2/60x25)	5.8	5.8	A
Palm Springs Bus Stop – Sheung Shui Bound (NB)	2	1 (i.e. 2/60x25)	20.3	20.3	A

Remarks: (1) Refer to **Drawing 3.17** for locations of identified queuing area.
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue).
(3) Refer to HCM2000, EXHIBIT 11-9.

3.4.2 As shown in **Table 3.6** and **3.7**, the identified footpaths and queuing area at concerned bus stops are currently operating with adequate spare capacities during the typical weekday morning and evening peak hours.



Rev.	Description	Checked	Date
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-	-	-	-
A	MINOR AMENDMENT	CFC	24DEC24

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

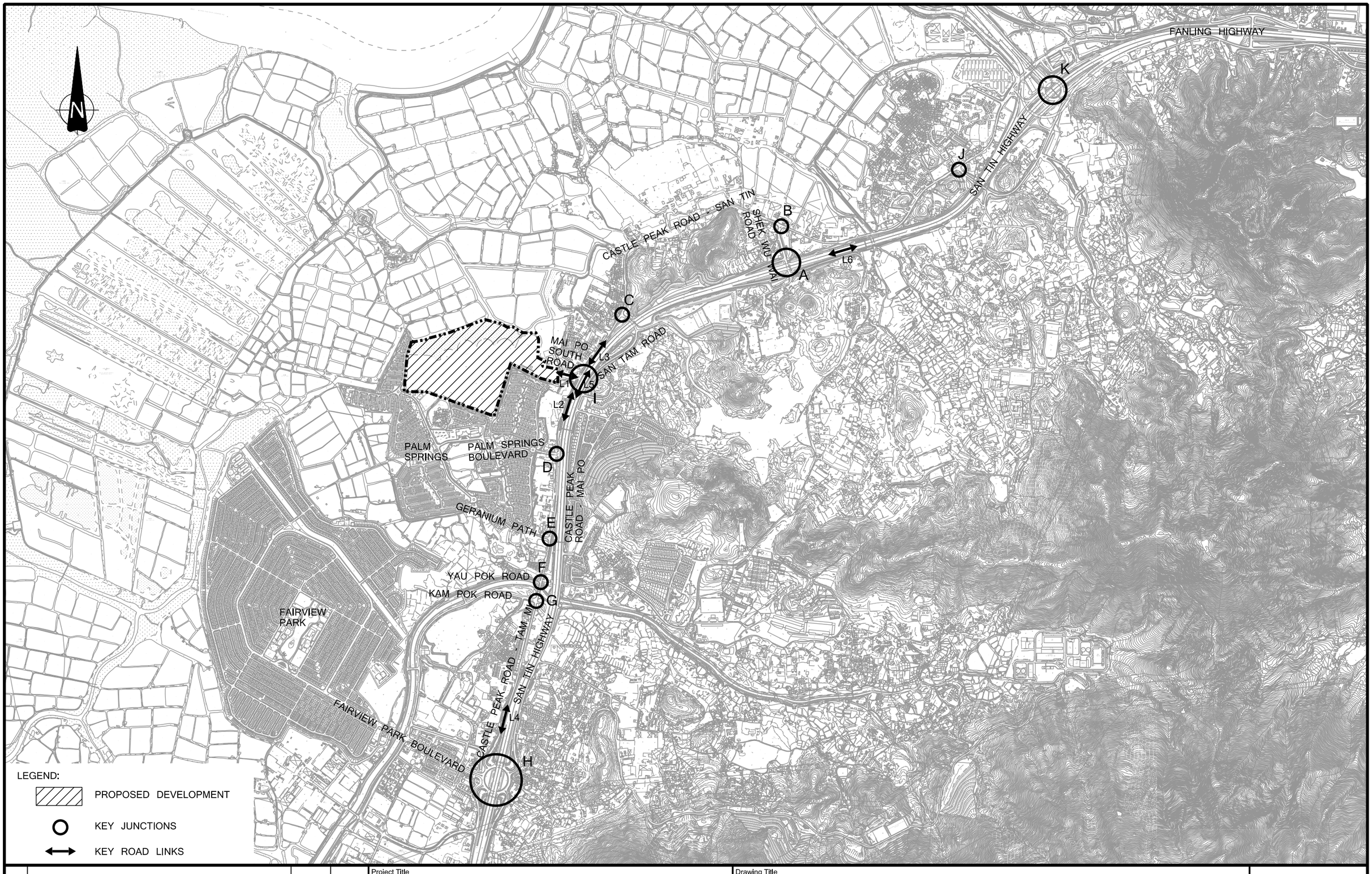
MAJOR INGRESS AND EGRESS ROUTE

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JUN 2024	3.1	A

SYSTRA MVA

CHK50800610/TIA/F31-A.CDR/LLH/24DEC24

Original Size : A3



Rev.	Description	Checked	Date
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C	TD COMMENT INCORPORATED	CFC	15AUG25
B	TD COMMENT INCORPORATED	CFC	22MAY25
A	TD COMMENT INCORPORATED	CFC	02JAN25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

KEY JUNCTIONS AND ROAD LINKS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	3.2	C

SYSTRA MVA

CHK50800610/TIA/F32-C.DGN/KCM/15AUG25

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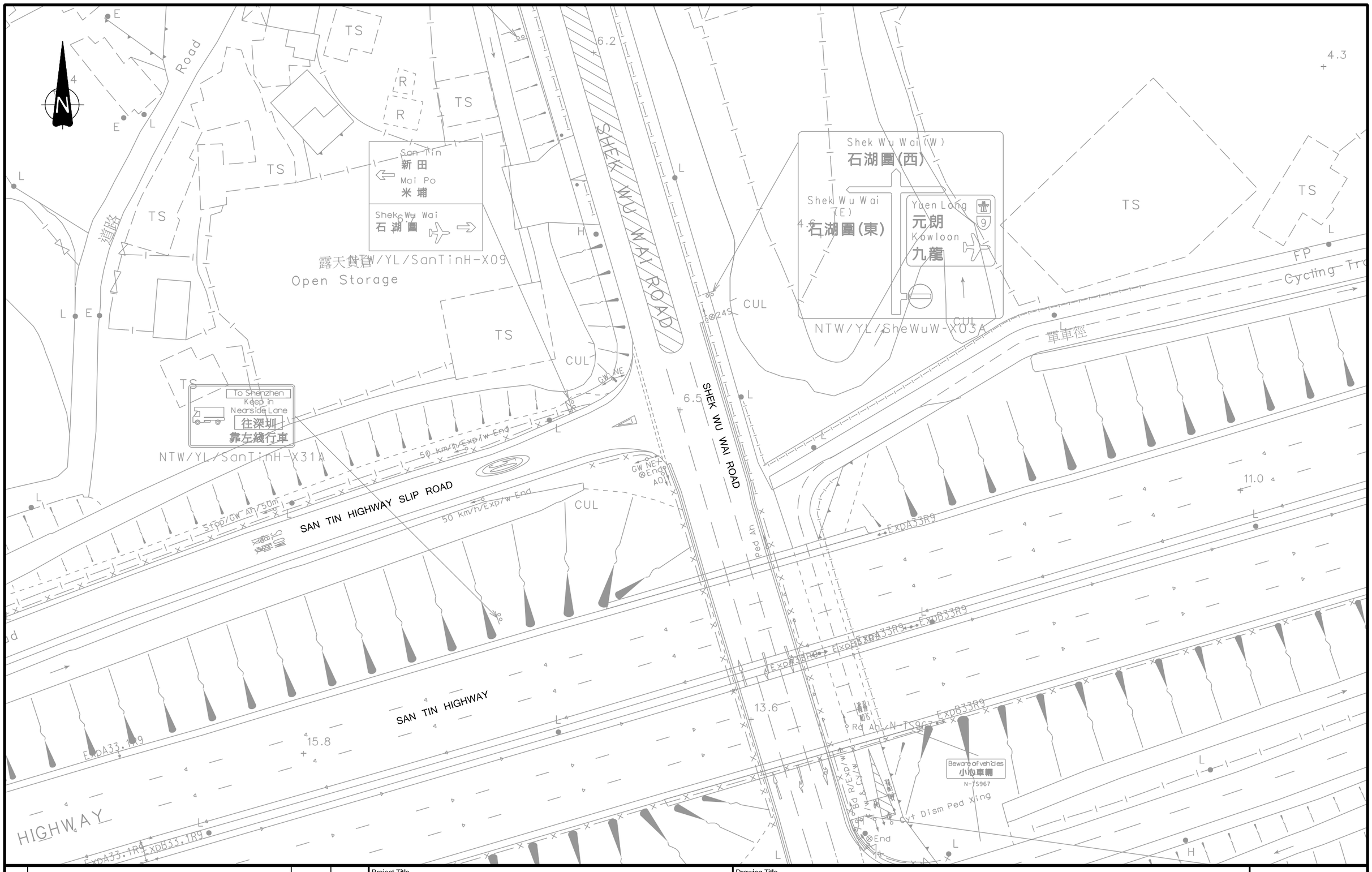

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

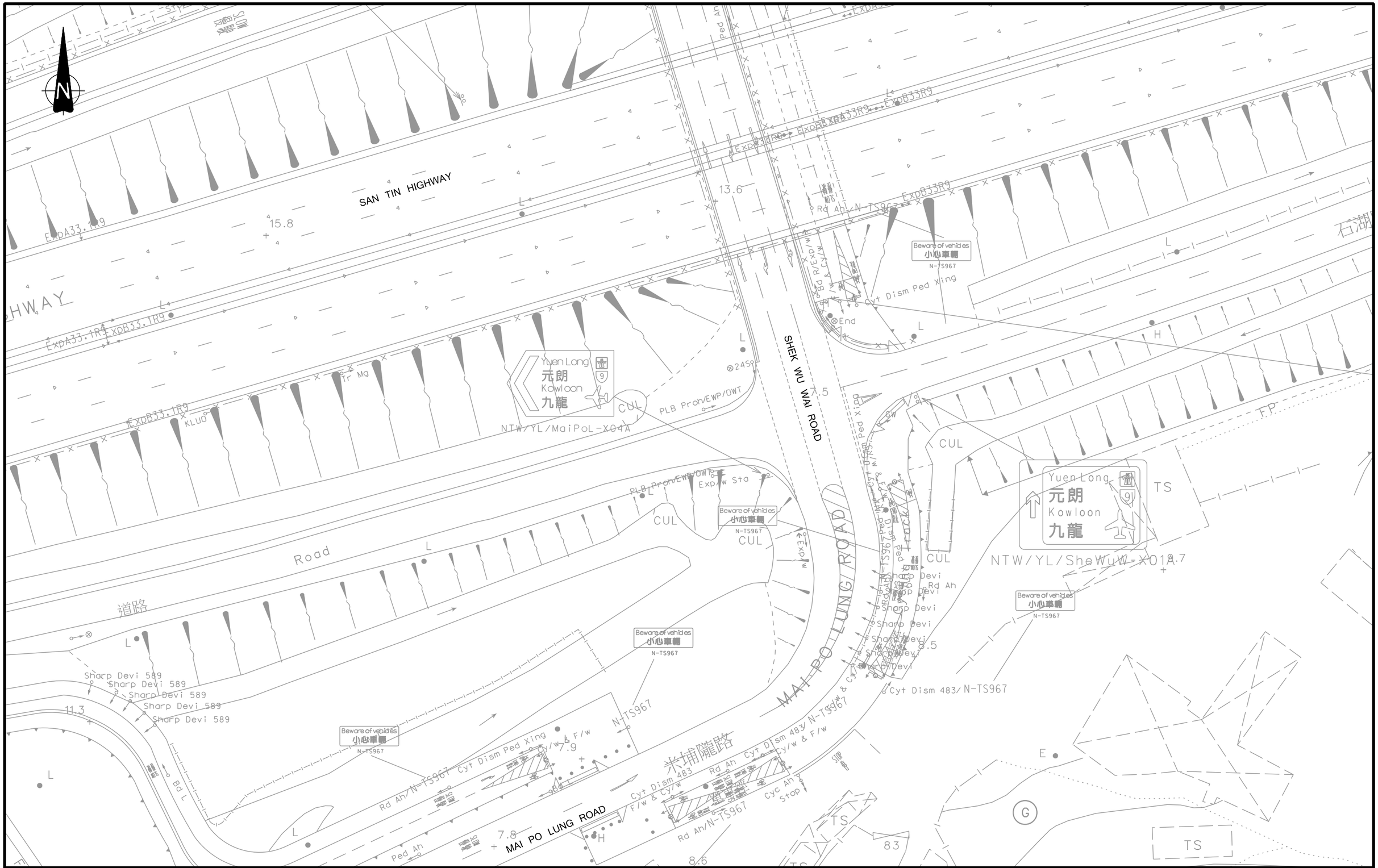
EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A1)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DED 2024	**3.3**	-

SYSTRA MVA

CHK50800610/TIA/F33.DGN/LHO/31DEC24

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

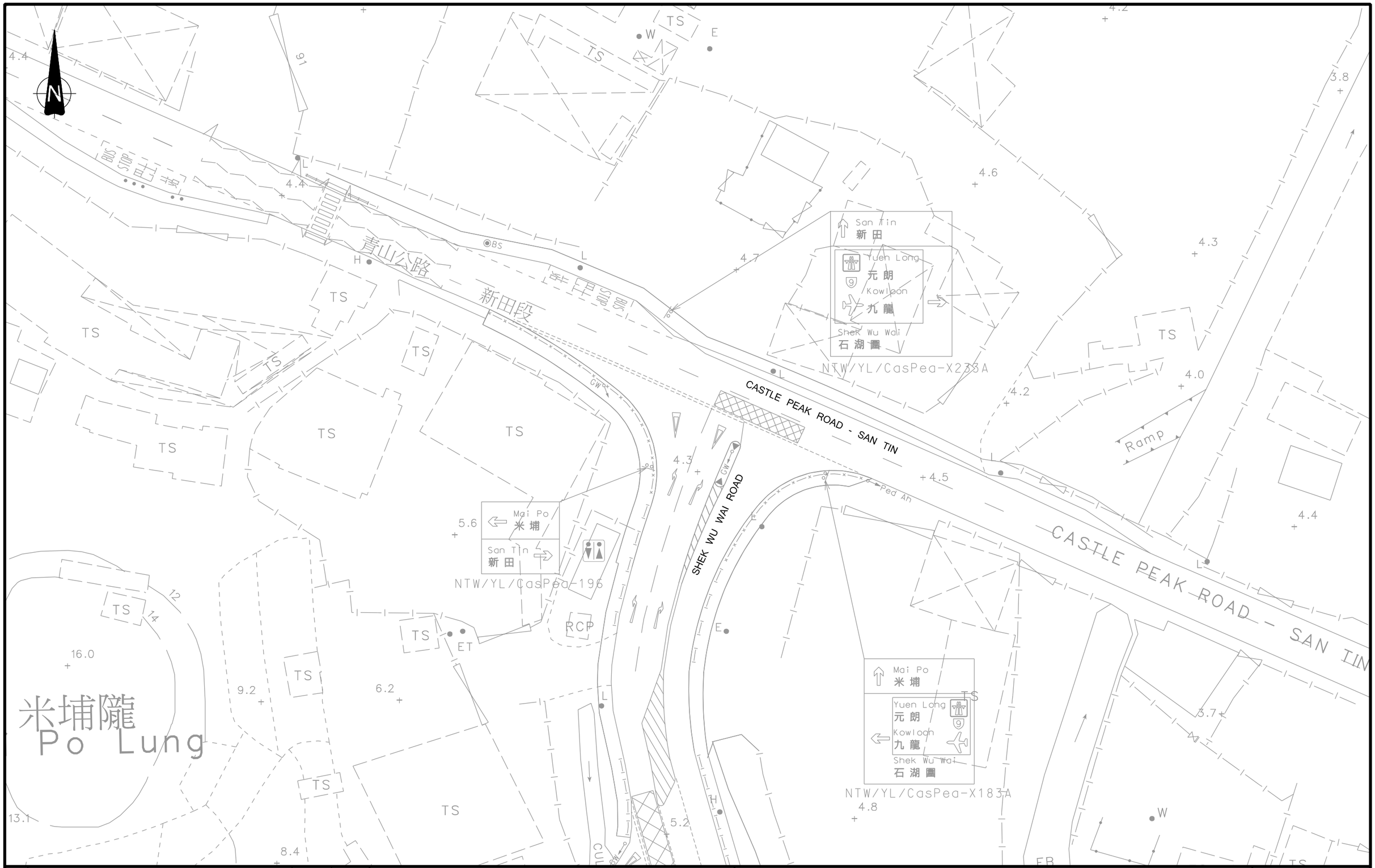
EXISTING JUNCTION LAYOUT OF SHEK WU WAI ROAD / MAI PO LUNG ROAD (A2)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.4**	-

SYSTRA MVA

CHK50800610/TIA/F34.DGN/LHO/03JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD-SAN TIN / SHEK WU WAI ROAD (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	DEC 2024	**3.5**	-

SYSTRA MVA

CHK50800610/TIA/F35.DGN/LHO/02JAN25

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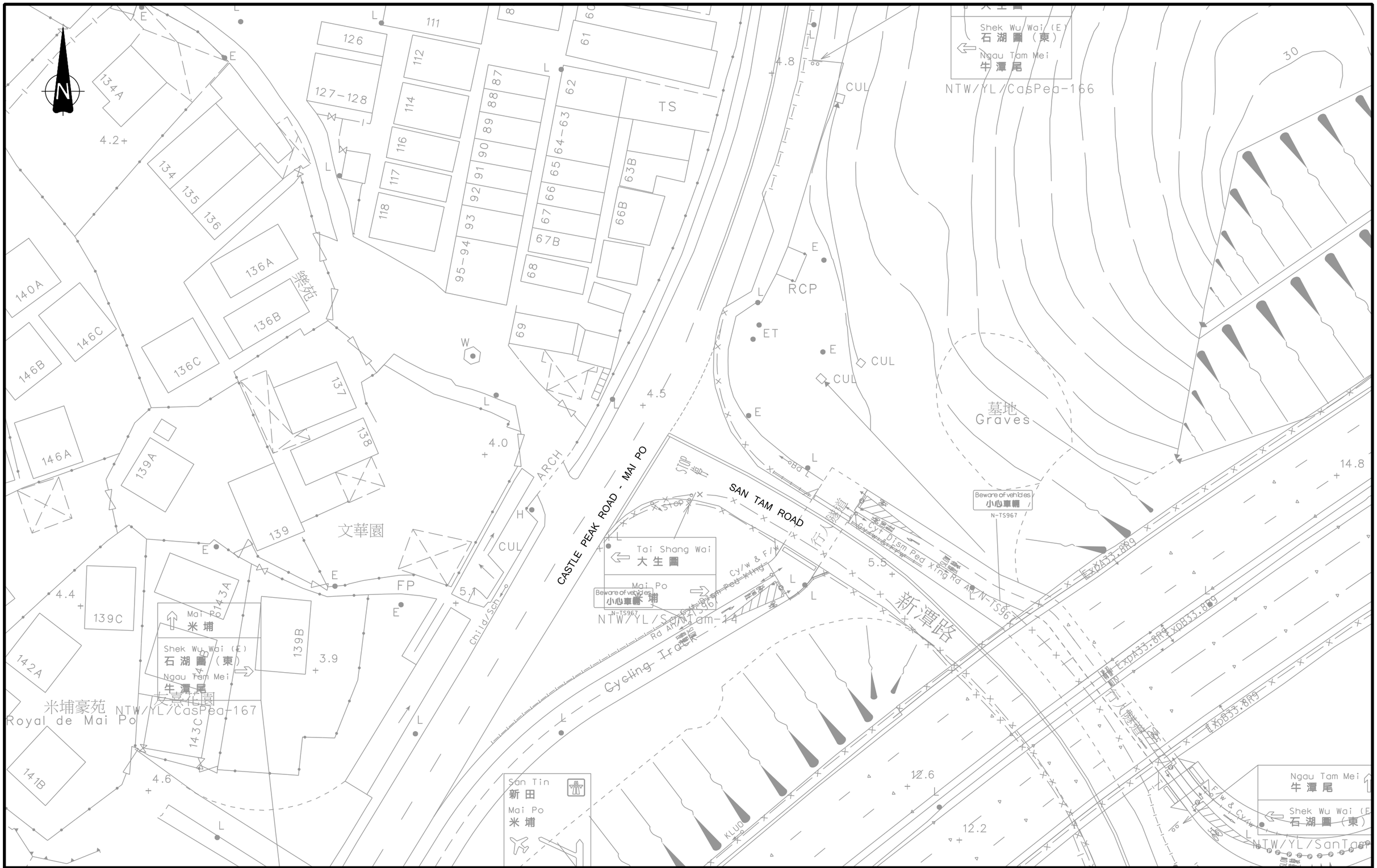

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

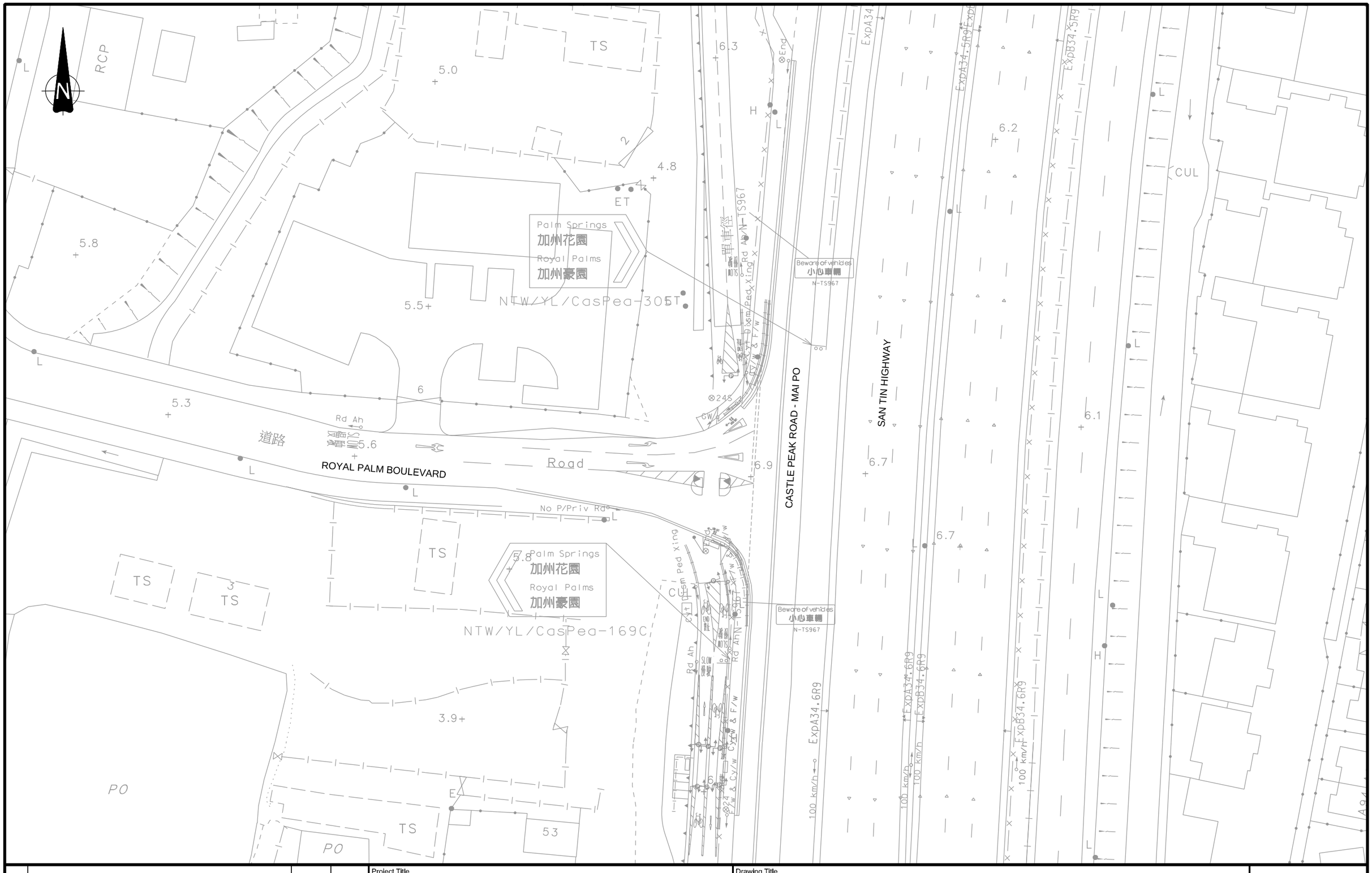
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / SAN TAM ROAD (C)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.6**	-

SYSTRA MVA

CHK50800610/TIA/F36.DGN/LHO/02JAN25

Original Size : A3



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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAIPO / ROYAL PALM BOULEVARD (D)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	3.7	-

SYSTRA MVA

CHK50800610/TIA/F37.DGN/LHO/02JAN25

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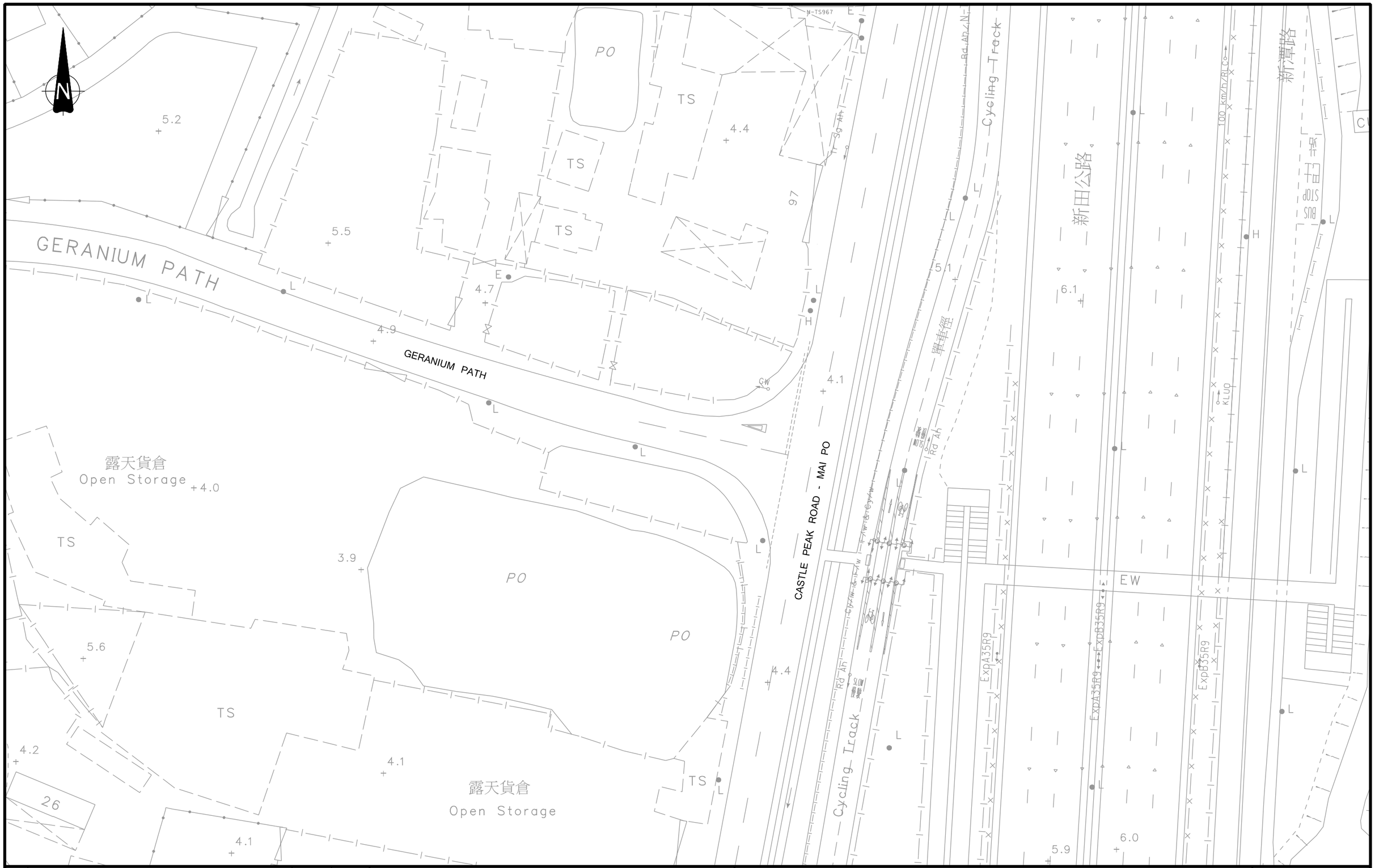

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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

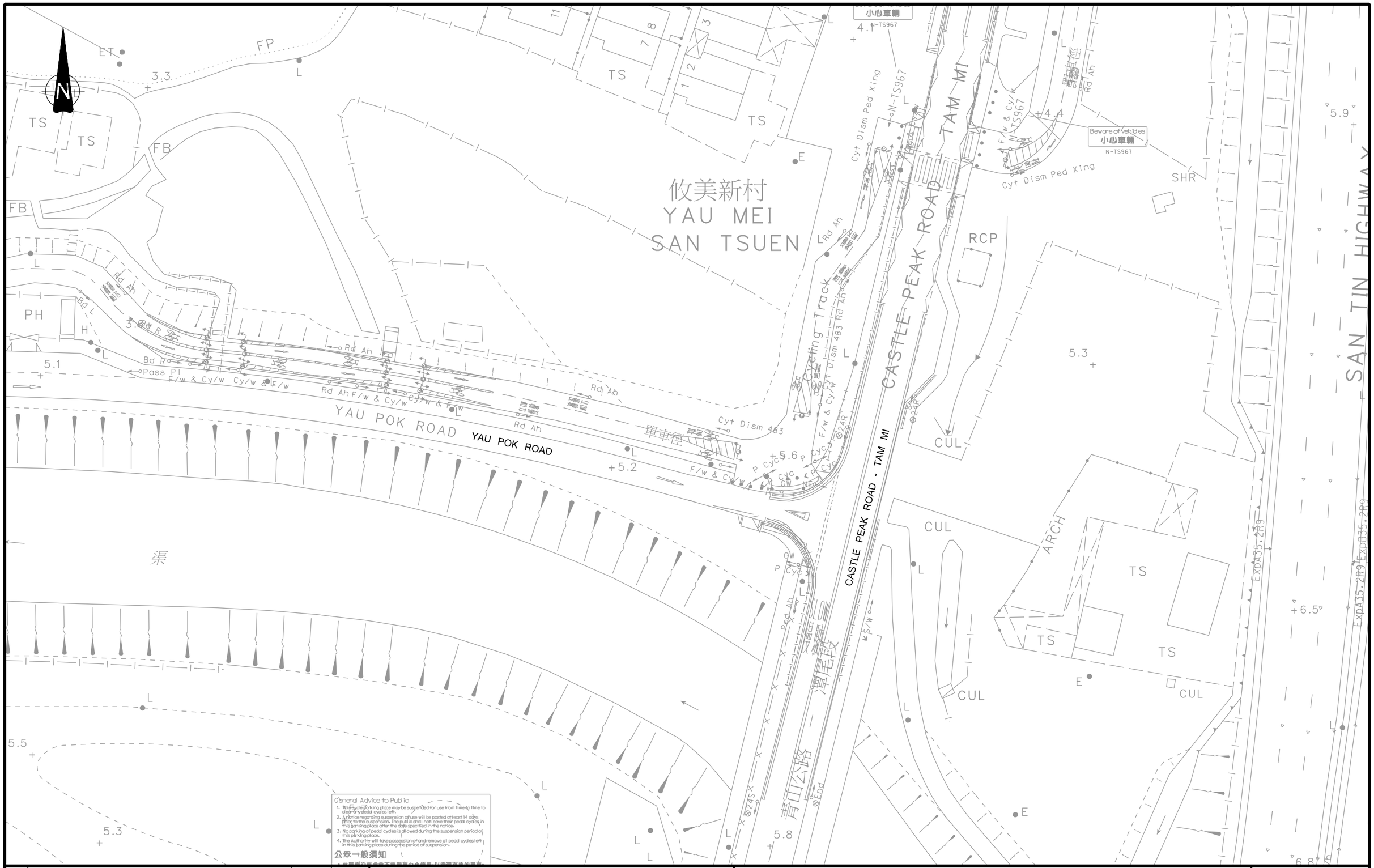
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / GERANIUM PATH (E)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.8**	-

SYSTRA MVA

CHK50800610/TIA/F38.DGN/LHO/02JAN25

Original Size : A3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N-TS967
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Cyt Dism Ped Xing
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CASTLE PEAK ROAD
RCP
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佐美新村
YAU MEI
SAN TSUEN
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Rd Ah
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Bd R
5.1
Pass Pl
F/w & Cy/w
Cy/w & F/w
Rd Ah
F/w & Cy/w
Cy/w & F/w
Rd Ah
Rd Ah
YAU POK ROAD
YAU POK ROAD
+5.2
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單車徑
Cycling Track
Cyt Dism 483
Rd Ah
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Cy/w & F/w
5.6
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C Cyc
GW
NE
F/w & Cy/w
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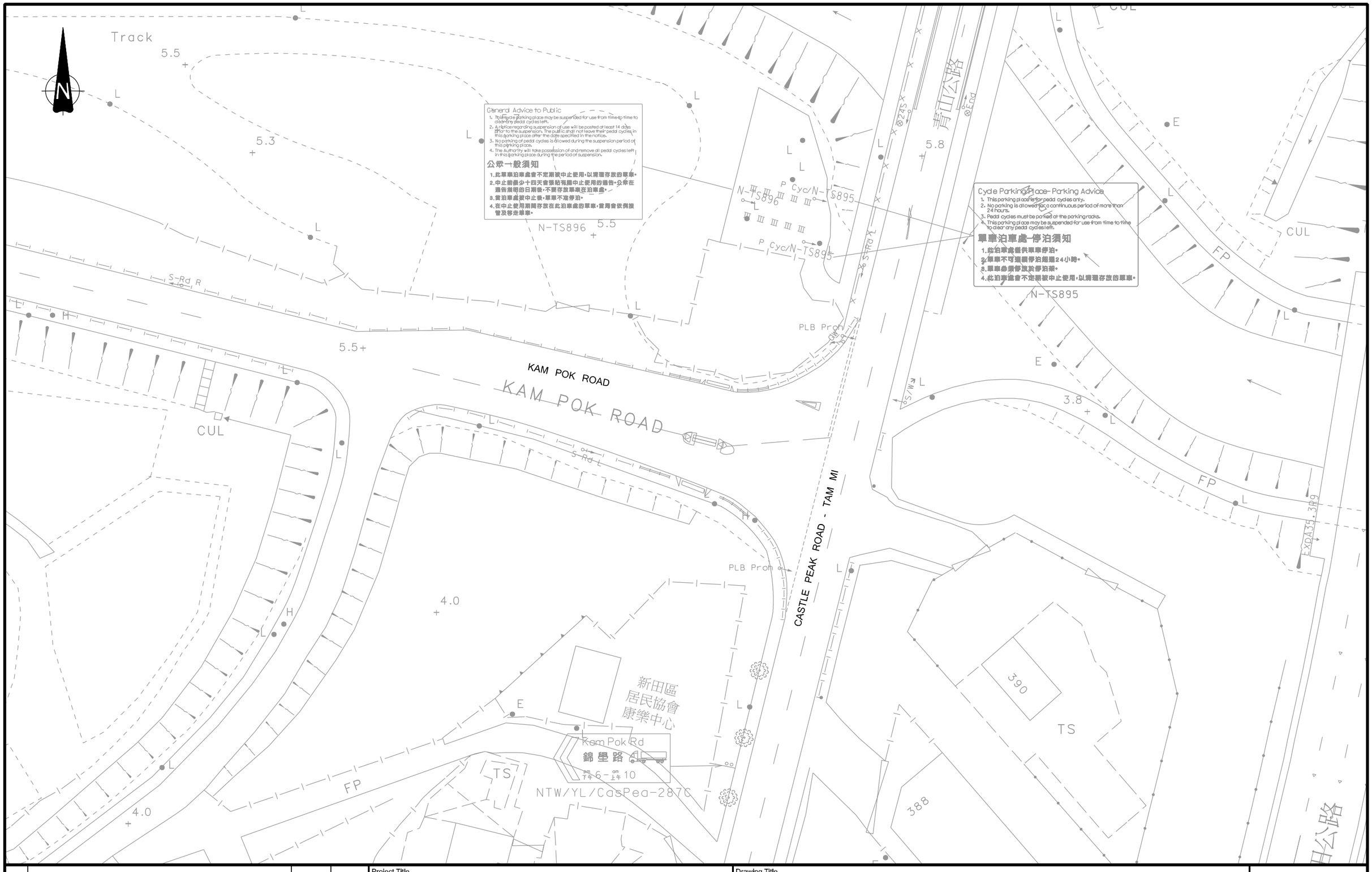

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

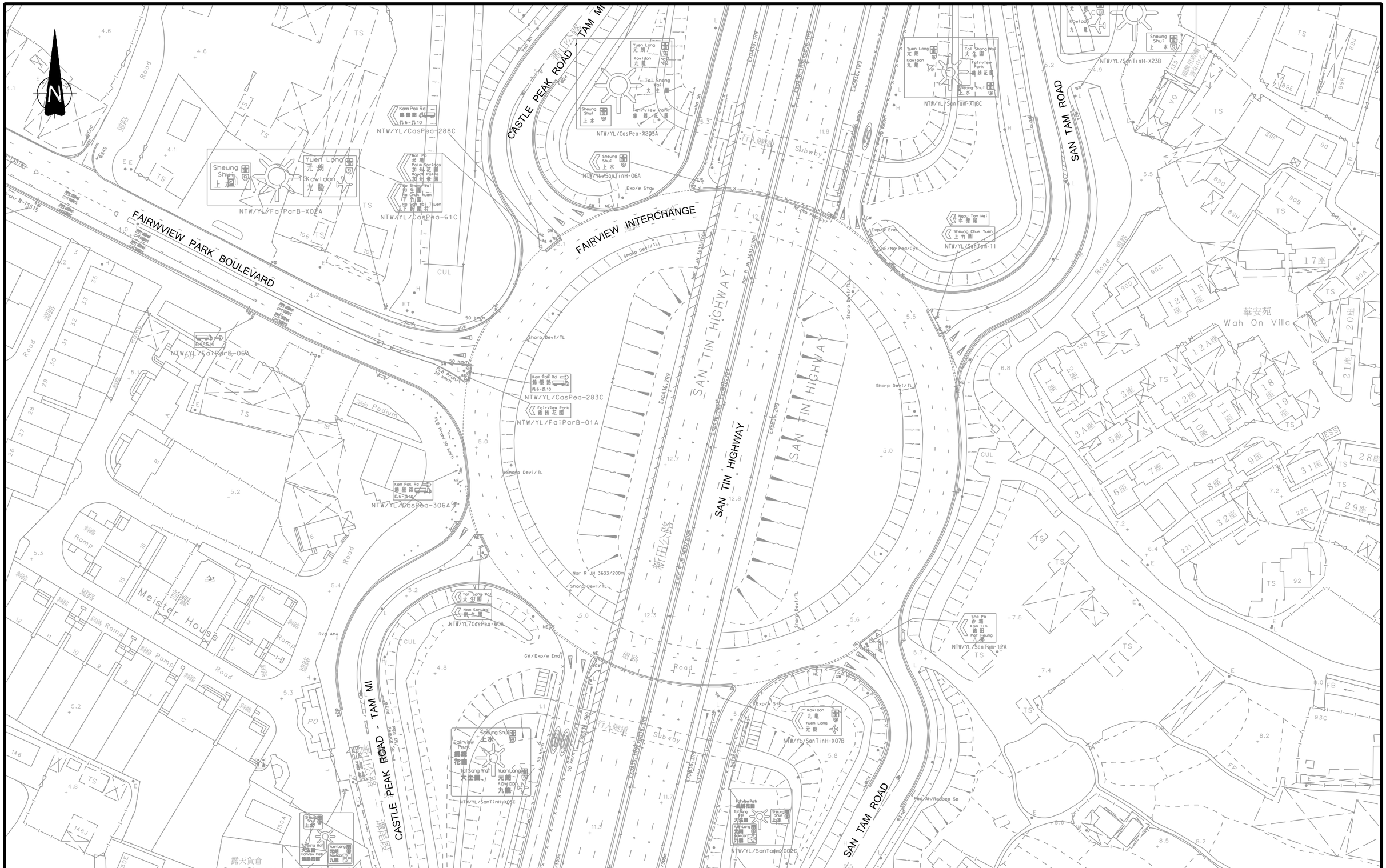
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - TAM MI / KAM POK ROAD (G)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.10**	-

SYSTRA MVA

CHK50800610/TIA/F310.DGN/LHO/02JAN25

Original Size : A3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FAIRVIEW INTERCHANGE
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
華安苑
Wah On Villa
Meister House
NTW/YL/CasPea-288C
NTW/YL/CasPea-X20A
NTW/YL/FaiParB-X02A
NTW/YL/CasPea-61C
NTW/YL/SanTinH-06A
NTW/YL/FaiParB-06A
NTW/YL/CasPea-283C
NTW/YL/FaiParB-01A
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NTW/YL/SanTam-X18C
NTW/YL/SanTinH-X23B
NTW/YL/SanTam-11
NTW/YL/SanTam-12A
NTW/YL/SanTam-GO2C
NTW/YL/CasPea-X54B
Yuen Long 元朗
Kowloon 九龍
Sheung Shui 上水
Tai Shang Wai 大生圍
Fairview Park 錦繡花園
Kam Pok Rd 錦樂路
Mai Po 米埔
Palm Springs 棕灣花園
Regent Palms 加州豪園
Ha Chuk Yuen 下竹園
Ha San Wai Tsuen 下新圍村
Ngau Tam Mei 牛潭尾
Sheung Chuk Yuen 上竹園
Sna Po 沙埔
Kam Tin 錦田
Pat Heung 八鄉
Subway
Footbridge
Road
道路
斜路
Ramp
行人隧道
露天貨倉
Open Storage
Vita Podium
Sharp Devi/TL
Nar R JN 3633/200m
Exp/w Stop
Exp/w End
GW/Exp/w End
Pedestrian Refuge Sp
50 km/h
30 km/h
Pub Proy 30 km/h
Exp036-TR9
Exp036-TR10
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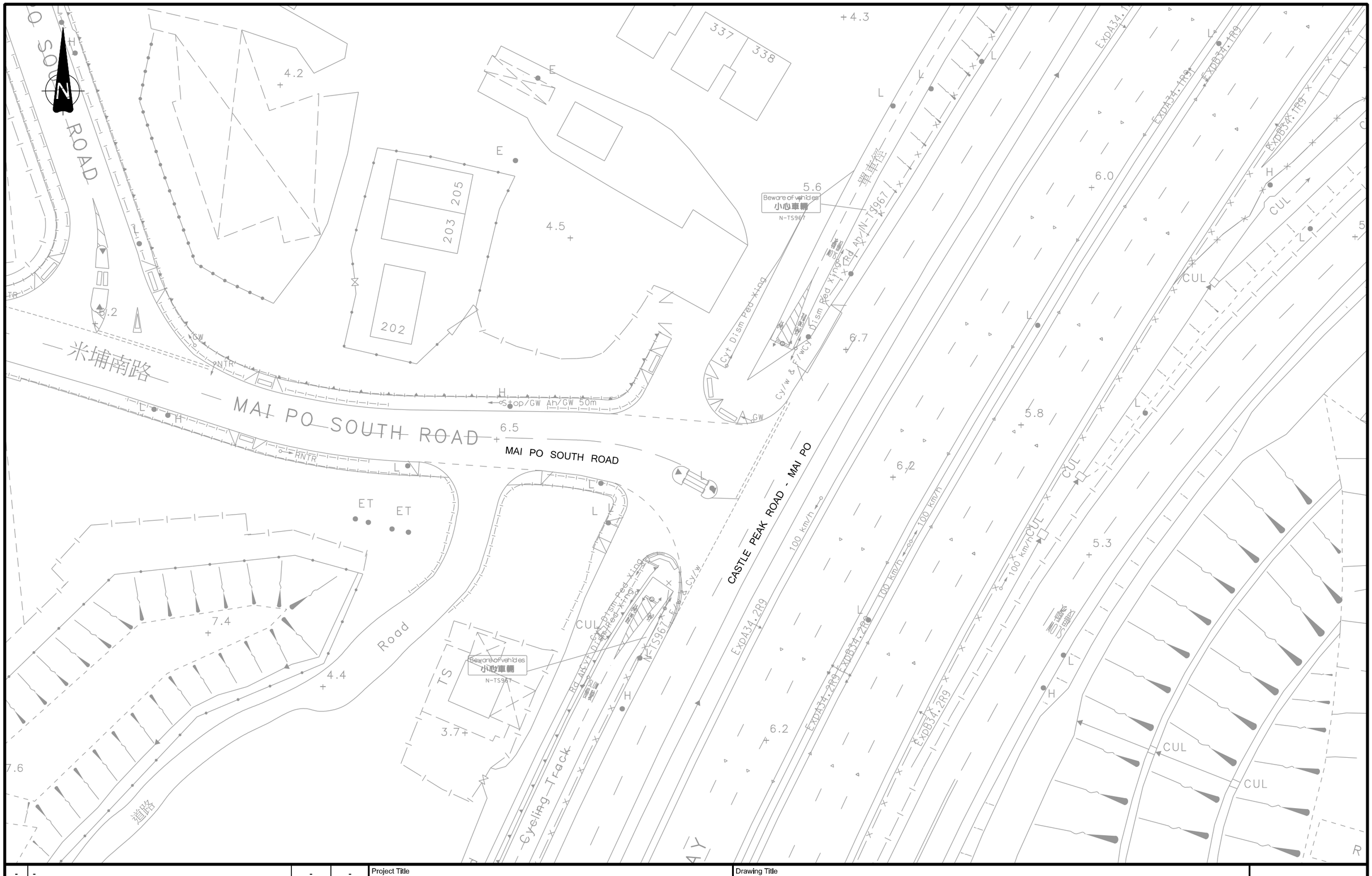

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD - MAI PO / MAI PO SOUTH ROAD (I)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	**3.12**	-

SYSTRA MVA

CHK50800610/TIA/F312.DGN/LHO/03JAN25

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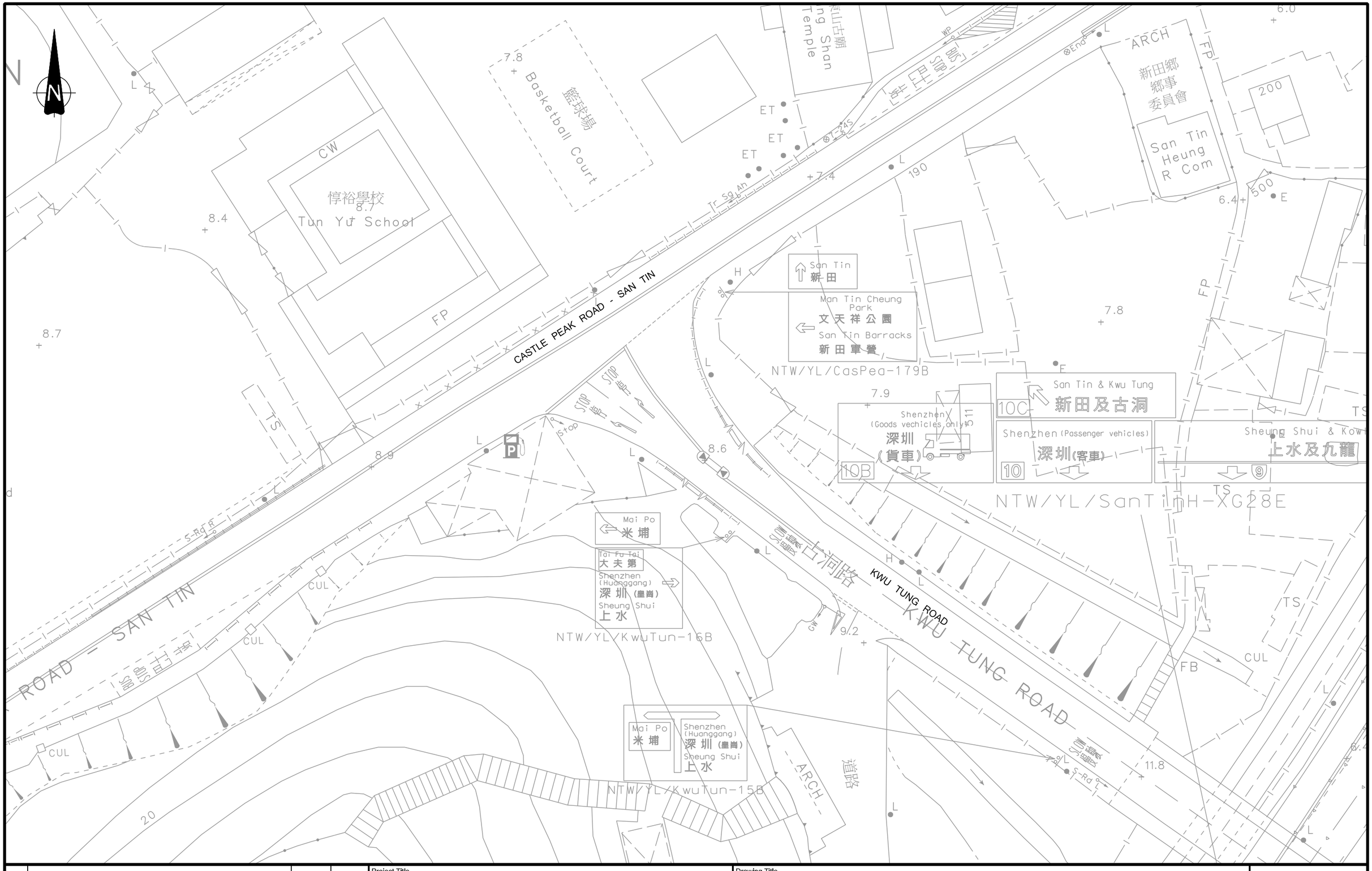

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

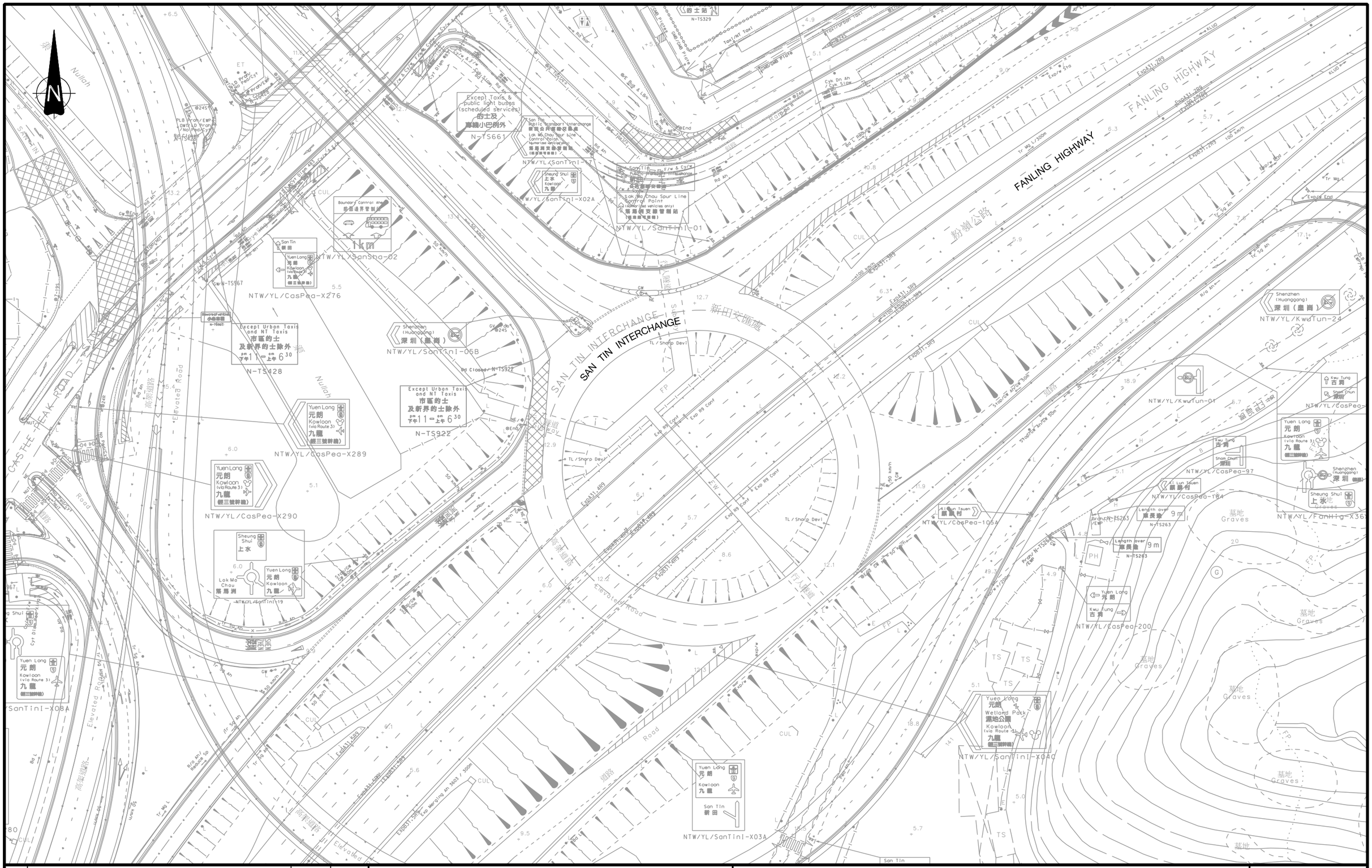
EXISTING JUNCTION LAYOUT OF CASTLE PEAK ROAD-SAN TIN / KWU TUNG ROAD (J)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	MAY 2025	3.13	-

SYSTRA MVA

CHK50800610/TIA/F313DGN/LHO/23MAY25

Original Size : A3


SAN TIN INTERCHANGE
新田交匯處
FANLING HIGHWAY
粉嶺公路
Except Taxis & public light buses (scheduled services) 的士及專線小巴例外
N-TS661
Except Urban Taxis and NT Taxis 市區的士及新界的士除外 pm下午11 – am上午6 30
N-TS428
N-TS922
Except Taxis 的士除外
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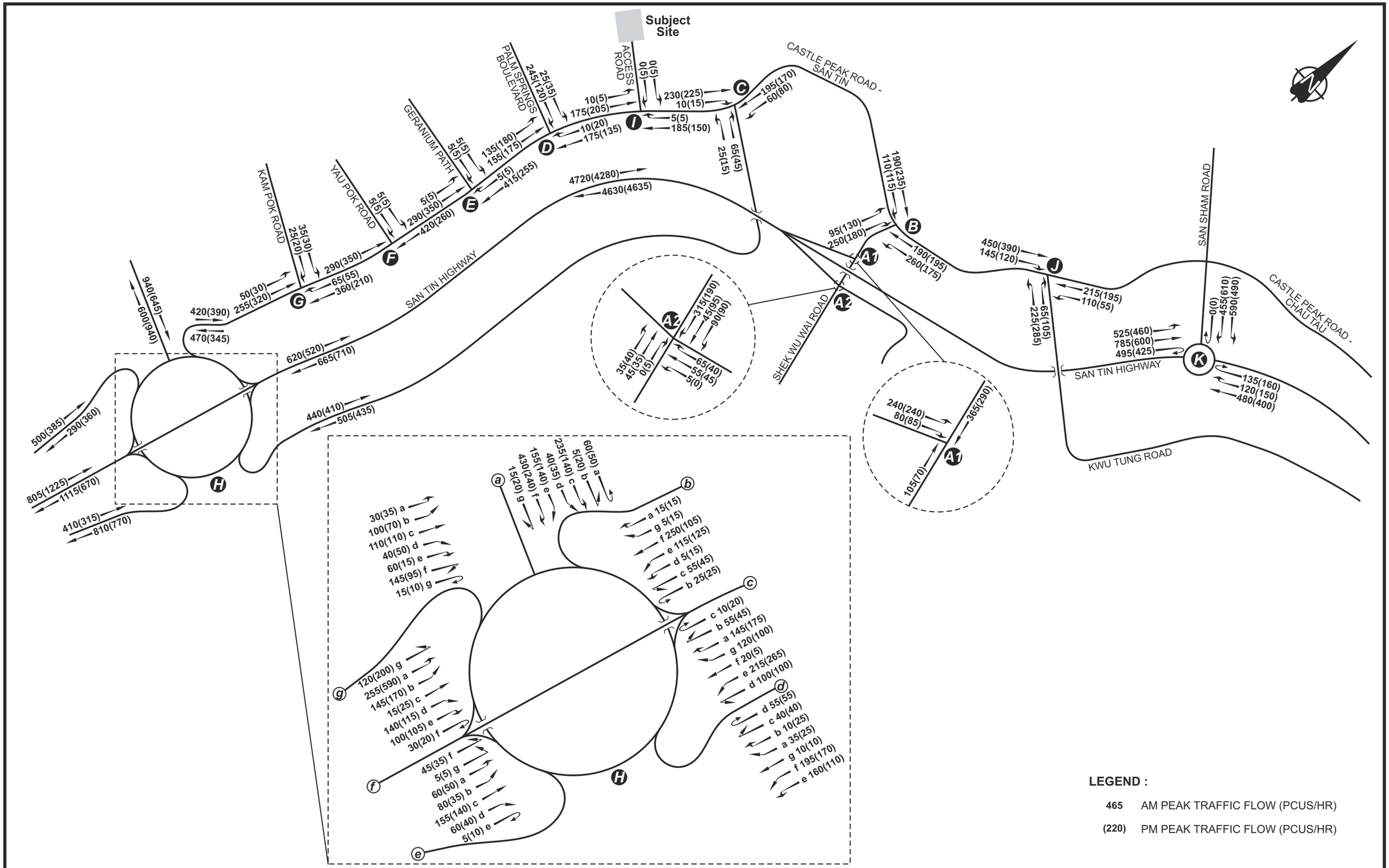

Rev.	Description	Checked	Date
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B	MINOR UPDATE	CFC	16SEP25
A	REVISE FIGURE NO.	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

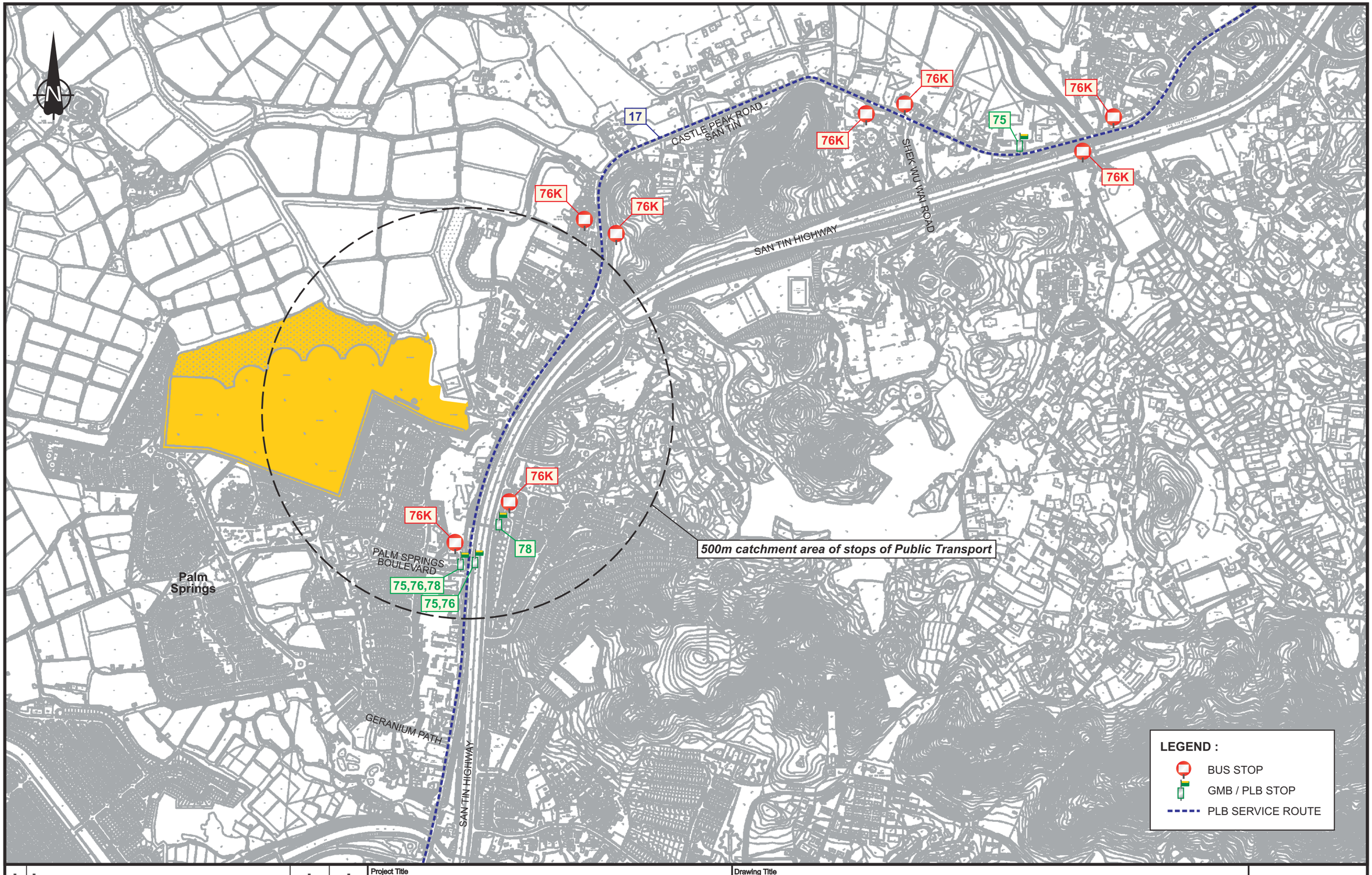
2024 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	3.15	B

SYSTRA MVA

CHK50800610/TIA/F315-A.CDR/LLH/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

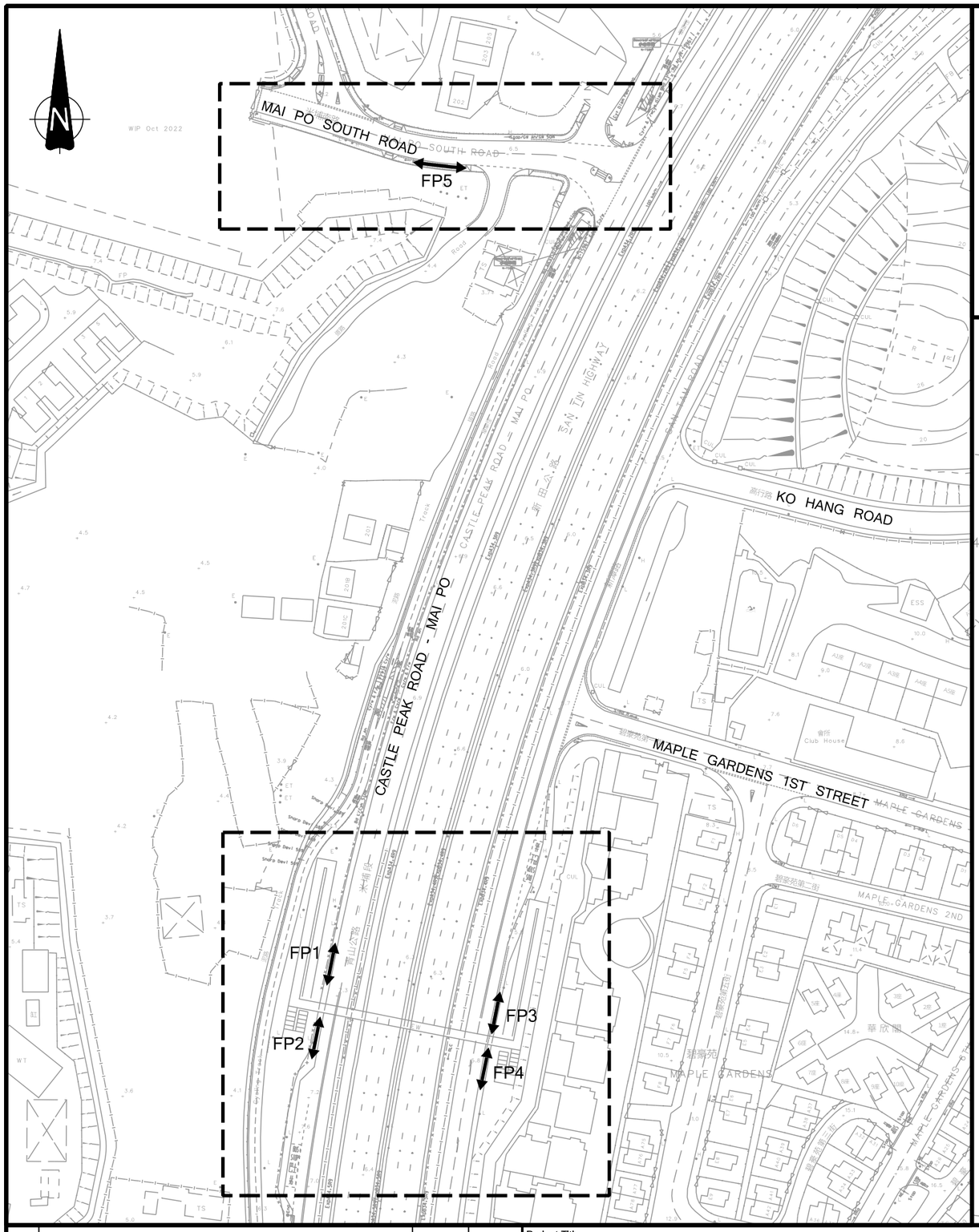
CURRENT PROVISION OF PUBLIC TRANSPORT SERVICES

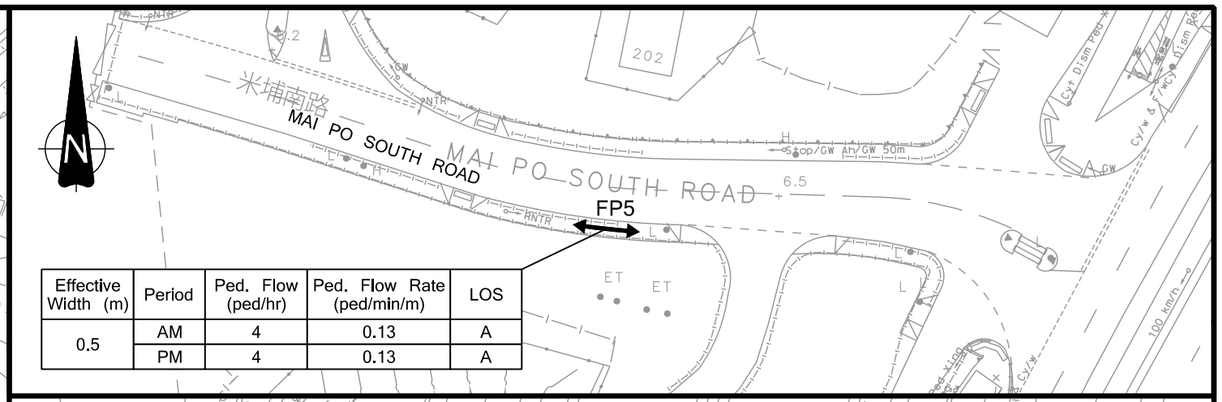
Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	MAY 2025	3.16	-

SYSTRA MVA

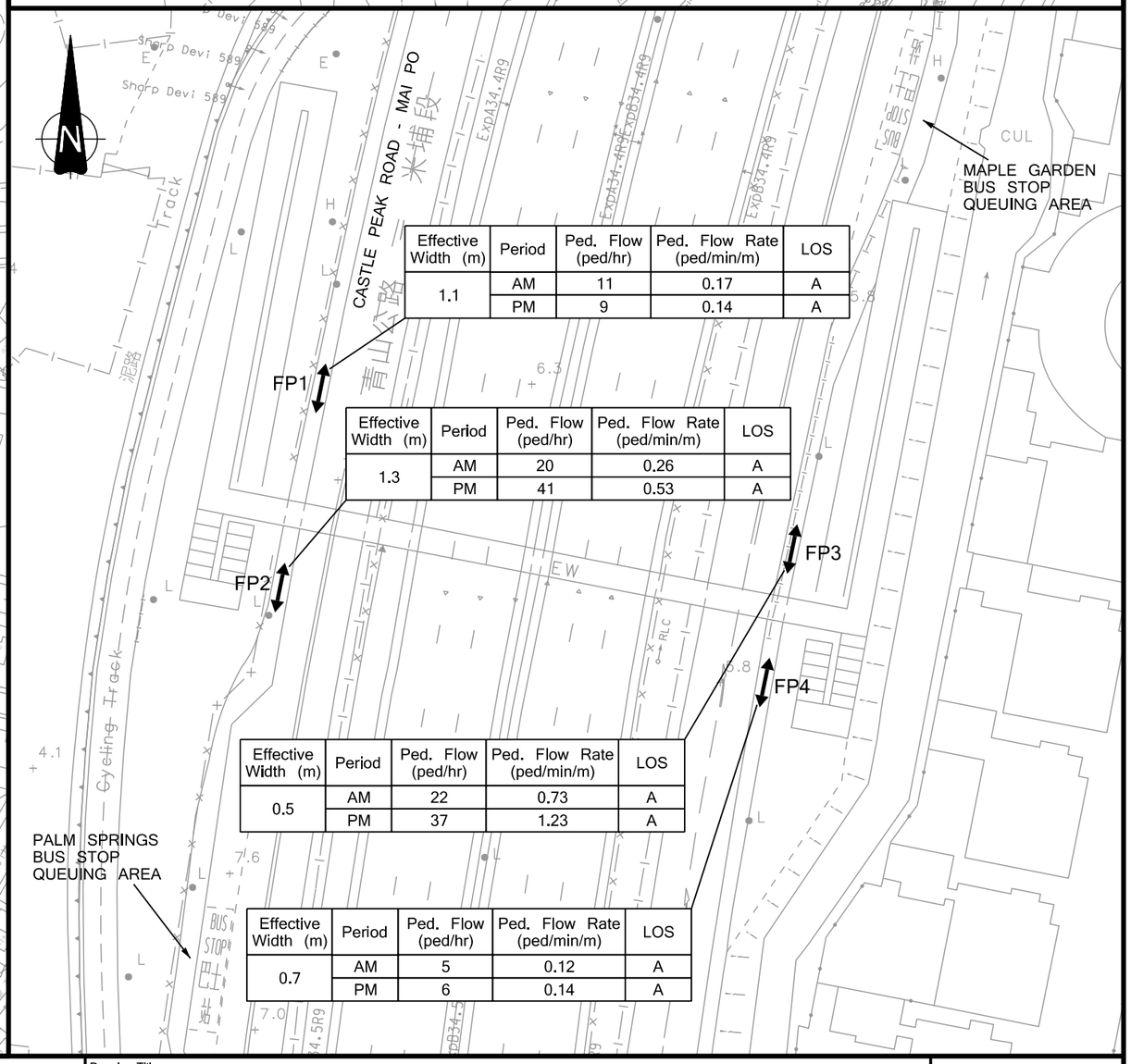
CHK50800610/TIA/F316.CDR/LLH/21MAY25

Original Size : A3





Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	4	0.13	A
	PM	4	0.13	A



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	11	0.17	A
	PM	9	0.14	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	20	0.26	A
	PM	41	0.53	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	22	0.73	A
	PM	37	1.23	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	5	0.12	A
	PM	6	0.14	A

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	15AUG25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A IN DD101

Drawing Title

YEAR 2024 OBSERVED PEAK HOUR PEDESTRIAN FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S. (A3)	DEC 2024	3.17	A

SYSTRA MVA

CHK50800610/TIA/F317-A.DGN/KCM/15AUG25

Original Size : A3

4. TRAFFIC FORECAST

4.1 Design Year

4.1.1 The tentative operation year of the proposed development is by 2031. Hence, the design year of 2034, three years upon operation, has been adopted for traffic forecast and assessment purposes.

4.2 Reference Traffic Forecast

Planning Application of Y/YL-MP/10

4.2.1 In order to produce the traffic forecast for the strategic highway and other local road links at the design year of 2034, reference has been made to the 2-tier model from nearby approved planning application, Y/YL-MP/10 for proposed development in various lots and adjacent Government Land in DD 104, Yuen Long, N.T.. Subject to review of the traffic flow in Year 2034 and the accounted planned development in the TIA report of Y/YL-MP/10, further adjustment has been made to produce the 2034 Reference traffic flow for study purpose.

Toll Plans Changes for Tai Lam Tunnel

4.2.2 The Government has taken over the Tai Lam Tunnel and implement new tolls on 31 May 2025. Based on the Legislative Council paper regarding the tolling scenarios for Tai Lam Tunnel upon Government's Takeover, the V/C ratio of Tai Lam Tunnel would be changed. With the review of BDTM flow of Tolo Highway and the major junctions along, adjustment on traffic flow is also included into the traffic forecast to reflect the situation accordingly.

Effect of Northern Link (NOL) and Northern Metropolis (NM) Highway

4.2.3 The proposed NOL Main Line would be a railway of about 10.7 kilometres connecting the Kam Sheung Road Station and the planned Kwu Tung Station, with three intermediate stations at San Tin, Ngau Tam Mei and Au Tau. Construction of the NOL Main Line is expected to commence in 2025 for completion in 2034.

4.2.4 The proposed NM Highway is a major east-west corridor linking the development nodes (including Ngau Tam Mei, San Tin Technopole, Kwu Tung North/Fanling North and New Territories North (NTN) New Town) in the Northern Metropolis with a total length of approximately 23 kilometers. The NM Highway will enhance accessibility to the new development areas and further enhance cross-boundary road connections. Upon commissioning of the NM Highway, it can alleviate traffic pressure on existing roads. The commissioning of San Tin section is targeted in or before Year 2036.

4.2.5 The impact of NOL has been considered in the 2-tier model from nearby approved planning application, Y/YL-MP/10. Although the impact of NM Highway has not been reflected in the traffic forecast, the commissioning of both NM Highway would be expected to share the burden of road traffic and help to improve the road junction and road link performance. The population intake programme of the proposed development will take into account the commissioning programme of NOL and the capacity of road network to ensure that the proposed development would not cause any significant traffic impact to the road network.

San Tin Technopole

4.2.6 The large-scale development of San Tin Technopole (STT) will be constructed and intake by different phases, as illustrated in **Annex B** and **Annex C**. The summary will be as shown in **Table 4.1**.

Table 4.1 Phasing of San Tin Technopole

Phases [1]	Proposed Commencement of Works	Proposed Intake Year
Initial Phase	Year 2024	Year 2031
Main Phase	Year 2026	Year 2034
Remaining Phase	Year 2032	Year 2039

Remark: (1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.

4.2.7 The development trips in "Initial Phase" and "Main Phase" would be considered in the assessment of Year 2034. The related development schedules and estimated traffic generations are summarized in below **Table 4.2**. The estimated traffic flows of STT under Year 2034 are shown in **Drawing 4.1**.

Table 4.2 Development Trips of San Tin Technopole Adopted in Assessment

Ref.[1]	Development Schedule	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
San Tin Technopole (Initial Phase and Main Phase)	Information and Technology (I&T) Section	(120,000 Employment)	2,139[2]	3,080[2]	1,976[2]	1,477[2]
	Logistics & Storage and Workshop	(Approximate 758,000 m^2)	702[3]	1,051[3]	1,023[3]	795[3]
	Public Housing	Approximate 25,805 units (Average house/flat size of about 50 m^2)	1,418[4]	901[4]	695[4]	967[4]
	Private Housing	Approximate 12,200 units (Average house/flat size of about 60 m^2)	612[5]	271[5]	237[5]	370[5]

Remark:
(1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.
(2) Based on 120,000 I&T employment in TPB Land Use Proposal; average daily mechanised home-based work trips per employed person of 1.41 trips, peak hour percentage to daily total trips of 12%, distribution of boardings by transport mode (LRT, tram and ferry excluded) in TCS 2011 (87.4% of PT trips and 12.6% of PC/Taxi trips); and assumed capacity of franchised bus, PLB, shuttle bus and PC.
(3) Based on site area measurement, plot ratio of 2/ 5 in RODP, and traffic generation and attraction rates for industrial building in TPDM.
(4) Based on site area measurement, plot ratio of 6.5 in RODP, assumed average flat size of 50 m^2, consideration of new flat units about 50,000-54,000 in TPB land use proposal, and traffic generation and attraction rates for subsidised housing: HOS/PSPS in TPDM.
(5) Based on site area measurement, plot ratio of 6 in RODP, assumed average flat size of 60 m^2, consideration of new flat units about 50,000 - 54,000 in TPB land use proposal, and traffic generation and attraction rates for private housing: high-density/R(A) in TPDM.

Development Proposal of Ngau Tam Mei

4.2.8 The Government has recently disclosed the broad development proposal of Ngau Tam Mei (NTM) under Legislative Council Paper (No. CB(1)1487/2024(04). It is proposed to reserve land in NTM for use of post-secondary education institutions (self-sustained UniTown) with integrated residential neighbourhood. The first population intake is expected to take place gradually from Year 2034 onwards to tally with the commissioning of NOL Main Line.

4.2.9 According to the broad land use concept plan, NTM is expected to be served by the new Northern Metropolis (NM) Highway, while direct road connections/interchange are proposed to San Tin Highway and STT. Besides, upon NOL opening by Year 2034, MTR Ngau Tam Mei

Station is expected to attract and shift some of the existing road traffic into railway, it is anticipated that the traffic conditions along San Tam Road and the existing Fairview Park Boulevard Interchange will be largely improved. With reviewed of the traffic flow of 2-tier model of Y/YL-MP/10, it has already been considered in the traffic forecast.

Other Planned/Committed Developments

4.2.10 Apart from San Tin Technopole, there are also a number of other planned/committed developments located in the vicinity that are expected to be completed by year 2034. The Proposed temporary light public housing development (in various lots in D.D. 104 and adjoining government land, Yau Pok Road, Yuen Long) is excluded in the assessment due to its anticipated completion year (2024/2025), and the proposed 5-year operation period. Upon the comment received from PlanD, the development schedules of these developments and estimated traffic generations are summarized in **Table 4.3** and the locations of these developments are indicated in **Drawing 4.2**.

Table 4.3 Other Planned/Committed Developments

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Lots 3152, 3153 RP, 3156 S.B and 4805 in D.D. 104 and Adjoining Government Land (GL), Kam Pok Road, Mai Po, Yuen Long, Y/YL-MP/10	2,322 units (average flat size of about 42.4 m^2)	167(3)	99(3)	67(3)	86(3)
		Public Transport	28(3)	28(3)	28(3)	28(3)
		Retail (2,363 m^2)	6(3)	6(3)	8(3)	9(3)
		Kindergarten (6 Classrooms)	47(3)	47(3))	2(3)	2(3)
		Neighbourhood Elderly Centre (NEC)	10(3)	10(3)	10(3)	10(3)
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10(2)	10(2)	10(2)	10(2)
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/8	6,825 units (Average Flat Size 37.5 m^2)	491(3)	291(3)	196(3)	253(3)
		Retail (3,950m^2)	10(3)	10(3)	13(3)	15(3)
		GIC Facilities (2 nos.)	10(3)	10(3)	10(3)	10(3)
		Kindergarten (8 Classrooms)	25(3)	25(3)	1(3)	1(3)
6	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/9	3,115 units (Average Flat Size 37.2 m^2)	224(3)	133(3)	90(3)	116(3)
		Retail (3,900 m^2)	9(3)	10(3)	13(3)	14(3)
		1 School	7(3)	30(3)	1(3)	1(3)
		Kindergarten (8 Classrooms)	25(3)	25(3)	1(3)	1(3)

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
		Relocated Soy Sauce Factory (13,700 m^2)	0[3]	4[3]	10[3]	2[3]
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	3,556 units (average flat size of about 44 m^2)	255	151	102	132
		9 Houses (assumed average house size of 120 m^2)	2	1	1	1
		Retail (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	109	65	43	56
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[2]	10[2]	10[2]	10[2]
		Special Child Care Centre	10[2]	10[2]	10[2]	10[2]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home 142 Beds	10[2]	10[2]	10[2]	10[2]
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[2]	10[2]	10[2]	10[2]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12
14	Lots 3054 S.A RP (Part), 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (Part), 3250 S.B ss.23 RP (Part), 3250 S.B ss.33 RP (Part) in D.D. 104, and Adjoining Government Land, Yuen Long, Y/YL-MP/3	106 Houses (average house size of about 163 m^2)	30	19	18	26
		Retail 607 m^2	2	2	2	3
15	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size	45	27	18	23

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
		of about 38 m^2)				
		Retail 1,165 m^2	3	3	4	5
16	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m^2)	7	4	3	4
		5,400 m^2 residential care home for the elderly 127 Beds	10(2)	10(2)	10(2)	10(2)
17	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m^2 residential care home for the elderly 530 Beds	23(3)	27(3)	21(3)	27(3)
18	Proposed Comprehensive Development Scheme to include Wetland Restoration Proposal and Proposed Filling of Ponds/Land and Excavation of Land in "OU(CDWRA)" Zone at Various Lots in D.D. 104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories, A/YL-NSW/314	90 units (average flat size of about 227 m^2)	28(3)	21(3)	21(3)	31(3)

Remark: (1) Refer to **Drawing 4.2** for development locations.
(2) Assume Nominal Trips of 10 pcu/hr.
(3) Trips generation from project's TIA report.

4.2.11 Based on the above, the year 2034 reference traffic flows, as shown in **Drawing 4.3** are produced according to the following:

Local Road Links: = Review Year 2034 Reference Traffic Flows + Adjustment of other Planned/Committed Development Trip Generation

4.3 Development Traffic Generations

Trip Generation of Proposed Scheme

4.3.1 The proposed development will provide 3,562 units and the related trip generations of the residential units are estimated in accordance with the relevant trip rates as tabulated in the Transport Planning Design Manual (TPDM). With the provision of 100-bed RCHE, reference is made to the traffic trip rates as surveyed from the existing similar social welfare development. **Table 4.4** summarises the trip rates of the proposed development.

Table 4.4 Estimated Trip Rates of Proposed Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Residential Trip Rate (pcu/hr/flat)				
R(A), Average flat size = 70m^2 per unit, Mean rate, for 3,056 units	0.0888	0.0515	0.0356	0.0480
R(A), Average flat size = 80m^2 per unit, Mean rate, for 378 units	0.1058	0.0605	0.0426	0.0590

R(C), Average flat size = 180m² per unit, Mean rate, for 104 units	0.2772	0.1769	0.1635	0.2394
R(C), Average flat size = 300m² per unit, Mean rate, for 24 units	0.3252	0.2609	0.2835	0.4074
Surveyed RCHE Trip Rate (pcu/hr/bed)				
Fung Kai Care and Attention Home for the Elderly, Sheung Shui(1)	0.0297	0.0372	0.0069	0.0069
Hong Kong Sheng Kung Hui John Yuen Home for the Elderly, Tseung Kwan O(1)	0.0286	0.0380	0.0357	0.0207
The Christian God's Love Care Home(2)	0.0051	0	0	0
Hongtai Home For The Aged Limited(2)	0	0	0	0
Adopted RCHE Trip Rate (pcu/hr/bed)(3)	**0.0297**	**0.0380**	**0.0357**	**0.0207**

Remark: (1) Trip rates as derived from the consultant's surveys in mid-Sep 2024.
(2) Trip rates as derived from the consultant's surveys in mid-Jul 2025.
(3) The surveyed highest trip rates to be adopted for conservative assessments.

4.3.2 The resulting trip generations of the proposed development are summarized in **Table 4.5**.

Table 4.5 Estimated Trip Generation of Proposed Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Residential Trips(1)				
3,056 units with an average flat size of 70m²	271	157	109	147
378 units with an average flat size of 80m²	40	23	16	22
104 units with an average flat size of 180m²	29	18	17	25
24 units with an average flat size of 300m²	8	6	7	10
Total Residential Trips (3,562 units) (pcu/hr)	**348**	**204**	**149**	**204**
RCHE Trips(1)				
RCHE Trips (100-bed) (pcu/hr)	**3**	**4**	**4**	**2**
Induced Proposed Bus Service(2)				
Induced Proposed Bus Trips (pcu/hr)	**40**	**40**	**40**	**40**
Enhancement of Public Transport(3)				
Enhancement of Public Transport (pcu/hr)(4)	**5**	**0**	**3**	**5**
Total (pcu/hr):	**396**	**248**	**196**	**251**

Remark: (1) By referring to **Table 4.4**.
(2) By referring to **Para 4.3.7**.
(3) By referring to **Table 4.8** and **Para 4.3.11**.
(4) Pcu factor 2.5 pcu/veh is adopted for buses.

4.3.3 As indicated in **Table 4.5**, the proposed development would generate a two-way total of 644 pcu/hr and 447 pcu/hr (including proposed bus trips and enhanced public transport trips) during the weekday morning and evening peak hour periods respectively. The development trip distributions are shown in **Drawing 4.4**.

Public Transport Trips

4.3.4 The public transport demands for the Rezoning Site was estimated with reference to the average daily mechanised trips, the peak hour factor of mechanised trips with reference to TD's Travel Characteristics Survey (TCS) 2011. The public transport modal share from the modal split assumption from 2021 Population Census of Yuen Long District is also shown in **Table 4.6**. Based on the above assumptions, the public transport demands for the proposed development are estimated in **Table 4.7**.

Table 4.6 Modal Split Assumption based on 2021 Population Census of Yuen Long District

Transport Mode[1]	Modal Split	
Rail/LRT	48.3%	Public Transport mode = 81.7%
Shuttle Bus	4.1%	
Bus	25.8%	
PLB	3.5%	
PV/Taxi	11%	
Walk	7.3%	
Total	**100%**	

Remarks: (1) For Transport Mode, "Ferry" and "Others" are excluded.

Table 4.7 Estimated Trip Generation of Approved Development

Index	Parameter	Formula	Result
(a)	Proposed No. of Units	-	3,562
(b)	Average Domestic Household Size [1]	-	2.8
(c)	Estimated Total Population	(a)*(b)	9,974
(d)	Average Daily Mechanised Trips per Person [2]	-	1.83
(e)	Peak Hour Percentage of Daily Total [3]	-	12%
(f)	Assumed Percentage of Major Outbound Trips in Peak Hour	-	100%
(g)	Estimated Peak Hour Trips by Proposed Development	(c)*(d)*(e)*(f)	2,191
(h)	Major Public Transport Modal Share [4]	-	81.7%
(i)	Estimated Peak Hour Public Transport Demand	(g)*(h)	1,790
(j)	Estimated Passenger using Proposed Bus Service	(i)*64.2%[5]	1,149
(k)	No. of induced trips for Proposed Bus Service (veh/hr)	(j)/60[6]	20
(l)	Estimated Passenger using Franchised Bus	(i)*35.8%[7]	641
(m)	- Yuen Long Bound Demand [AM Peak (PM peak)]	65% (68%)	417 (436)
(n)	- San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]	35% (32%)	224 (205)
(o)	No. of Additional Bus Required during Peak Hour[8] - Yuen Long Bound Demand [AM Peak (PM peak)] - San Tin/Sheung Shui Bound Demand [AM Peak (PM peak)]		2 (1) 0 (2)

Remarks: (1) Agreed by Planning Department.
(2) With reference to Table E.2 in TCS 2011.
(3) Peak hour percentage to daily total, with reference to Para. 3.3.7 in TCS 2011.
(4) Refer to Table 4.6.
(5) Based on 81.7% of PT modal split, consider Rail/LRT trips and Shuttle Bus trips using potential bus route, which implies the proportion of passengers of potential bus route (48.3%+4.3%)/81.7% = approximate 64.2% of PT modal split. The modal split of Rail/LRT would be considered as "short-haul" service, while the modal split of Shuttle Bus trips would be considered as "long-haul" services.
(6) Assumed passenger using Railway would be served by proposed bus service between the subject site and future San Tin Station of Northern Link, while the modal split of Shuttle Bus trips would be heading to San Tin Highway SB to Kowloon/Hong Kong Island. 60 pax/veh adopted as proposed bus service capacity in conservative approach.
(7) Based on 81.7% of PT modal split, the remaining 35.8% of PT modal split for Bus trips and PLB trips would be considered as using franchised bus.
(8) Referring to **Table 4.9**.

4.3.5 From **Table 4.7**, it is estimated that there will be one-way of approx. 1,790 pax/hr of public transport demand generated from the proposed residential development during the peak hour.

4.3.6 With reference to **Table 4.6**, the transport mode of PT passengers of Railway and Shuttle Bus is 64.2%, and the passengers of Bus and GMB is 35.8%, respectively. Therefore, the induced PT demand will be distributed accordingly, i.e. 1,149 pax are assumed using short-haul and long-haul potential bus routes (i.e. 92.1% to the nearest railway station (future San Tin Station of Northern Link) as short-haul, or 7.9% to Kowloon/Hong Kong Island as long-haul). The remaining 641 pax are assumed using Franchised Bus, which being adopted in the assessment.

4.3.7 The Railway and Shuttle Bus demand are proposed to be served by coach (i.e. 60 pax/veh), which is equivalent to 20 veh/hr (40 pcu/hr), running between the subject development and

the nearest railway station (future San Tin Station of Northern Link) and to Kowloon/Hong Kong Island direction.

4.3.8 The estimated overall public transport demands at Year 2034 are summarized in **Table 4.8**.

Table 4.8 Estimated Year 2034 Public Transport Demands

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Estimated Year 2034 Occupancy (pax)(1)	Additional Passenger Demands (pax)(2)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	532	417	949	117%
	San Tin/Sheung Shui	713	409	224	633	89%
PM Peak	Yuen Long	780	656	205	861	110%
	San Tin/Sheung Shui	776	468	436	904	116%

Remarks: (1) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand.
(2) Refer to **Table 4.6** and **Para 4.3.6**.

4.3.9 From **Table 4.7**, it can be shown that the demand for public transport service would be over capacity in Year 2034 upon occupation of the proposed residential development.

4.3.10 It is proposed to enhance the nearby public transport service by increasing the frequency of KMB 76K during PM peak. The estimated overall public transport demands at Year 2034 with proposed PT service enhancement are summarized in **Table 4.9**.

Table 4.9 Estimated Year 2034 Public Transport Demands – With Service Enhancement

Peak Hour	Bound	Average Peak Hour Service Capacity (pax)	Enhanced Peak Hour Service Capacity (pax)(1)	Estimated Year 2034 Occupancy (pax)(2)	Additional Passenger Demands (pax)(3)	Overall Passenger Demands (pax)	Occupancy Rate (%)
AM Peak	Yuen Long	812	992 (812+90*2)	532	417	949	96%
	San Tin/Sheung Shui	713	713	409	224	633	89%
PM Peak	Yuen Long	780	870 (780+90*1)	656	205	861	99%
	San Tin/Sheung Shui	776	956 (776+90*2)	468	436	904	95%

Remarks: (1) The bus capacity is assumed to be 90 passengers.
(2) +1.0% annual growth rate is applied to the average observed peak hour PT trips to estimate Year 2034 demand.
(2) Refer to **Table 4.6** and **Para 4.3.6**.

4.3.11 From **Table 4.9**, it is demonstrated that with the service enhancement (with 2 additional buses and 1 additional bus for Yuen Long bound at both AM and PM peak periods respectively, and 2 additional buses for Sheung Shui bound in PM peak periods), the public transport would operate within capacity in Year 2034.

4.3.12 Potential bus stops and other public transport with related facilities would be provided within the subject development to allow bus route and public transport services. The detailed arrangement of public transport service enhancement such as frequency improvement of the existing services and potential bus and other public transport service would be subject to actual passenger demand and further review and agreement with the corresponding public transport operators and government departments, if necessary.

Trip Generation of Approved Scheme

4.3.13 In the approved scheme, the development will provide 789 houses with an average flat size of approximately 105.1 m^2. The trip generations of the approved development are summarised in **Table 4.10**.

Table 4.10 Estimated Trip Generation of Approved Development

	Trip Generations			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Trip Rates (pcu/units/hr) (1)	0.1961	0.1116	0.0955	0.1321
No. of House Unit	789			
Trips (pcu/hr)	155	88	75	104

Remark: (1) Trip Rates extracted from TPDM for private housing: low-density R(B) with average flat sizes of 100m^2.

4.3.14 The net difference of the trip generation between the approved and proposed schemes is summarised in **Table 4.11**. As shown in **Table 4.11**, the trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme.

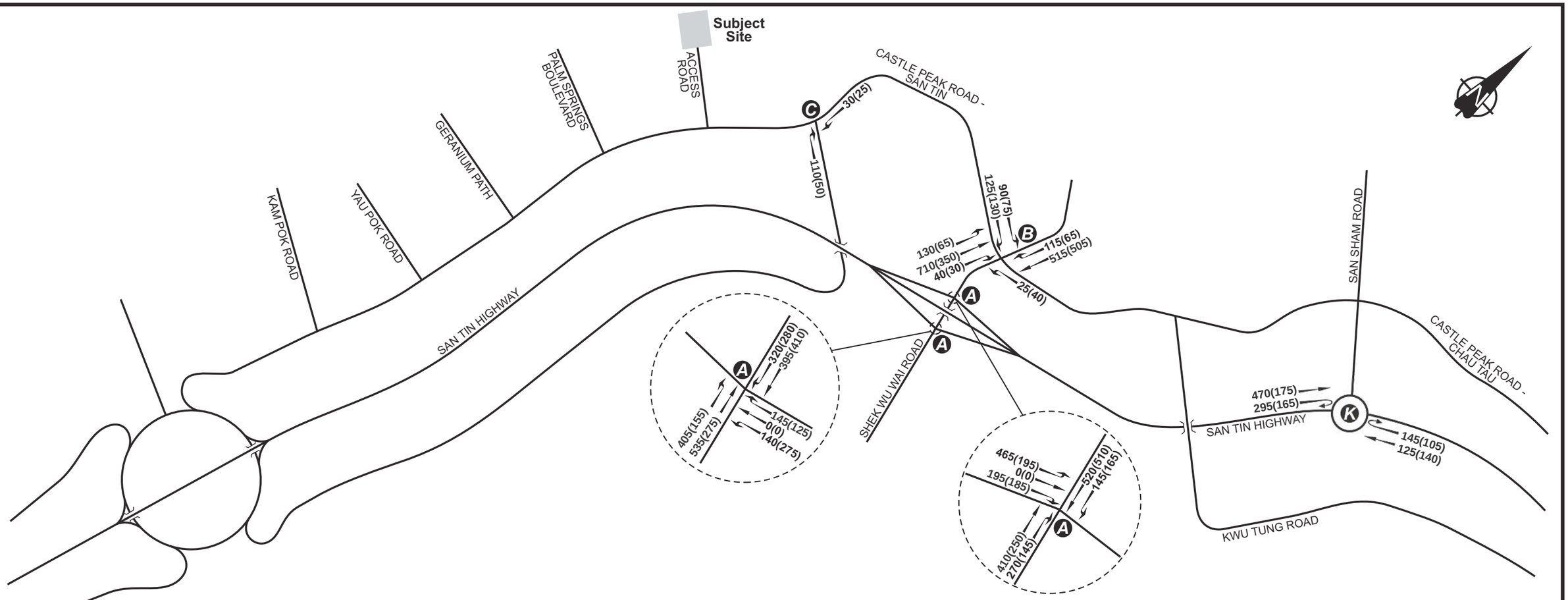
Table 4.11 Net Difference of Trip Generations between the Approved and Proposed Schemes

	Trip Generations (pcu/hr)			
	AM Peak		PM Peak	
	Gen	Att	Gen	Att
Approved Scheme [A]	155	88	75	104
Proposed Scheme [B]	396	248	196	251
Trip Difference [B] – [A]	+241	+160	+121	+147

4.4 Traffic Forecast Data

4.4.1 Based on the above, the year 2034 design flows, as shown in **Drawing 4.5** are produced according to the following.

Year 2034 Design Case = Year 2034 Reference Case + Proposed Development Trip Generation, induced bus trips and the additional public transport trips



LEGEND :

30 AM PEAK TRAFFIC FLOW (PCUS/HR)

(25) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR UPDATE	CFC	9SEP25
A	MINOR AMENDMENT	CFC	21MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

ESTIMATED TRAFFIC FLOWS OF SAN TIN TECHNOPOLE (STT)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.1	B

SYSTRA MVA

CHK50800610/TIA/F41-A.CDR/LLH/21MAY25

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. LOTS 3152, 3153 RP, 3156 S.B AND 4805 IN D.D. 104 AND ADJOINING GOVERNMENT LAND (GL), KAM POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/10.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A AND 1740 S.A RP IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/8.
6. LOTS 1910 RP (PART) AND 1743 S.C RP (PART) IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/9
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A-YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3054 S.A RP (PART), 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP, 3205 RP, 3156 RP, 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3 214 S.B, 3215, 3216, 3217, 3218 RP (PART), 3250 S.B SS.23 RP (PART), 3250 S.B SS.33 RP (PART) IN D.D. 104, AND ADJOINING GOVERNMENT LAND, YUEN LONG, Y/YL-MP/3.
15. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
16. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
17. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
18. PROPOSED COMPREHENSIVE DEVELOPMENT SCHEME TO INCLUDE WETLAND RESTORATION PROPOSAL AND PROPOSED FILLING OF PONDS/LAND AND EXCAVATION OF LAND IN "OU(CDWRA)" ZONE AT VARIOUS LOTS IN D.D. 104, NORTH OF KAM POK ROAD EAST, POK WAI, YUEN LONG, NEW TERRITORIES, A/YL-NSW/314.
19. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
FAIRVIEW PARK BOULEVARD
KAM POK ROAD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	15AUG25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

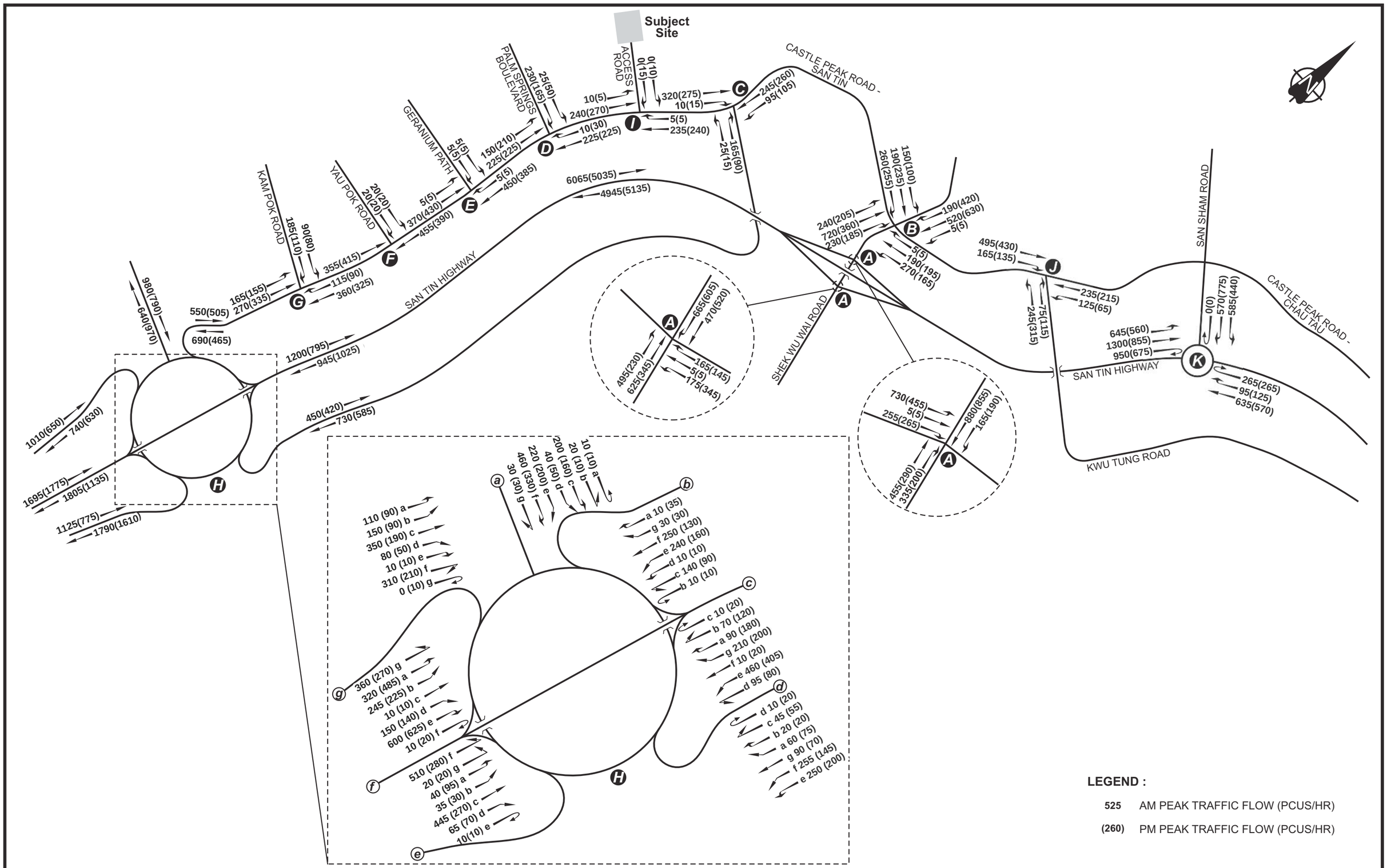
LOCAL PLANNED AND COMMITTED DEVELOPMENTS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.(A3)	JUN 2024	4.2	A

SYSTRA MVA

CHK50800610/TIA/F42-A.DGN/KCM/15AUG25

Original Size : A3



LEGEND :

525 AM PEAK TRAFFIC FLOW (PCUS/HR)

(260) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
C	MINOR UPDATE	CFC	16SEP25
B	MINOR UPDATE	CFC	9SEP25
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

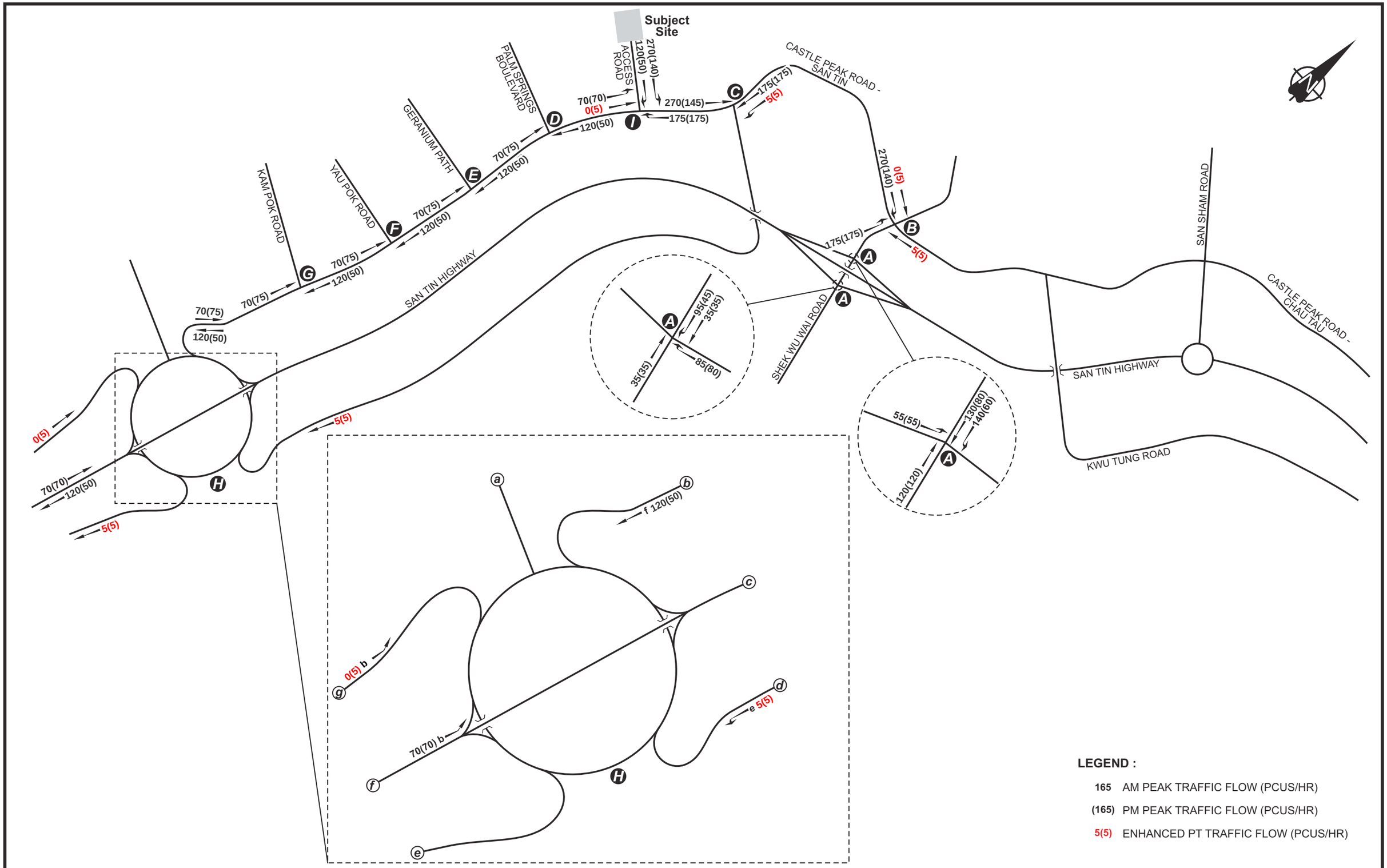
2034 REFERENCE TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	4.3	C

SYSTRA MVA

CHK50800610/TIA/F43-A.CDR/LLH/23MAY25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	21MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

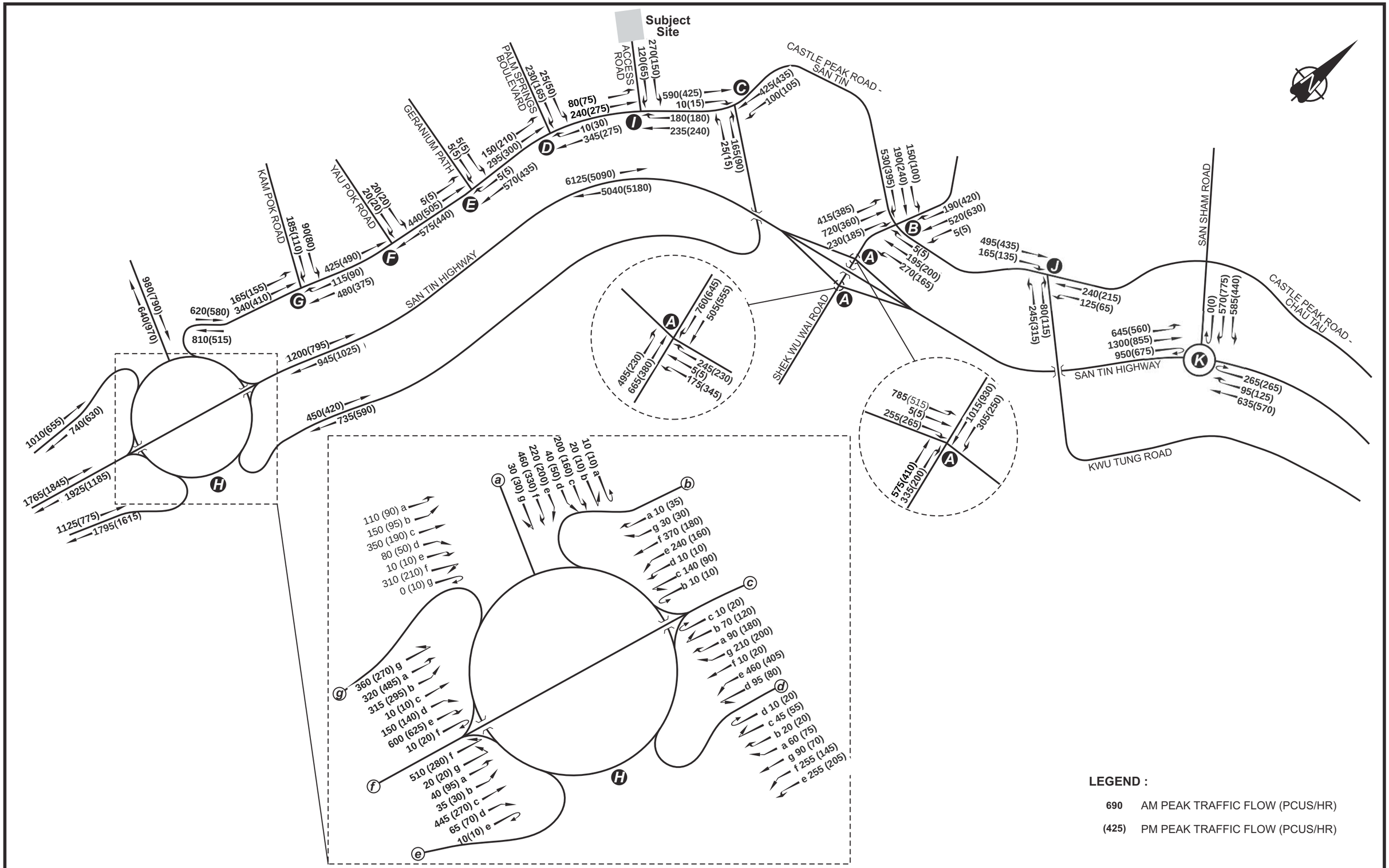
DEVELOPMENT TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.4	A

SYSTRA MVA

CHK50800610/TIA/F44-A.CDR/LLH/21MAY25

Original Size : A3



LEGEND :

690	AM PEAK TRAFFIC FLOW (PCUS/HR)
(425)	PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
C	MINOR UPDATE	CFC	16SEP25
B	MINOR UPDATE	CFC	9SEP25
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

2034 DESIGN TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	4.5	C

SYSTRA MVA

CHK50800610/TIA/F45-A.CDR/LLH/23MAY25

Original Size : A3

5. TRAFFIC IMPACT ASSESSMENT

5.1 Year 2034 Junction Operational Performance

5.1.1 To investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases. The assessment results for the year 2034 reference and design cases are summarised in **Table 5.1**. The junction calculation sheets are attached in **Annex A**.

Table 5.1 Year 2034 Junction Operational Performance

Ref.(1)	Junction	RC/RFC (2)			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	96%	>100%	68%	98%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	53%	45%	29%	29%
C	Castle Peak Road – Mai Po/San Tam Road	0.43	0.24	0.53	0.28
D	Castle Peak Road – Mai Po/ Royal Palms Boulevard	0.56	0.46	0.60	0.49
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.02	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.10	0.11	0.11	0.11
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.65	0.44	0.71	0.46
H	Fairview Park Interchange	1.34	1.07	1.40	1.11
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.05	0.75	0.42
J	Castle Peak Road – San Tin/Kwun Tung Road	0.61	0.80	0.63	0.81
K	San Tin Interchange	0.81	0.59	0.81	0.59

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.

5.1.2 The anticipated trip generations of the current proposed scheme would be larger in both AM peak and PM peak periods, compared with the previous approved scheme. The assessment results in **Table 5.1** indicated that the majority of identified key junctions would operate with ample capacity in year 2034, except for Junction H, which will be operated over capacity.

5.1.3 For Junction H, with reference to the Preliminary Technical Review on Site Formation and Infrastructure Works for Proposed Public Housing Developments at Sha Po, Shap Pat Heung and Tai Kei Leng, Yuen Long – Feasibility Study under Agreement No. CE 10/2020 (CE) and the planning application Y/YL-MP/10, there will be a planned junction improvement scheme for Fairview Park Interchange, as illustrated in **Drawing 5.3**. It is proposed to widen the entry lanes at Fairview Park Boulevard, Castle-Peak Road – Tam Mi, San Tam Road and the slip road from San Tin Highway northbound and southbound. In addition, an additional exclusive left-turn lane is proposed at San Tin Highway northbound for the traffic to Castle Peak Road – Tam Mi southbound. Nonetheless, should there be any delay whatsoever such that the abovementioned junction improvement works at Junction H are not in place, the applicant would take up the responsibility to carry out the related junction improvement works instead.

Table 5.2 Year 2034 Junction Operational Performance (With Improvement)

Ref.	Junction	RC/RFC [2]			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
H	Fairview Park Interchange [1]	0.75	0.79	0.78	0.82

Remarks: (1) Refer to **Drawing 5.3** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.1.4 **Table 5.2** indicates that with the junction improvement schemes, Junction H will be operating within capacity in Year 2034.

5.1.5 The road link performance for identified road links was conducted as summarised in **Table 5.3**.

Table 5.3 Year 2034 Road Links Performance

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[4]	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C [5]		Traffic Flow (pcu/hr)		V/C [5]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	25	0.00	0.03	390	215	0.43	0.24
		WB	700[2]	910	15	10	0.02	0.01	260	255	0.29	0.28
L2	Castle Peak Road – Mai Po	NB	700[2]	910	250	275	0.27	0.30	320	350	0.35	0.38
		SB	700[2]	910	235	255	0.26	0.28	355	305	0.39	0.34
L3	Castle Peak Road – Mai Po	NB	700[2]	910	330	290	0.36	0.32	600	440	0.66	0.48
		SB	700[2]	910	270	275	0.30	0.30	450	450	0.49	0.49
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	550	505	0.60	0.55	620	580	0.68	0.64
		SB	700[2]	910	690	465	0.76	0.51	810	515	0.89	0.57
L5	San Tin Highway	NB	4,700[3]	6,100	6,065	5,035	0.99	0.82	6,125	5,090	1.00	0.83
		SB	4,700[3]	6,100	4,945	5,135	0.81	0.84	5,040	5,180	0.82	0.85
L6	San Tin Highway	NB	4700[3]	6,100	5,580	4,705	0.91	0.77	5,725	4,760	0.94	0.78
		SB	4700[3]	6,100	4,125	4,790	0.68	0.78	4,205	4,880	0.69	0.80

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction.
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction.
(4) PCU factor of 1.3 adopted.
(5) V/C = volume to capacity ratio.

5.1.6 The assessment results in **Table 5.3** indicate that L1 to L3 would operate with ample capacity in year 2034 upon completion of the proposed development. For L4, L6, V/C ratio <1.0 implies the road has sufficient capacity to cope with the anticipated traffic volume under consideration and the resultant traffic will flow smoothly. For L5 (San Tin Highway), it would result in a V/C at 1.0. Since the contribution of additional traffic flow of the subject site to the performance of road links is minimal, and the traffic burden would be shared by the future road infrastructure of NM Highway, the link flow of the concerned road sections should be lowered, and the link flow performance would be improved.

5.1.7 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

5.2 Year 2034 Pedestrian Flow and Queuing Space Assessment

5.2.1 For the growth rate of pedestrian flow, references have been made to the latest "Projections of Population Distribution 2023-2031" as published by PlanD's Working Group on Population Distribution Projections in March 2024. The available projected population for the local Tertiary Planning Unit (TPU) in the vicinity, as shown in **Drawing 5.4**, are referenced to derive the annual growth rates as summarised in **Table 5.4**.

Table 5.4 Projected Populations of Selected Tertiary Planning Units

Tertiary Planning Unit (TPU)	Projected Population		Growth Rate (p.a.)
	2021	2027	21/27
541	19,100	19,900	+0.7%
542	12,500	11,700	-1.1%
543 & 546	3,300	5,000	+7.2%
544	3,500	3,200	-1.5%
Total	**38,400**	**39,800**	**+0.6%**

5.2.2 As shown in **Table 5.4**, the projected population planning data suggest that the annual growth rate between Year 2021 and Year 2027 is +0.6% when considering the local TPUs. In conservative approach, +1.0% per annum is adopted for the background pedestrian growth of the local pedestrian flow from Year 2024 to Year 2034, and the consideration of the induced pedestrian trips for franchised bus demand of **Table 4.7**.

5.2.3 The peak hour pedestrian flows in Year 2034 under both reference and design scenarios are shown in **Drawing 5.5** and **5.6**, and the results of the operational performance of identified footpaths and concerned queuing area of bus stops are summarized in **Table 5.5** and **5.6.**

Table 5.5 2034 Level-Of-Service Assessment

Ref. (1)	Actual Width (m)	Effective Width (m) (2)	2034 Reference Peak Hourly Flow (ped/hr) (3)		2034 Reference Peak Flow Rate (ped/min/m) (4)		LOS (5)		2034 Design Peak Hourly Flow (ped/hr)(6)		2034 Design Peak Flow Rate (ped/min/m) (4)		LOS (5)	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Fp1	2.1	1.1	12	10	0.18	0.15	A	A	653	651	9.89	9.86	A	A
Fp2	2.3	1.3	22	45	0.28	0.58	A	A	246	481	3.15	6.17	A	A
Fp3	1.5	0.5	24	41	0.80	1.37	A	A	441	246	14.70	8.20	A	A
Fp4	1.7	0.7	6	7	0.14	0.17	A	A	6	7	0.14	0.17	A	A
FP5	1.5	0.5	5	5	0.17	0.17	A	A	646	646	21.53	21.53	B	B

Note: (1) Refer to **Drawing 5.5** and **Drawing 5.6** for locations and operational performance of identified footpaths.
(2) Effective width for footpath = Actual width – 1.0m dead width (0.5m dead width on one side of footpath).
(3) Reference pedestrian flow = Year 2024 peak hour pedestrian flows*(1+adopted growth rate of 1.0%)^10.
(4) Peak flow rate = Peak hourly flow ÷ 60 ÷ effective width.
(5) Refer to TPDM Vol.6 Chapter 10 Chapter 10.5.2.
(6) Design pedestrian flow = Reference pedestrian flow + induced pedestrian trips for franchised bus demand

Table 5.6 2034 Queuing Area Level-Of-Service Assessment for Bus Stops

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)(1)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)(2)	LOS (3)	Passenger Flow at Bus Stop (pax/hr)(4)	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS (3)
Maple Garden Bus Stop – Yuen Long Bound (SB)	5.8	3	2 (i.e. 3/60x25)	2.9	A	420	96 (i.e. 420/60x13.6)	0.06	F
Palm Springs Bus Stop – Sheung Shui Bound (NB)	20.3	3	2 (i.e. 3/60x25)	10.2	A	227	95 (i.e. 227/60x25)	0.21	E

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9.
(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.4 As shown in **Table 5.5** and **5.6**, the results indicate that the identified footpaths are operating with adequate spare capacities to cater for the future demand during the peak hours under reference and design scenarios. However, the LOS of queuing area at bus stop would be operated with LOS F and E under the Year 2034 design scenario.

5.2.5 Therefore, it is proposed to widen the queuing area at both concerned bus stops to allow the LOS queuing area to reach LOS C, (i.e. the average pedestrian space = 0.6 m^2/p). The queuing area assessment under both 2034 reference and design scenarios are shown in **Table 5.7**, and the propose widening scheme is illustrated in **Drawing 5.7**. The proposed widening works would be undertaken by the applicant.

Table 5.7 2034 Queuing Area Level-Of-Service Assessment for Bus Stops (With Widening)

Ref.	Queuing Area (m^2)	2034 Reference				2034 Design			
		Passenger Flow at Bus Stop (pax/hr)[1]	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)[2]	LOS [3]	Passenger Flow at Bus Stop (pax/hr)[4]	Maximum Queue at Queuing Area (pax)	Avg. Queuing Space (m^2/p)	LOS [3]
Maple Garden Bus Stop – Yuen Long Bound (SB)	57.6 (5.8+51.8)	3	2 (i.e. 3/60x25)	28.8	A	420	96 (i.e. 420/60x13.6)	0.6	C
Palm Springs Bus Stop – Sheung Shui Bound (NB)	57 (20.3+36.7)	3	2 (i.e. 3/60x25)	28.5	A	227	95 (i.e. 227/60x25)	0.6	C

Note: (1) Reference pedestrian flow = Year 2024 peak hour passenger flows*(1+adopted growth rate of 1.0%)^10
(2) Average Queuing Space = Queuing Area ÷ (Maximum Queue)
(3) Refer to HCM2000, EXHIBIT 11-9
(4) Design pedestrian flow = Reference pedestrian flow + induced passenger demand for franchised bus

5.2.6 **Table 5.7** indicates that with the widening scheme, the LOS of the identified queuing area at bus stops would be operating within capacity in Year 2034.

5.3 Sensitivity Assessment

Assessment 1: Existing Junction Layout for Junction A and Junction B in Design Year 2034

5.3.1 Upon TD's comments on pre-submission of the TIA report, the layout of Junction A (Shek Wu Wai Road / San Tin Highway Slip Road) and Junction B (Shek Wu Wai Road / Road D3 / Road L11 / Road L12) has assumed to be modified as per the proposed road network under San Tin Technopole. In case there is delay on the proposed road work under San Tin Technopole, the junction operational performance for Junction A and Junction B based on the existing junction layout under Design scenario is required to be assessed. However, as the junction improvement works are mostly to accommodate the development of STT, therefore the STT related traffic trips would also be excluded in the sensitivity assessment. The assessment results for the year 2034 reference and design cases based on existing junction layouts of Junctions A and B are summarised in **Table 5.8**. The junction calculation sheets are attached in **Annex D**.

Table 5.8 Year 2034 Junction Operational Performance for Junction A and B in Sensitivity Test 1

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A1	Shek Wu Wai Road/ San Tin Highway Slip Road	0.43	0.42	0.48	0.48
A2	Shek Wu Wai Road/ Mai Po Lung Road	0.53	0.32	0.67	0.38
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.91	0.75	1.23	0.93

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.2 The assessment results in **Table 5.8** indicated that the Junction A1 and A2 would operate with ample capacity in year 2034, based on the existing junction layout, except for Junction B, which would be operated over capacity.

5.3.3 For Junction B, the existing priority junction is proposed to be upgraded into a roundabout junction with cautionary crossings proposed to the east of the junction. The proposed improved layout of Junction B, which will be constructed subject to further review of San Tin Technopole's project, is illustrated in **Drawing 5.8**. Nonetheless, should there be any delay on the proposed road works under San Tin Technopole, the applicant would take up the responsibility to carry out the related junction improvement works at Junction B.

Table 5.9 Year 2034 Junction Operational Performance for Junction B (With Improvement) in Sensitivity Test 1

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
B	Castle Peak Road – San Tin/ Shek Wu Wai Road	0.46	0.38	0.61	0.50

Remarks: (1) Refer to **Drawing 5.8** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.4 **Table 5.9** indicates that with the junction improvement schemes, Junction B would be operating within capacity in Year 2034. Nevertheless, the junction improvement scheme for Junction B would be assessed based on a hypothetical approach in the sensitivity test, as the proposed road works related to STT should be in place.

Assessment 2: Adjacent Potential Planning Applications

5.3.5 Upon TD's comments on pre-submission of the TIA report, due to the similar population intake year of the residential developments, apart from STT, traffic generations of a number of potential planning applications (Y/YL-MP/7 and Y/YL-MP/8) would also be included in the assessment as a sensitivity test in Year 2034. The development schedules of these potential developments and estimated traffic generations are summarized in **Table 5.10** and the locations of these developments are indicated in **Drawing 5.9**.

Table 5.10 Planned/Committed Developments in Sensitivity Test 2

Ref.(1)	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
1	Lots 3152, 3153 RP, 3156 S.B and 4805 in D.D. 104 and Adjoining Government Land (GL), Kam Pok Road, Mai Po, Yuen Long, Y/YL-MP/10	2,322 units (average flat size of about 42.4 m^2)	167(4)	99(4)	67(4)	86(4)
		Public Transport	28(4)	28(4)	28(4)	28(4)
		Retail (2,363 m^2)	6(4)	6(4)	8(4)	9(4)
		Kindergarten (6 Classrooms)	47(4)	47(4)	2(4)	2(4)
		Neighbourhood Elderly Centre (NEC)	10(4)	10(4)	10(4)	10(4)
2	Proposed House development in various lots in D.D. 104 and adjoining government land, Mai Po, Yuen Long, A/YL-MP/287	65 units (average flat size of about 116 m^2)	15	8	7	10
3	Various Lots in D.D. 104 and adjoining Government Land, Wing Kei Tsuen, Nam Sang Wai, Yuen Long, Y/YL-NSW/7	1,997 units (average flat size of about 49 m^2)	143	85	57	74
		Retail (900 m^2)	2	2	3	3
		Kindergarten / Child Care Centre (2,200 m^2)	10(3)	10(3)	10(3)	10(3)
4	Sha Po Public Housing Development, N/A	16,300 units	1,385	1,155	850	1,020
5	Lots 8 RP (Part), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A and 1740 S.A RP in D.D.107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/8	6,825 units (Average Flat Size 37.5 m^2)	491(4)	291(4)	196(4)	253(4)
		Retail (3,950m^2)	10(4)	10(4)	13(4)	15(4)
		GIC Facilities (2 nos.)	10(4)	10(4)	10(4)	10(4)
		Kindergarten (8 Classrooms)	25(4)	25(4)	1(4)	1(4)
6	Lots 1910 RP (Part) and 1743 S.C RP (Part) in D.D. 107 and Adjoining Government Land, West of Castle Peak Road – Tam Mi, Yuen Long, Y/YL-NSW/9	3,115 units (Average Flat Size 37.2 m^2)	224(4)	133(4)	90(4)	116(4)
		Retail (3,900 m^2)	9(4)	10(4)	13(4)	14(4)
		1 School	7(4)	30(4)	1(4)	1(4)
		Kindergarten (8 Classrooms)	25(4)	25(4)	1(4)	1(4)
		Relocated Soy Sauce Factory (13,700 m^2)	0(4)	4(4)	10(4)	2(4)
7	Various Lots in D.D. 103 and D.D. 115, Tung Shing Lei, Nam Sang Wai, Yuen Long, YL-NSW/293	3,556 units (average flat size of about 44 m^2)	255	151	102	132

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
		9 Houses (assumed average house size of 120 m^2)	2	1	1	1
		Retail (5,358 m^2)	12	13	17	19
8	Ho Chau Road, Yuen Long, New Territories (near Tung Shing Lei) (Various lots in D.D. 115 and adjoining Government land), LSPS/002	Private Housing 1,261 units (average flat size of about 40 m^2)	91	54	37	47
		Public Housing 1,868 units (average flat size of about 50 m^2)	117	80	56	75
		Retail 3,045 m^2	7	8	10	11
9	Lots 592 S.C ss.1 S.A, 592 S.C ss.4 and 1252 S.C in D.D. 115, Nam Sang Wai, Yuen Long, A/YL-NSW/274	1,518 units (average flat size of About 46 m^2)	109	65	43	56
		Retail / Commercial (1,800 m^2)	4	4	6	6
		Wellness Centre	10[3]	10[3]	10[3]	10[3]
		Special Child Care Centre	10[3]	10[3]	10[3]	10[3]
10	Lot 4823 in D.D. 104, Ngau Tam Mei, Yuen Long, Y/YL-NTM/9	5,400 m^2 GFA Elderly Care Home 142 Beds	10[3]	10[3]	10[3]	10[3]
11	Various Lots in D.D. 107 and Adjoining Government Land, Cheung Chun San Tsuen, Kam Tin, Yuen Long, A/YL-KTN/604	3,891 units (average flat size of about 46 m^2)	279	165	111	144
		Eating Place/Shop and Services (5,500 m^2)	13	13	17	20
		Social Welfare Facility (788 m^2)	10[3]	10[3]	10[3]	10[3]
12	Phase 2 Development of Lots 1783 (Part), 1784 RP, 1788 RP, 1789 RP, 1790 RP (Part), 1791 RP, 1795 (Part), 1796 (Part), 1797 (Part), 1836 (Part), 1927 S.A and 1927 RP (Part) in D.D. 107 and Adjoining Government Land, Kam Tin, Yuen Long, A/YL-KTN/663	1,154 units (average flat size of about 43 m^2)	83	49	33	43
13	Lot 2206 in D.D. 109, Kam Tai Road, Kam Tin, Yuen Long, A/YL-KTN/791	330 units (average house/flat size of about 39 m^2)	24	14	9	12
14[2]	**Lots 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, 3250 S.B ss.23 RP and 3250 S.B ss.33 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/7**	**1,228 units (Average Flat Size 43 m^2)**	**89[4]**	**53[4]**	**36[4]**	**46[4]**
		Retail (831m^2)	**2[4]**	**2[4]**	**3[4]**	**3[4]**
		Kindergarten (6 Classrooms)	**32[4]**	**32[4]**	**1[4]**	**1[4]**
		Public Transport	**15[4]**	**15[4]**	**15[4]**	**15[4]**

Ref.[1]	Developments Location; Application No.	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
15[2]	**Lots 3054 S.A ss.1, 3156 S.A, 3200 RP (Part), 3200 S.A RP, 3201 RP (Part), 3202 (Part), 3203 RP, 3204 RP and 3205 RP in D.D. 104 and Adjoining Government Land, Yau Pok Road, Mai Po, Yuen Long, Y/YL-MP/8**	**1,249 units (Average Flat Size 44 m²)**	**90[4]**	**54[4]**	**36[4]**	**47[4]**
		Public Transport	**15[4]**	**15[4]**	**15[4]**	**15[4]**
16	Lot 1071 in D.D. 103, Ha Ko Po Tsuen, Kam Tin, Yuen Long, A/YL-KTN/964	615 units (average flat size of about 38 m²)	45	27	18	23
		Retail 1,165 m²	3	3	4	5
17	Lots 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP and 892 in D.D. 115 and Adjoining Government Land, Tung Shing Lei, Nam Sang Wai, Yuen Long, A/YL-NSW/303	90 units (senior hostel, average flat size of about 66 m²)	7	4	3	4
		5,400 m² residential care home for the elderly 127 Beds	10[3]	10[3]	10[3]	10[3]
18	Lots 879, 880 S.A ss.1, 880 S.B ss.1, 881 to 885, 889 RP (Part), 891 (Part), 1318, 1326 and 1344 in D.D. 115 and Adjoining Government Land, Au Tau, Nam Sang Wai, Yuen Long, A/YL-NSW/292	9,178.9 m² residential care home for the elderly 530 Beds	23[4]	27[4]	21[4]	27[4]
19	Proposed Comprehensive Development Scheme to include Wetland Restoration Proposal and Proposed Filling of Ponds/Land and Excavation of Land in "OU(CDWRA)" Zone at Various Lots in D.D. 104, North of Kam Pok Road East, Pok Wai, Yuen Long, New Territories, A/YL-NSW/314	90 units (average flat size of about 227 m²)	28[4]	21[4]	21[4]	31[4]

Remark: (1) Refer to **Drawing 5.9** for development locations.
(2) Planning Application subject to TD's comment.
(3) Assume Nominal Trips of 10 pcu/hr.
(4) Trips generation from project's TIA report.

5.3.6 The traffic flows of the above potential development are further included into the Year 2034 Design Case and the traffic flows for reference and design cases under Year 2034 Sensitivity Test are shown in **Drawing 5.10** and **5.11**.

Year 2034 Junction Operational Performance under Sensitivity Test (with Potential Planning Applications)

5.3.7 Similarly, to investigate the traffic impact of the proposed development on the surrounding road network at the design year 2034, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2034 reference and design cases in Sensitivity Test. The assessment results for the year 2034 sensitivity test are summarised in **Table 5.11**. The junction calculation sheets are attached in **Annex D**.

Table 5.11 Year 2034 Junction Operational Performance in Sensitivity Test 2

Ref.(1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	96%	>100%	68%	98%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	50%	42%	27%	27%
C	Castle Peak Road – Mai Po/San Tam Road	0.45	0.24	0.56	0.28
D	Castle Peak Road – Mai Po/ Royal Palms Boulevard	0.58	0.47	0.63	0.50
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.03	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.11	0.11	0.12	0.11
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.97	0.62	1.06	0.66
H	Fairview Park Interchange (with improvement) (5)	0.86	0.81	0.89	0.85
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.05	0.78	0.42
J	Castle Peak Road – San Tin/Kwun Tung Road	0.61	0.80	0.63	0.81
K	San Tin Interchange	0.81	0.59	0.81	0.59

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.
(5) Refer to **Drawing 5.3** for junction reference.

5.3.8 The assessment results in **Table 5.11** indicated that the majority of identified key junctions would operate with ample capacity in year 2034 under sensitivity test, except for Junction G, which will be operated over capacity.

5.3.9 For Junction G, with reference to the application of Y/YL-MP/10, there will be a planned junction improvement scheme for the junction in Kam Pok Road to cater the associated traffic with the subject application of Y/YL-MP/10, as illustrated in **Annex E**. It is proposed to allow separate turning lanes for at the minor road of Kam Pok Road. Nonetheless, should there be any delay whatsoever such that the abovementioned junction improvement works at Junction G are not in place, the applicant would take up the responsibility to carry out the related junction improvement works.

Table 5.12 Year 2034 Junction Operational Performance for Junction G (With Improvement) in Sensitivity Test 2

Ref. (1)	Junction	RC/RFC (2) in Sensitivity Test			
		2034 Reference Case		2034 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.68	0.42	0.76	0.45

Remarks: (1) Refer to **Annex E** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.

5.3.10 **Table 5.12** indicates that with the junction improvement schemes, Junction G would be operating within capacity in Year 2034 in sensitivity test.

5.3.11 The road link performance for identified road links was conducted as summarised in **Table 5.12.**

Table 5.13 Year 2034 Road Links Performance in Sensitivity Test 2

Ref.(1)	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)(5)	2034 Reference Case				2034 Design Case			
					Traffic Flow (pcu/hr)		V/C (6)		Traffic Flow (pcu/hr)		V/C (6)	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700(2)	910	0	25	0.00	0.03	390	215	0.43	0.24
		WB	700(2)	910	15	10	0.02	0.01	260	255	0.29	0.28
L2	Castle Peak Road – Mai Po	NB	700(2)	910	300	295	0.33	0.32	370	370	0.41	0.41
		SB	700(2)	910	290	270	0.32	0.30	410	320	0.45	0.35
L3	Castle Peak Road – Mai Po	NB	700(2)	910	375	315	0.41	0.35	645	460	0.71	0.51
		SB	700(2)	910	325	290	0.36	0.32	505	470	0.55	0.52
L4	Castle Peak Road – Tam Mi	NB	700(2)	910	625	565	0.69	0.62	695	640	0.76	0.70
		SB	700(2)	910	755	520	0.83	0.57	875	570	0.96	0.63
L5	San Tin Highway	NB	4,700(3)	6,100	6,100	5,055	1.00	0.83	6,160	5,110	1.01	0.84
		SB	4,700(3)	6,100	4,950	5,150	0.81	0.84	5,045	5,195	0.83	0.85
L6	San Tin Highway	NB	4,700(3)	6,100	5,615	4,725	0.92	0.77	5,760	4,780	0.94	0.78
		SB	4,700(3)	6,100	4,130	4,805	0.68	0.79	4,210	4,895	0.69	0.80

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction
(4) PCU factor of 1.3 adopted
(5) V/C = volume to capacity ratio

5.3.12 The assessment results in **Table 5.13** indicate that L1 to L3 would operate with ample capacity in year 2034 sensitivity test 2. For L4 and L6, V/C ratio <1.0 implies the road has sufficient capacity to cope with the anticipated traffic volume under consideration and the resultant traffic will flow smoothly. For L5 (San Tin Highway), it would result in a V/C ratio slightly above 1.0. Since the contribution of additional traffic flow of the subject site to the performance of road links is minimal, and the traffic burden would be shared by the future road infrastructure of NM Highway, the link flow of the concerned road sections should be lowered and the link flow performance would be improved.

5.3.13 Therefore, it is anticipated that all the identified junctions would be operated within capacity and road links would operate with ample capacity with expected future road infrastructure in year 2034 sensitivity test 2.

Assessment 3: Full intake of San Tin Technopole (STT) in Design Year 2039

5.3.14 Upon TD's comments on previous submission of the TIA report, the scenario for full population intake of San Tin Technopole is considered and included in the assessment as a sensitivity test in Year 2039, according to the anticipated programme of STT. For the traffic growth rate between 2034 and 2039, the Hong Kong Population Projections 2022 – 2046, published by Census and Statistics Department, has been referenced and the figures are shown in **Table 5.14**.

Table 5.14 Hong Kong Population Projections between 2034 and 2039

	2034	2039	Annual Growth Rate (2034 - 2039)
Hong Kong Population (in thousands)	7,945.1	8,115.3	+0.43%

5.3.15 As shown in **Table 5.14**, Hong Kong population shows a positive growth trend with rate of +0.43% per annum from 2034 to 2039, which is adopted as the traffic growth rate of all road sections from Year 2034 to Year 2039.

5.3.16 The related development schedules and estimated traffic generations for the full intake of STT are summarized in below **Table 5.15**.

Table 5.15 Estimated Development Trips of San Tin Technopole in Year 2039

Remark:

Ref.(1)	Development Schedule	Parameters	Trip Generations (pcu/hr)			
			AM Peak		PM Peak	
			Gen	Att	Gen	Att
San Tin Technopole	Information and Technology (I&T) Section	(120,000 Employment)	2,139(2)	3,080(2)	1,976(2)	1,477(2)
	Logistics & Storage and Workshop	(Approximate 758,000 m^2)	702(3)	1,051(3)	1,023(3)	795(3)
	Public Housing	Approximate 37,800 units (Average house/flat size of about 50 m^2)	1,997(4)	1,236(4)	988(4)	1,389(4)
	Private Housing	Approximate 16,200 units (Average house/flat size of about 60 m^2)	1,551(5)	730(5)	664(5)	944(5)
	Mixed Use	(Approximate 482,500 m^2)	1,108(6)	1,175(6)	1,496(6)	1,719(6)

(1) Source from EIA study of First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation.
(2) Based on 120,000 I&T employment in TPB Land Use Proposal; average daily mechanised home-based work trips per employed person of 1.41 trips, peak hour percentage to daily total trips of 12%, distribution of boardings by transport mode (LRT, tram and ferry excluded) in TCS 2011 (87.4% of PT trips and 12.6% of PC/Taxi trips); and assumed capacity of franchised bus, PLB, shuttle bus and PC.
(3) Based on site area measurement, plot ratio of 2/ 5 in RODP, and traffic generation and attraction rates for industrial building in TPDM.
(4) Based on site area measurement, plot ratio of 6.5 in RODP, assumed average flat size of 50 m^2, consideration of new flat units about 50,000-54,000 in TPB land use proposal, and traffic generation and attraction rates for subsidised housing: HOS/PSPS in TPDM.
(5) Based on site area measurement, plot ratio of 6 in RODP, assumed average flat size of 60 m^2, consideration of new flat units about 50,000 - 54,000 in TPB land use proposal, and traffic generation and attraction rates for private housing: high-density/R(A) in TPDM.
(6) Based on site area and non-domestic plot ratio of 2.5/4 from OZP, and traffic generation and attraction rates for retail in TPDM.

5.3.17 With the consideration of traffic growth, traffic generation of the STT and the planned development in **Table 4.3,** the year 2039 reference traffic flow, as shown in **Drawing 5.12** are produced according to the following:

Year 2039 Reference Flow: = Year 2034 Reference Traffic Flows*(1+0.43%)^5 + STT traffic + other Planned/Committed Development Trip Generation

5.3.18 Similarly, the year 2039 design traffic flow, as shown in **Drawing 5.13** are produced according to the following:

Year 2039 Design Flow: = Year 2039 Reference Traffic Flows+ STT traffic + Proposed Development Trip Generation, potential bus trips and the additional public transport trips

5.3.19 To investigate the traffic impact of the proposed development on the surrounding road network at the design year 2039, operational performance of the identified key local junctions has been assessed based on the planned junction layouts (for junction A and B) and existing layout for both 2039 reference and design cases in Sensitivity Test. The assessment results for the year 2039 sensitivity test are summarised in **Table 5.16**. The junction calculation sheets are attached in **Annex D**.

Table 5.16 Year 2039 Junction Operational Performance in Sensitivity Test 3

Ref.(1)	Junction	RC/RFC (2) in Sensitivity Test			
		2039 Reference Case		2039 Design Case	
		AM Peak	PM Peak	AM Peak	PM Peak
A	Shek Wu Wai Road / San Tin Highway Slip Road(3)	43%	60%	27%	46%
B	Shek Wu Wai Road / Road D3 / Road L11 / Road L12(4)	45%	39%	22%	25%
C	Castle Peak Road – Mai Po/San Tam Road	0.58	0.31	0.72	0.37
D	Castle Peak Road – Mai Po/ Royal Palms Boulevard	0.57	0.48	0.62	0.50
E	Castle Peak Road – Mai Po/Geranium Path	0.02	0.02	0.02	0.02
F	Castle Peak Road – Tam Mi/Yau Pok Road	0.11	0.11	0.11	0.11
G	Castle Peak Road – Tam Mi/Kam Pok Road	0.67	0.44	0.73	0.47
H	Fairview Park Interchange (with improvement) (5)	0.78	0.81	0.81	0.84
I	Castle Peak Road – Mai Po/Mai Po South Road	0.01	0.05	0.75	0.42
J	Castle Peak Road – San Tin/Kwun Tung Road	0.62	0.82	0.64	0.84
K	San Tin Interchange	0.85	0.62	0.85	0.62

Remarks: (1) Refer to **Drawing 3.2** for junction reference.
(2) RC = reserve capacity, RFC = ratio of flow to capacity.
(3) Refer to **Drawing 5.1** for junction reference.
(4) Refer to **Drawing 5.2** for junction reference.
(5) Refer to **Drawing 5.3** for junction reference.

5.3.20 The assessment results in **Table 5.16** indicated that all identified key junctions would operate with ample capacity in year 2039 under sensitivity test.

5.3.21 The road link performance for identified road links was conducted as summarised in **Table 5.17.**

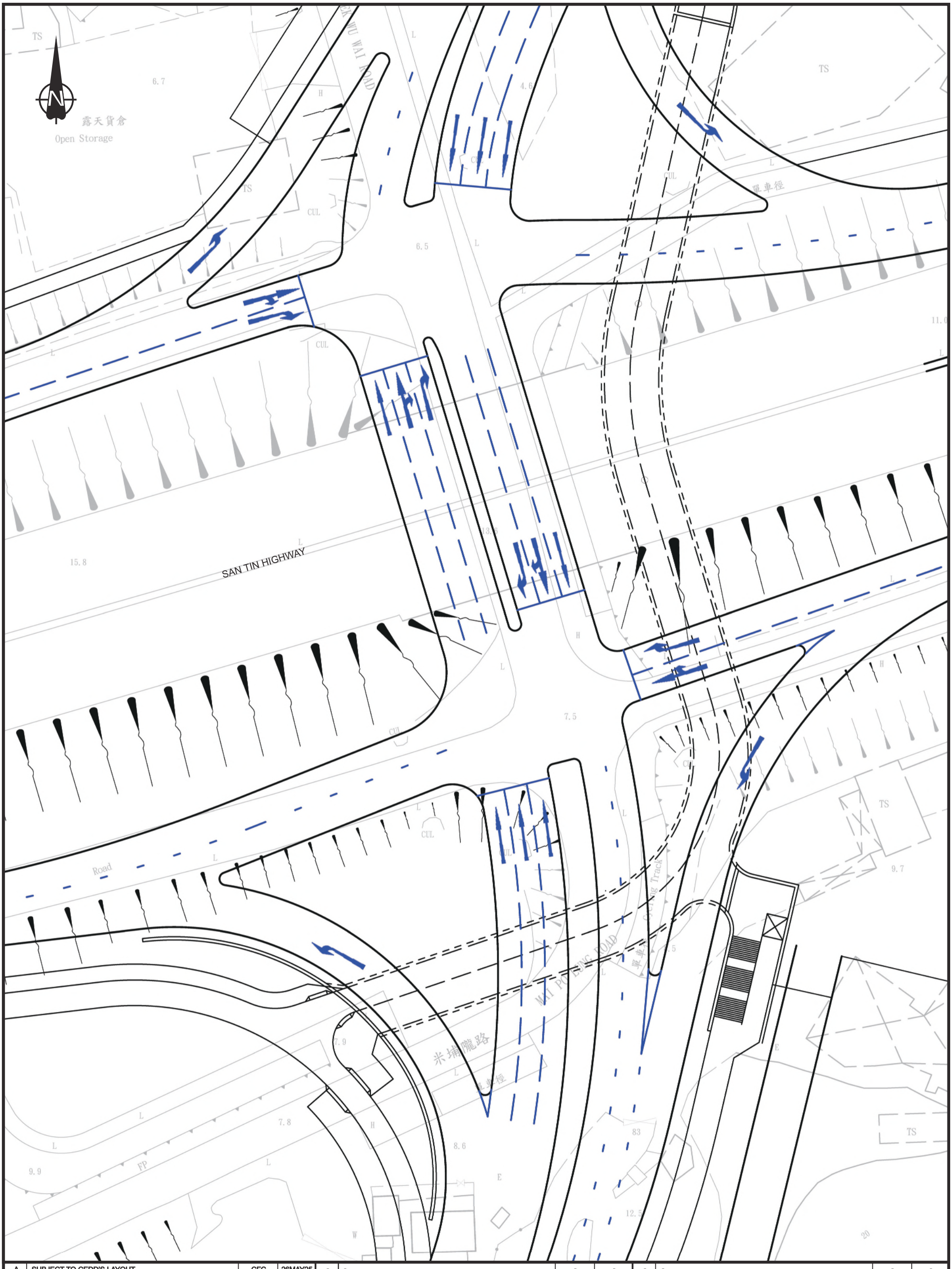
Table 5.17 Year 2039 Road Links Performance in Sensitivity Test 3

Ref.[1]	Road Link	Directions	Design Capacity (veh/hr)	Design Capacity (pcu/hr)[5]	2039 Reference Case				2039 Design Case			
					Traffic Flow (pcu/hr)		V/C [6]		Traffic Flow (pcu/hr)		V/C [6]	
					AM	PM	AM	PM	AM	PM	AM	PM
L1	Mai Po South Road	EB	700[2]	910	0	25	0.00	0.03	390	215	0.43	0.24
		WB	700[2]	910	15	10	0.02	0.01	260	255	0.29	0.28
L2	Castle Peak Road – Mai Po	NB	700[2]	910	255	280	0.28	0.31	325	355	0.36	0.39
		SB	700[2]	910	240	260	0.26	0.29	360	310	0.40	0.34
L3	Castle Peak Road – Mai Po	NB	700[2]	910	335	295	0.37	0.32	605	445	0.66	0.49
		SB	700[2]	910	275	280	0.30	0.31	455	455	0.50	0.50
L4	Castle Peak Road – Tam Mi	NB	700[2]	910	560	515	0.62	0.57	630	590	0.69	0.65
		SB	700[2]	910	705	475	0.77	0.52	825	525	0.91	0.58
L5	San Tin Highway	NB	4,700[3]	6,100	6,990	5,940	1.14	0.97	7,045	5,995	1.15	0.98
		SB	4,700[3]	6,100	5,955	5,950	0.97	0.97	6,050	5,990	0.99	0.98
L6	San Tin Highway	NB	4,700[3]	6,100	6,415	5,470	1.05	0.90	6,550	5,525	1.07	0.90
		SB	4,700[3]	6,100	4,825	5,695	0.79	0.93	4,910	5,775	0.80	0.95

Remarks: (1) Refer to **Drawing 3.2** for key road links.
(2) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 2-lane single carriageway will be taken as 1400 veh/hr for two-way traffic, which implies 700 veh/hr for one-way direction
(3) By TPDM Volume 2 Chapter 2 Table 2.4.1.1, design flow of a 3-lane dual expressway will be taken as 4700 veh/hr for one-way direction
(4) PCU factor of 1.3 adopted
(5) V/C = volume to capacity ratio

5.3.22 The assessment results in **Table 5.17** indicate that L1 to L3 would operate with ample capacity in year 2039 sensitivity test 3. For L4, V/C ratio <1.0 implies the road has sufficient capacity to cope with the anticipated traffic volume under consideration and the resultant traffic will flow smoothly. For L5 and L6 (San Tin Highway), it would result in a V/C ratio between 1.0 and 1.2. Since the contribution of additional traffic flow of the subject site to the performance of road links is minimal, and the traffic burden would be shared by the future road infrastructure of NM Highway, the link flow of the concerned road sections should be lowered and the link flow performance would be improved.

5.3.23 Therefore, it is anticipated that all the identified junctions would be operated within capacity and road links would operate with ample capacity with expected future road infrastructure in year 2039 sensitivity test 3.



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
A	SUBJECT TO CEDD'S LAYOUT	CFC	26MAY25	-	-	-	-	-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

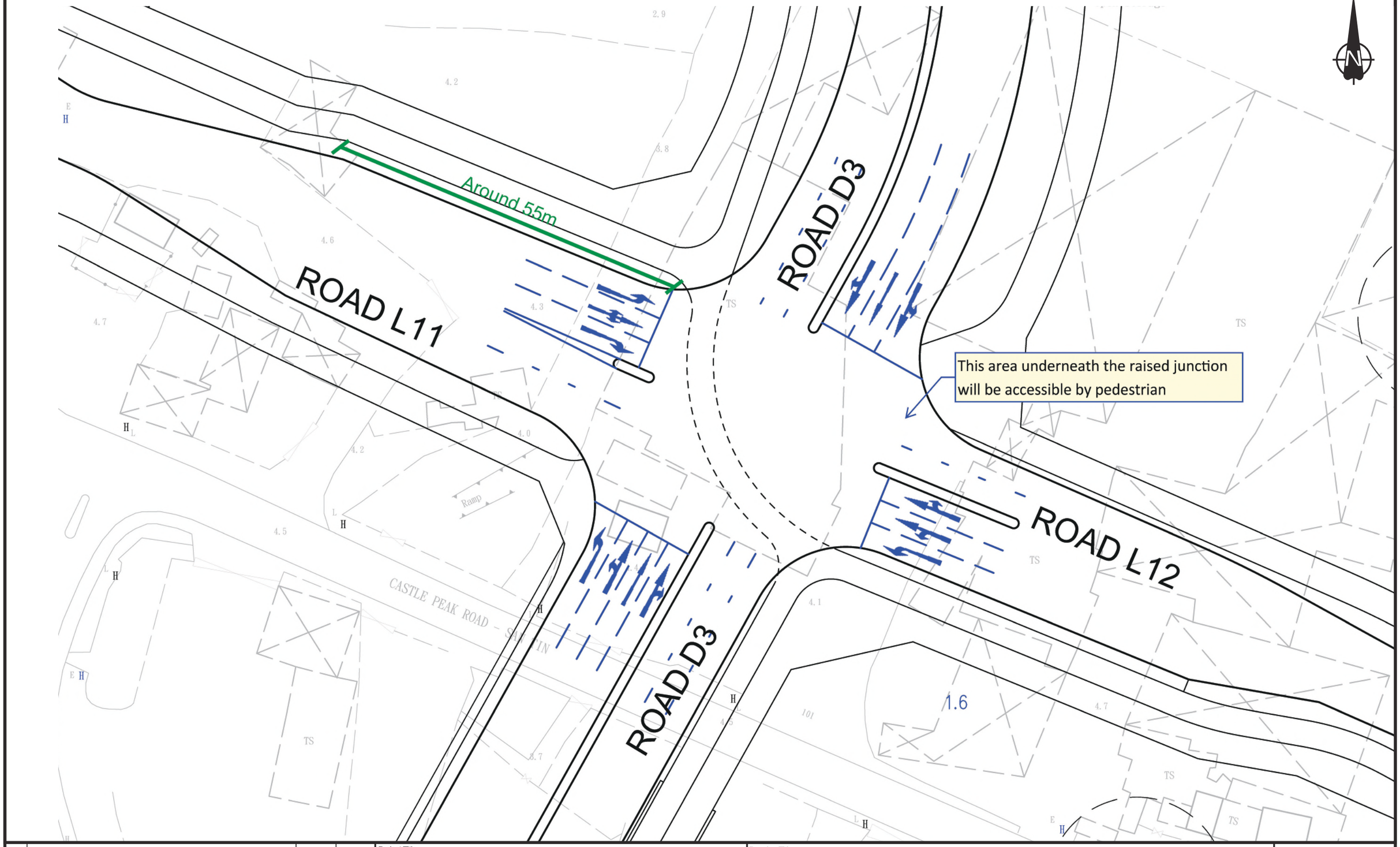
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / SAN TIN HIGHWAY SLIP ROAD (A)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.1	A

SYSTRA MVA

CHK50800610/TIA/F51-A.CDR/LLH/26MAY25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	SUBJECT TO CEDD'S LAYOUT	CFC	26MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

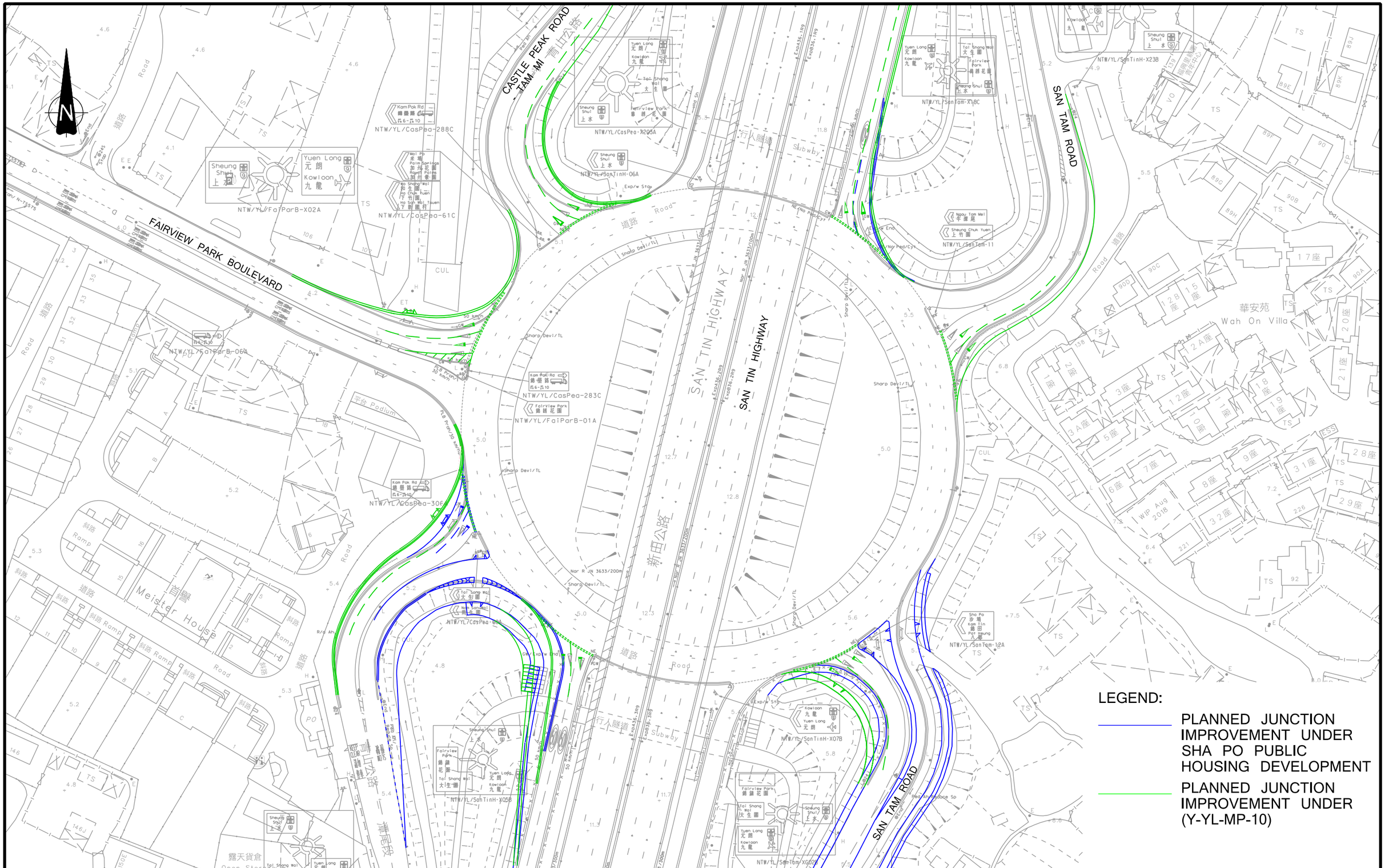
PLANNED JUNCTION IMPROVEMENT LAYOUT OF SHEK WU WAI ROAD / ROAD D3 / ROAD L11 / ROAD L12 (B)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.2	A

SYSTRA MVA

CHK50800610/TIA/F52-A.CDR/LLH/26MAY25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

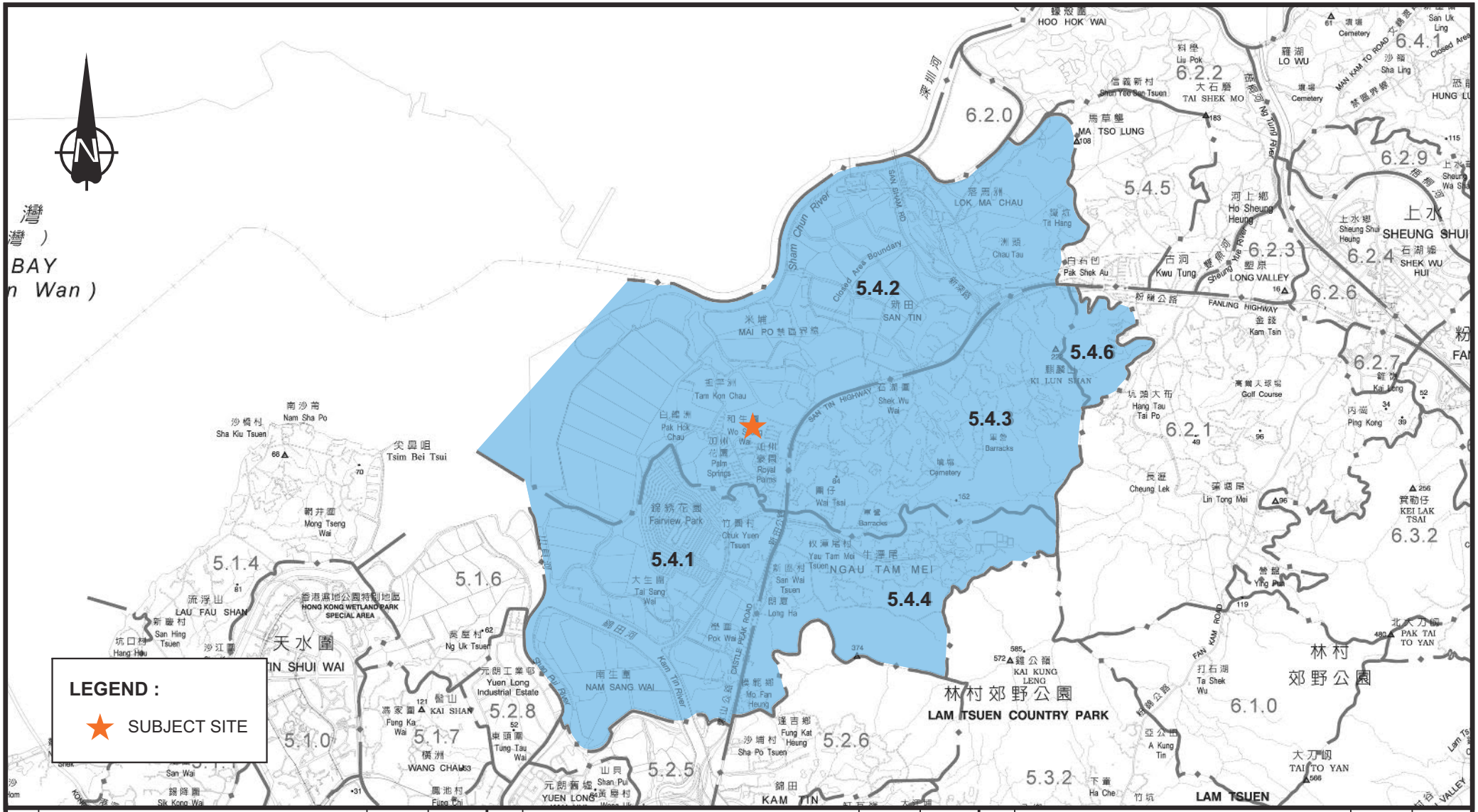
PLANNED JUNCTION IMPROVEMENT LAYOUT OF
FAIRVIEW PARK INTERCHANGE (H)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:1000(A3)	DEC 2024	5.3	-

SYSTRA MVA

CHK50800610/TIA/F512.DGN/LHO/22MAY25

Original Size : A3



A	MINOR AMENDMENT	CFC	21MAY25	-	-	-	-	-	-	-
Rev.	Description	Checked	Date	Rev.	Description	Checked	Date	Rev.	Description	Checked	Date

Project Title

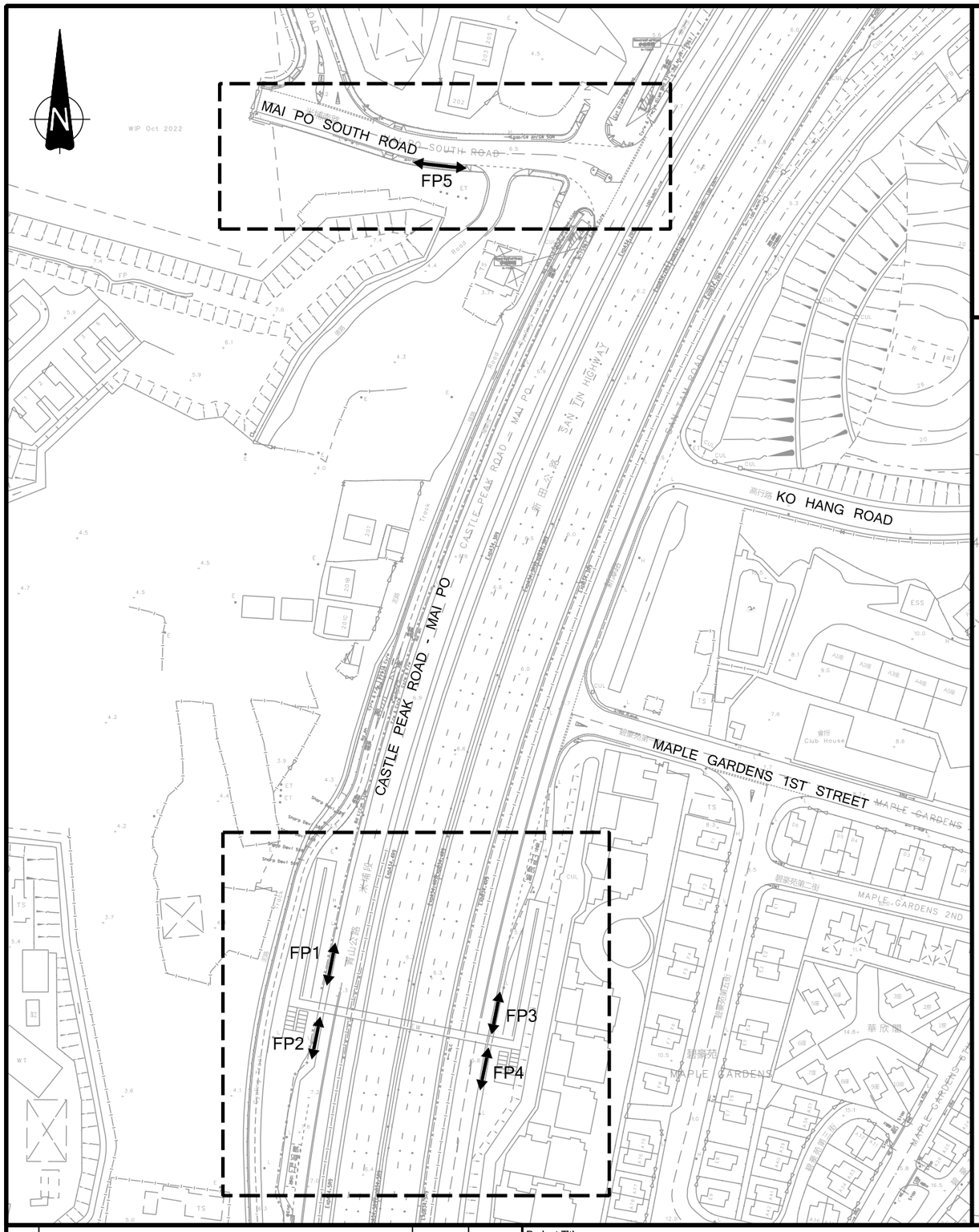
PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

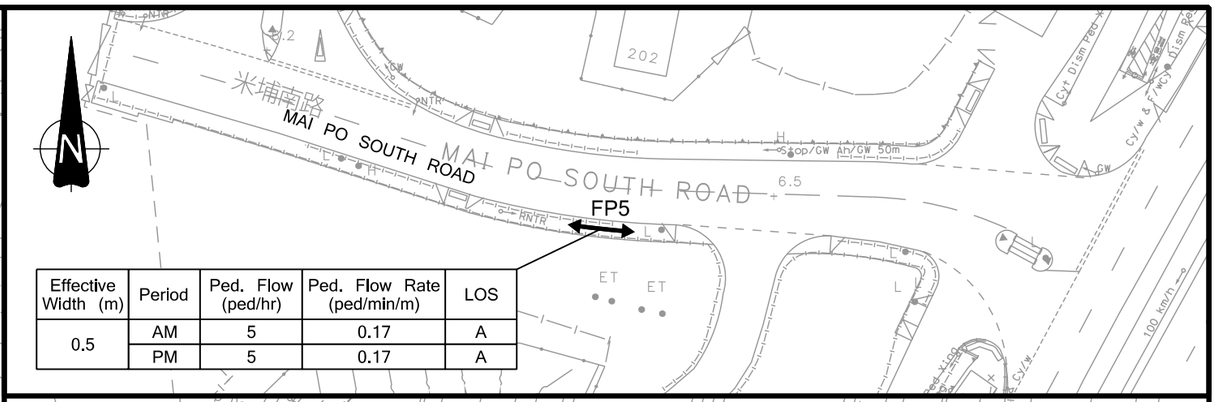
Drawing Title

TERTIARY PLANNING UNIT (TPU) BOUNDARIES

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JUN 2024	5.4	A

SYSTRA MVA





Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
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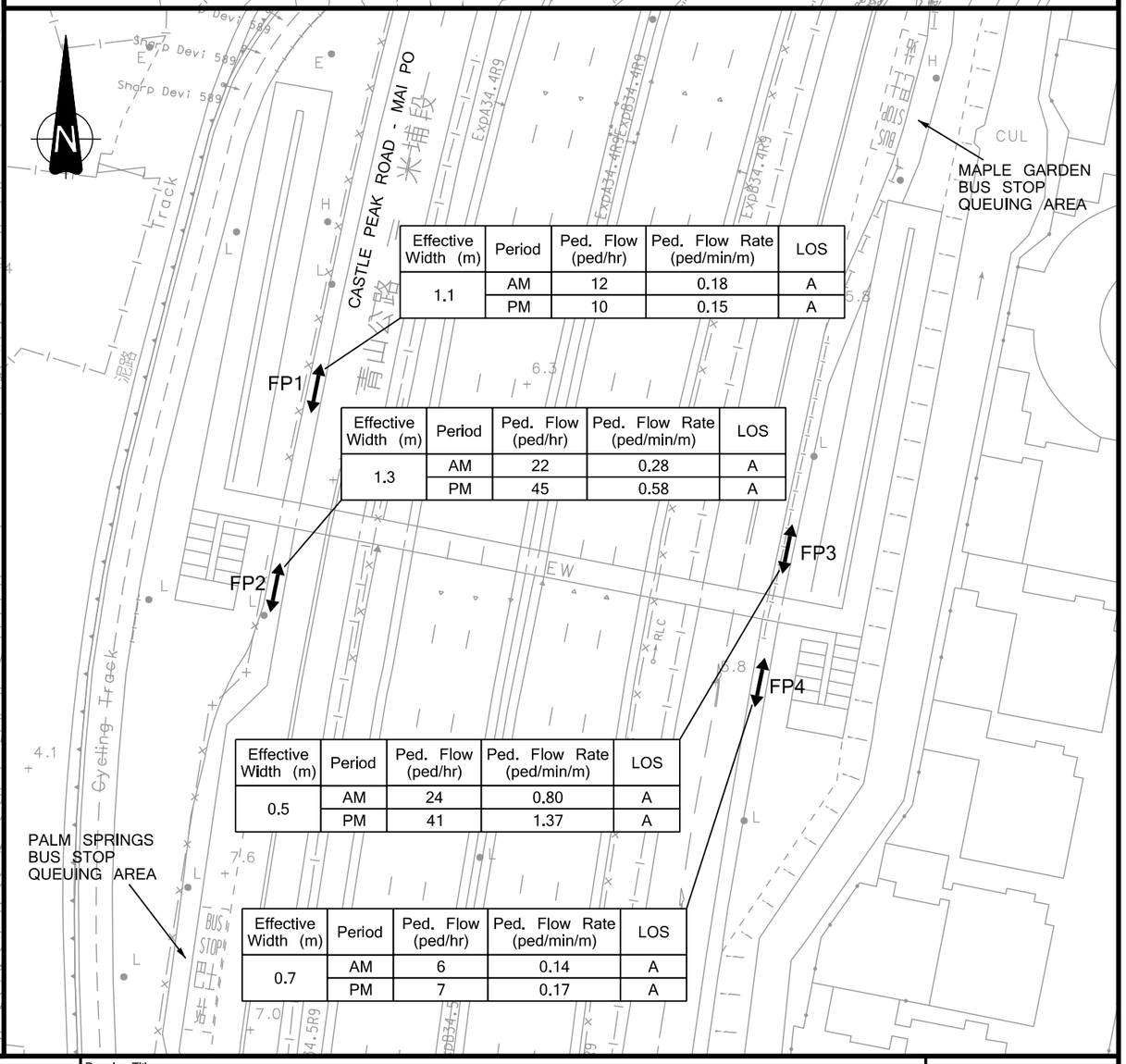
	PM	5	0.17	A



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	12	0.18	A
	PM	10	0.15	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	22	0.28	A
	PM	45	0.58	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	24	0.80	A
	PM	41	1.37	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	15AUG25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A IN DD101

Drawing Title

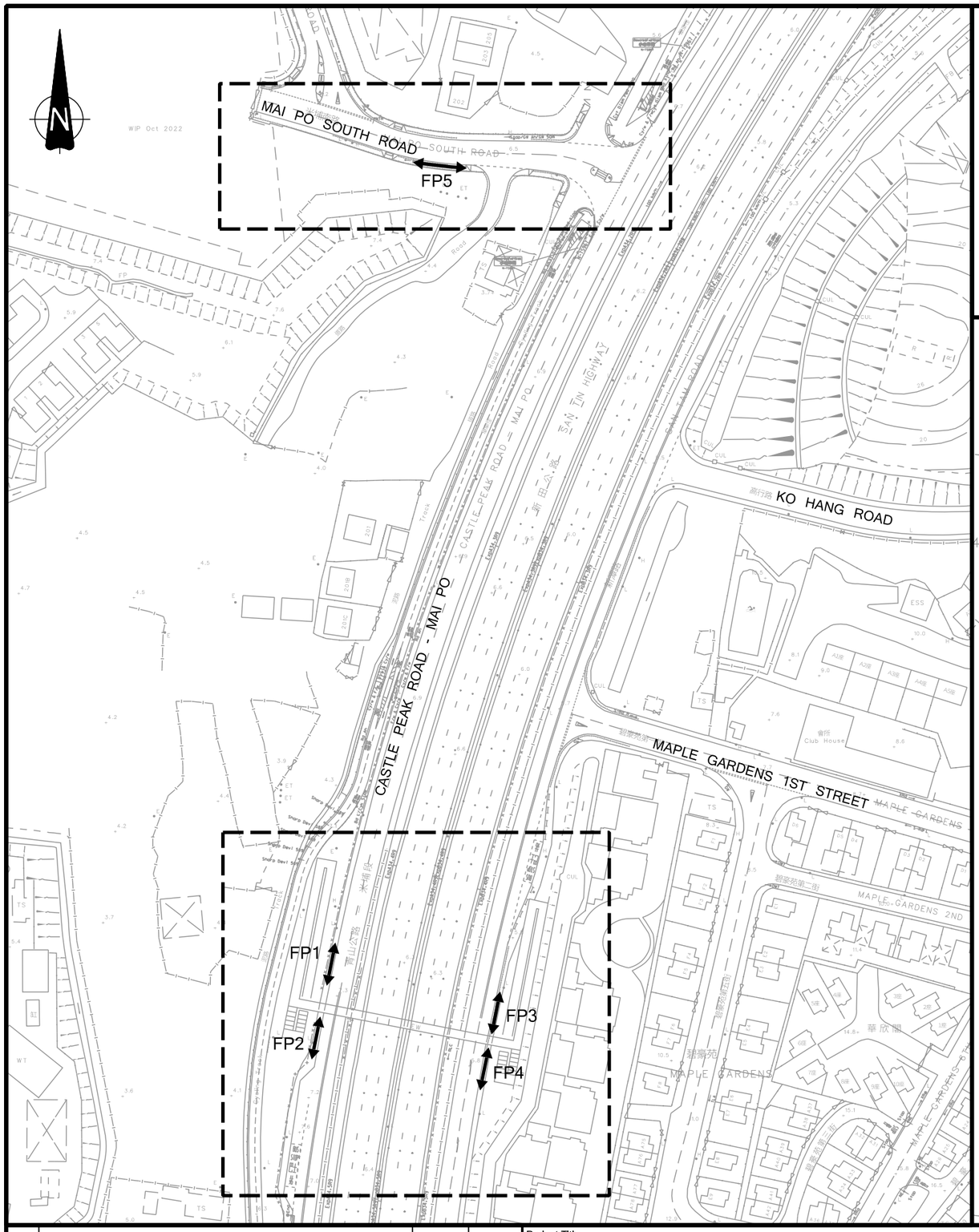
YEAR 2034 REFERENCE PEAK HOUR PEDESTRIAN FLOWS

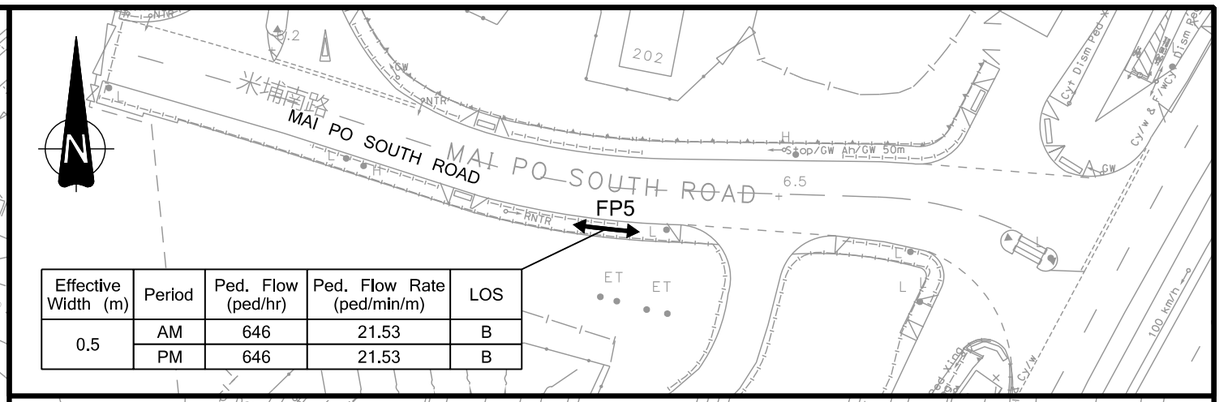
Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S. (A3)	DEC 2024	5.5	A

SYSTRA MVA

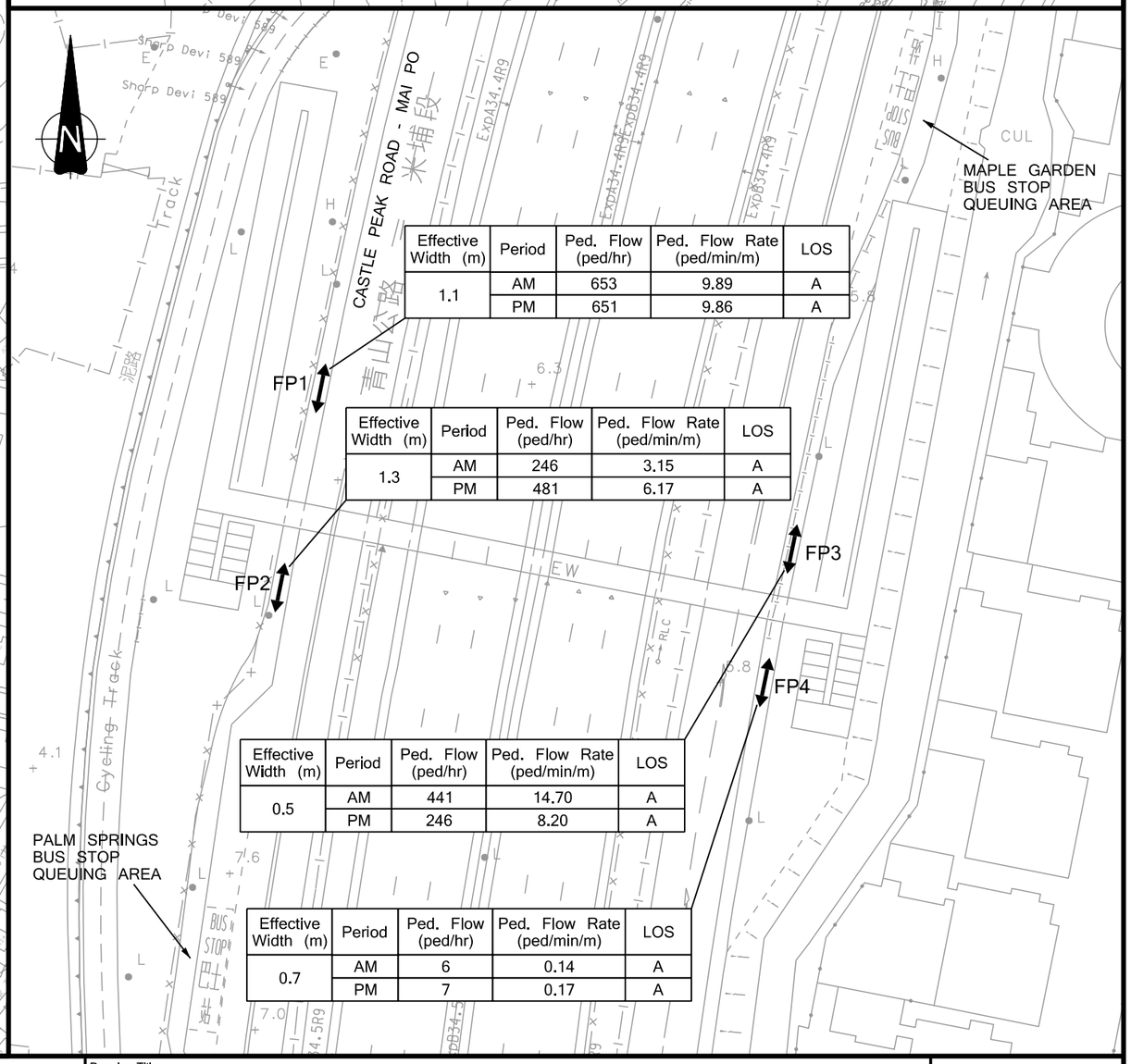
CHK50800610/TIA/F55-A.DGN/KCM/15AUG25

Original Size : A3





Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	646	21.53	B
	PM	646	21.53	B



Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.1	AM	653	9.89	A
	PM	651	9.86	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
1.3	AM	246	3.15	A
	PM	481	6.17	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.5	AM	441	14.70	A
	PM	246	8.20	A

Effective Width (m)	Period	Ped. Flow (ped/hr)	Ped. Flow Rate (ped/min/m)	LOS
0.7	AM	6	0.14	A
	PM	7	0.17	A

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	15AUG25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A IN DD101

Drawing Title

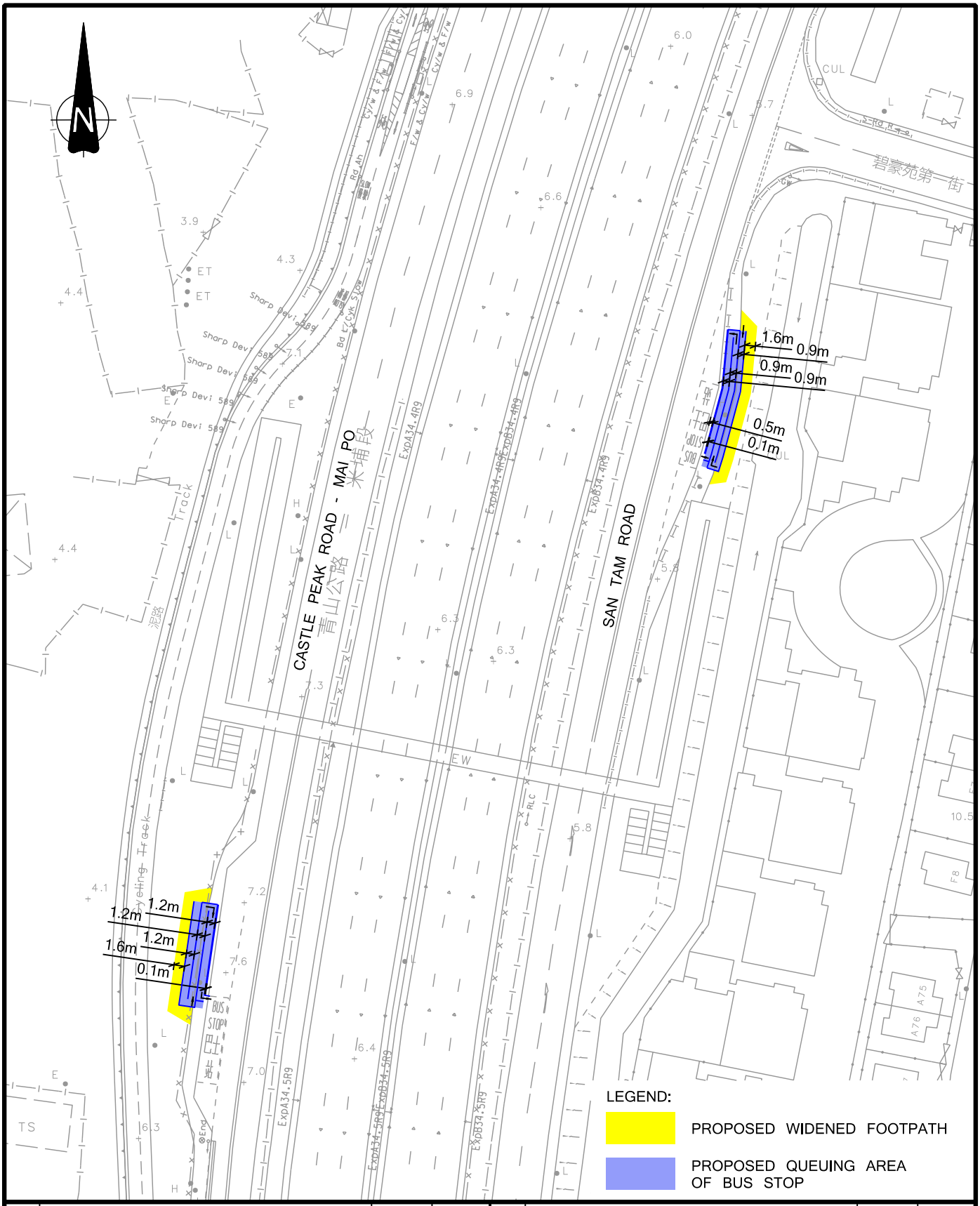
YEAR 2034 DESIGN PEAK HOUR PEDESTRIAN FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S. (A3)	DEC 2024	5.6	A

SYSTRA MVA

CHK50800610/TIA/F56-A.DGN/KCM/15AUG25

Original Size : A3



Rev.	Description	Checked	Date	Rev.	Description	Checked	Date
-	-	-	-	-	-	-	
A	MINOR AMENDMENT	CFC	15AUG25	-	-	-	

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

PROPOSED WIDENING OF BUS STOPS

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:800(A4)	JAN 2025	5.7	A

CHK50800610/TIA/F57-A.DGN/KCM/15AUG25

Original Size : A4

青山公路 新田段

CASTLE PEAK ROAD - SAN TIN

SHEK WU WAI ROAD

Ramp

San Tin 新田
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖
NTW/YL/CasPea-X233A

Mai Po 米埔
San Tin 新田
NTW/YL/CasPea-196

Mai Po 米埔
Yuen Long 元朗
Kowloon 九龍
Shek Wu Wai 石湖圖
NTW/YL/CasPea-X183A

Po Lung

PROPOSED CONVERSION TO MINI ROUNDABOUT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

INDICATIVE JUNCTION IMPROVEMENT LAYOUT OF CASTLE PEAK ROAD - SAN TIN / SHEK WU WAI ROAD

Designed	Checked	Scale	Date	Drawing No.	Rev.
LTY	CFC	1:500(A3)	DEC 2024	5.8	-

SYSTRA MVA

CHK50800610/TIA/F58.DGN/LHO/23MAY25

Original Size : A3

LOCAL PLANNED / COMMITTEND DEVELOPMENTS:

1. LOTS 3152, 3153 RP, 3156 S.B AND 4805 IN D.D. 104 AND ADJOINING GOVERNMENT LAND (GL), KAM POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/10.
2. PROPOSED HOUSE DEVELOPMENT IN VARIOUS LOTS IN D.D.104 AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG, A/YL-MP/287.
3. VARIOUS LOTS IN D.D. 104 AND ADJOINING GOVERNMENT LAND, WING KEI TSUEN, NAM SANG WAI, YUEN LONG, Y/YL-NSW/7.
4. SHA PO PUBLIC HOUSING DEVELOPMENT, N/A.
5. LOTS 8 RP (PART), 8 S.A RP, 12, 13, 14 S.B ss.2, 14 S.B RP, 14 S.C RP, 16, 17, 31 S.B RP, 33 RP, 36 RP, 45, 55 S.A AND 1740 S.A RP IN D.D.107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/8
6. LOTS 1910 RP (PART) AND 1743 S.C RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, WEST OF CASTLE PEAK ROAD - TAM MI, YUEN LONG, Y/YL-NSW/9.
7. VARIOUS LOTS IN D.D. 103 AND D.D. 115, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/293.
8. HO CHAU ROAD, YUEN LONG, NEW TERRITORIES (NEAR TUNG SHING LEI) (VARIOUS LOTS IN D.D. 115 AND ADJOINING GOVERMENT LAND), LSPS/002.
9. LOTS 592, S.C ss.1 S.A, 592 S.C ss.4 AND 1252 S.C IN D.D. 115, NAM SANG WAI, YUEN LONG, A/YL-NSW/274.
10. LOT 4823 IN D.D. 104, NGAU TAM MEI, YUEN LONG, Y/YL-NTM/9.
11. VARIOUS LOTS IN D.D. 107 AND ADJOINING GOVERNMENT LAND, CHEUNG CHUN SAN TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/604.
12. PHASE 2 DEVELOPMENT OF LOTS 1783 (PART), 1784 RP, 1788 RP, 1789 RP, 1790 RP (PART), 1791 RP, 1795 (PART), 1796 (PART), 1797 (PART), 1836 (PART), 1927 S.A AND 1927 RP (PART) IN D.D. 107 AND ADJOINING GOVERNMENT LAND, KAM TIN, YUEN LONG, A/YL-KTN/663.
13. LOT 2206 in D.D. 109, KAM TAI ROAD, KAM TIN, YUEN LONG, A/YL-KTN/791.
14. LOTS 3211 RP, 3212 RP, 3213 RP, 3214 S.A, 3214 S.B, 3215, 3216, 3217, 3218 RP, Ó250 S.B SS.23 RP AND 3250 S.B SS.33 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/7.
15. LOTS 3054 S.A SS.1, 3156 S.A, 3200 RP (PART), 3200 S.A RP, 3201 RP (PART), 3202 (PART), 3203 RP, 3204 RP AND 3205 RP IN D.D. 104 AND ADJOINING GOVERNMENT LAND, YAU POK ROAD, MAI PO, YUEN LONG, Y/YL-MP/8.
16. LOT 1071 IN D.D. 103, HA KO PO TSUEN, KAM TIN, YUEN LONG, A/YL-KTN/964.
17. LOTS 870 S.A, 870 RP, 877 RP, 878 S.A, 878 S.B, 878 S.C, 878 S.D, 878 S.E, 878 S.F, 878 RP AND 892 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, TUNG SHING LEI, NAM SANG WAI, YUEN LONG, A/YL-NSW/303.
18. LOTS 879, 880 S.A SS.1, 880 S.B SS.1, 881 TO 885, 889 RP (PART), 891 (PART), 1318, 1326 AND 1344 IN D.D. 115 AND ADJOINING GOVERNMENT LAND, AU TAU, NAM SANG WAI, YUEN LONG, A/YL-NSW/292.
19. PROPOSED COMPREHENSIVE DEVELOPMENT SCHEME TO INCLUDE WETLAND RESTORATION PROPOSAL AND PROPOSED FILLING OF PONDS/LAND AND EXCAVATION OF LAND IN "OU(CDWRA)" ZONE AT VARIOUS LOTS IN D.D. 104, NORTH OF KAM POK ROAD EAST, POK WAI, YUEN LONG, NEW TERRITORIES, A/YL-NSW/314.
20. SAN TIN TECHNOPOLE.

N

SAN TIN HIGHWAY
CASTLE PEAK ROAD - MAI PO
SAN TAM ROAD
NGAU TAM MEI ROAD
CHUN SHIN ROAD
CHUK YAU ROAD
SAN TIN HIGHWAY
CASTLE PEAK ROAD - TAM MI
SAN TIN HIGHWAY
SAN TAM ROAD
KAM POK ROAD
FAIRVIEW PARK BOULEVARD
KAM TIN ROAD
APPLICATION SITE

LEGEND:

APPLICATION SITE

PLANNED / COMMITTED DEVELOPMENT

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD COMMENT INCORPORATED	CFC	15AUG25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

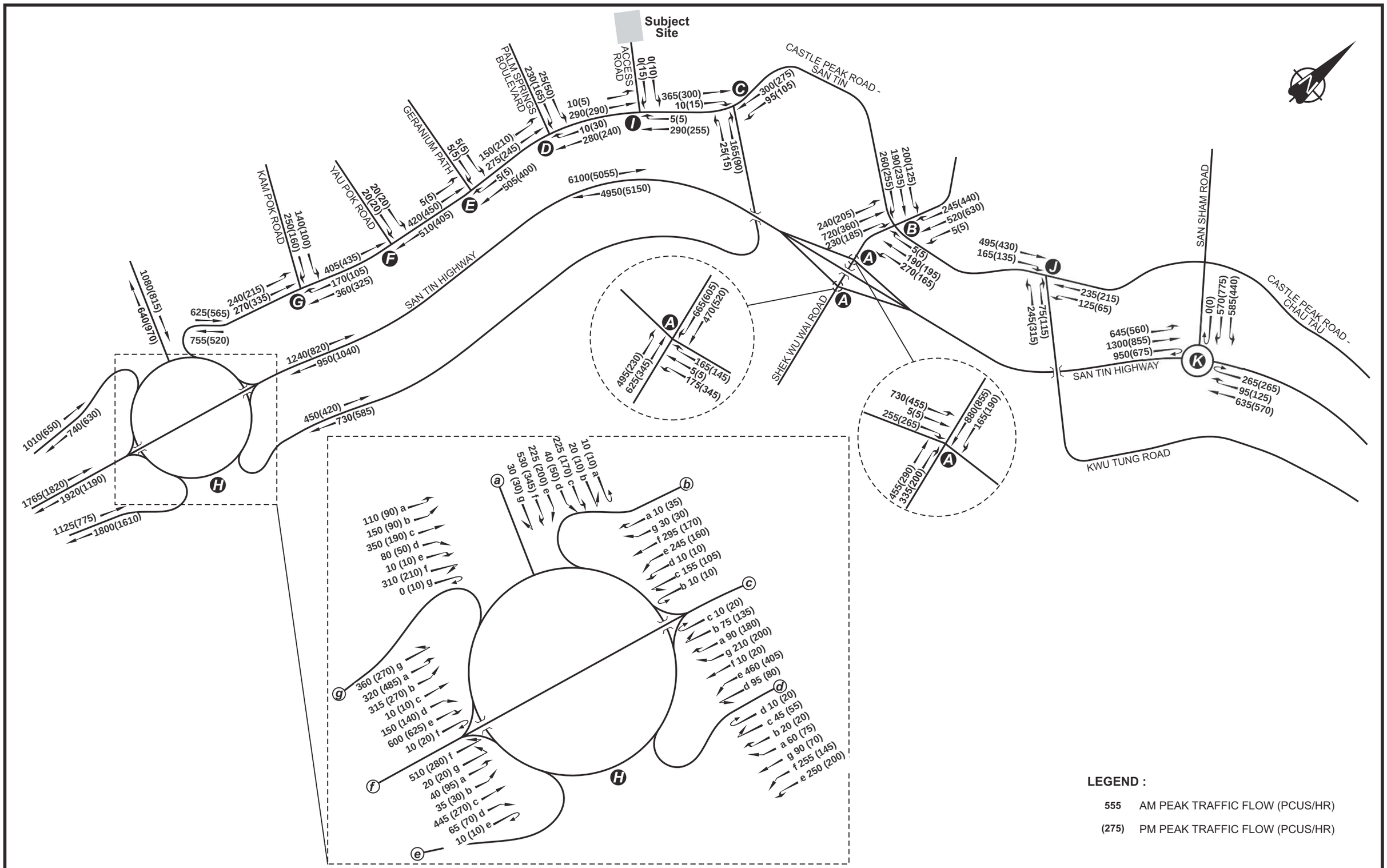
LOCAL PLANNED AND COMMITTED DEVELOPMENTS (SENSITIVITY TEST)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	N.T.S.	JUN 2024	**5.9**	A

SYSTRA MVA

CHK50800610/TIA/F59-A.DGN/KCM/15AUG25

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR UPDATE	CFC	9SEP25
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

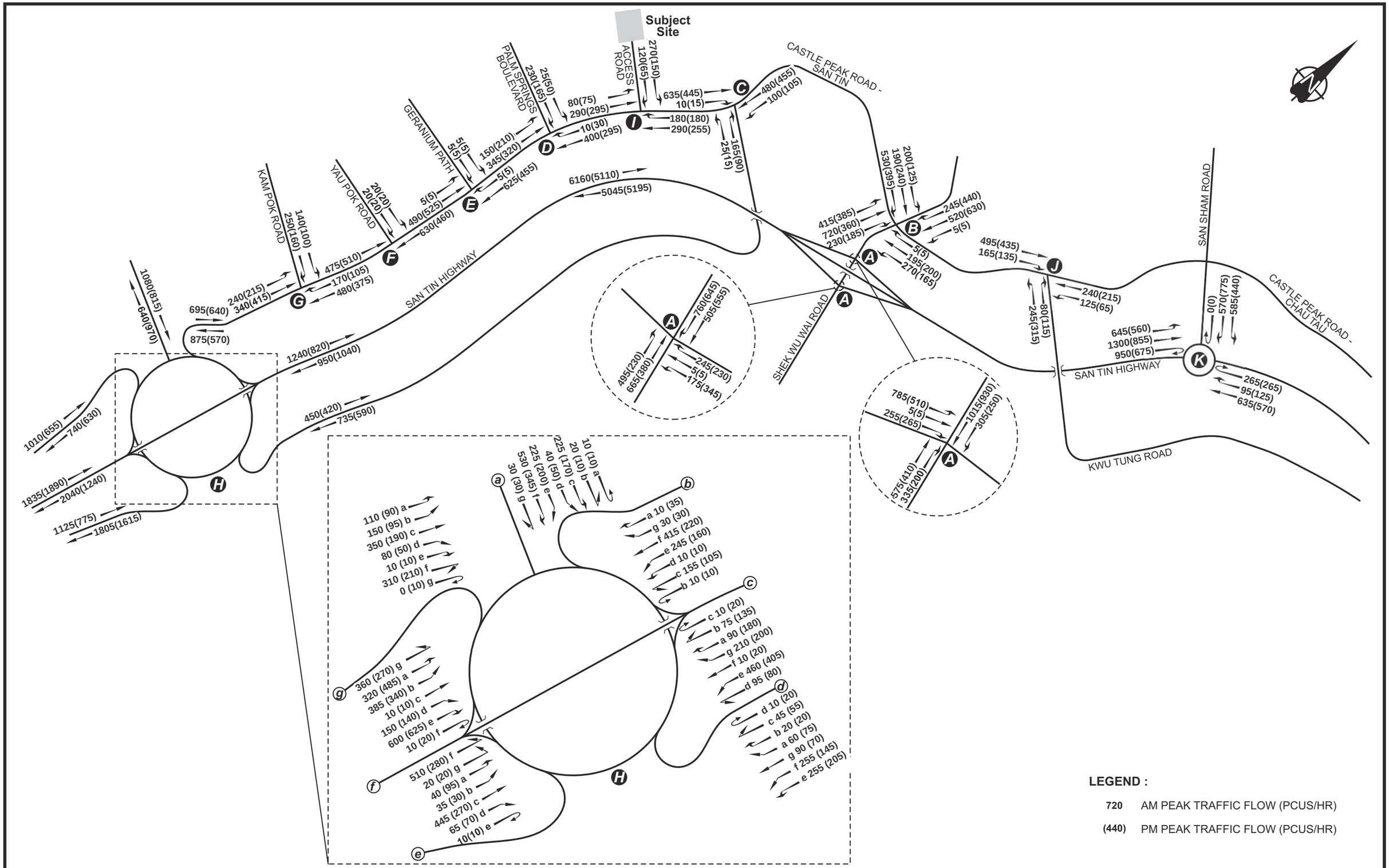
2034 REFERENCE TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.10	B

SYSTRA MVA

CHK50800610/TIA/F510-A.CDR/LLH/23MAY25

Original Size : A3



LEGEND :

720 AM PEAK TRAFFIC FLOW (PCUS/HR)

(440) PM PEAK TRAFFIC FLOW (PCUS/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR UPDATE	CFC	9SEP25
A	TD COMMENT INCORPORATED	CFC	23MAY25

Project Title: PROPOSED COMPREHENSIVE DEVELOPMENT AT WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A. IN DD101

Drawing Title: **2034 DESIGN TRAFFIC FLOWS IN SENSITIVITY TEST**

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	JAN 2025	5.11	B

SYSTRA MVA

CHK50800610/TIA/F511-A.CDR/LLH/23MAY25

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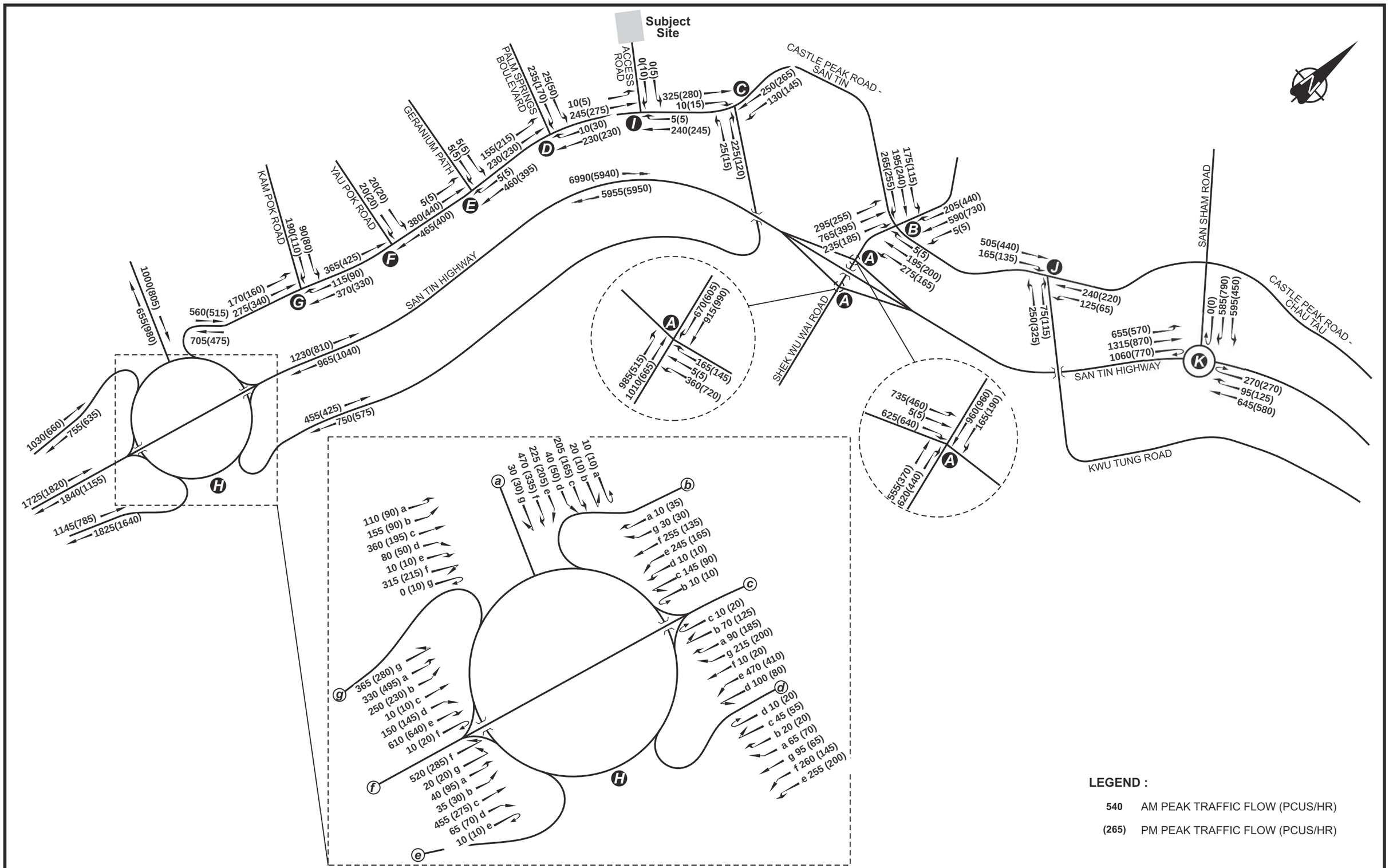


Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR UPDATE	CFC	9SEP25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

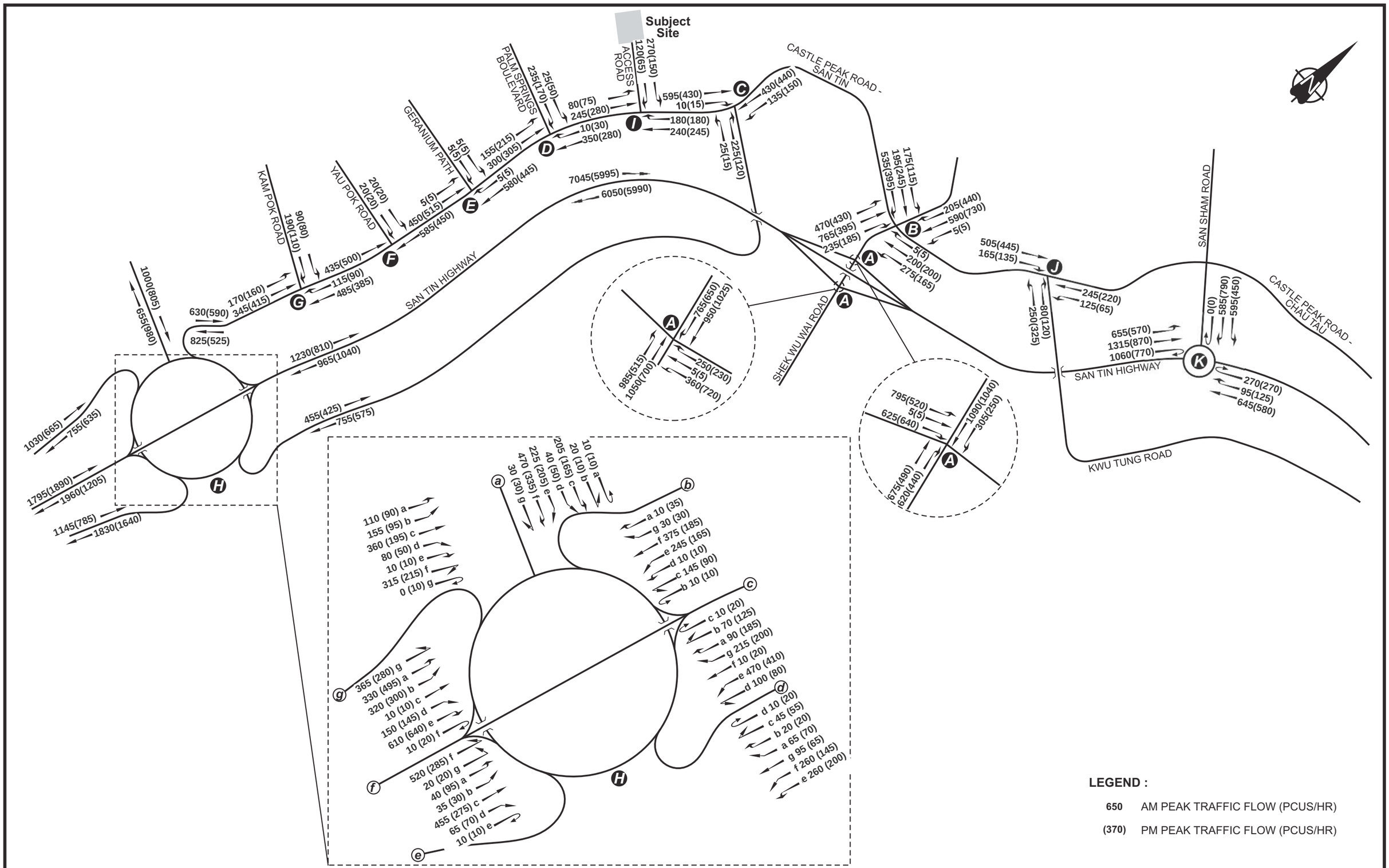
2039 **REFERENCE TRAFFIC FLOWS IN SENSITIVITY TEST**

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.12	A

SYSTRA MVA

CHK50800610/TIA/F59.CDR/LLH/31DEC24

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR UPDATE	CFC	9SEP25

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT
AT WO SHANG WAI, YUEN LONG,
LOTS 77 AND 50 S.A. IN DD101

Drawing Title

2039 DESIGN TRAFFIC FLOWS IN SENSITIVITY TEST

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	NTS	DEC 2024	5.13	A

SYSTRA MVA

CHK50800610/TIA/F510.CDR/LLH/31DEC24

Original Size : A3

6. CONCLUSION

6.1 Summary

6.1.1 The previous Section 16 Planning Application (Application no. A/YL-MP/344) was approved with conditions with domestic plot ratio of 0.4 on 1 March 2024 for a proposed house development with 789 houses. A planning application is made under section 12A of the Town Planning Ordinance, to rezone the Application Site on the Approved Mai Po and Fairview Park Outline Zoning Plan ("OZP") No. S/YL-MP/8. The rezoning application aims to increase the plot ratio ("PR") from 0.4 (i.e. maximum permissible PR on the OZP) to 1.30 (with 1.28 domestic plot ratio), with a maximum building height ("BH") adjusted to not more than 10-storeys and not exceeding +42mPD by amending the Notes of the current "Other Specified Uses (Comprehensive Development to include Wetland Restoration Area)" ("OU(CDWRA)") zone. It is the Applicant's intention to increase the development intensity and revise the layout and form of the housing developments in the Application Site.

6.1.2 Same to the previous approved scheme, the development vehicular access is off the local access road, Mai Po South Road connecting to Castle Peak Road - Mai Po.

6.1.3 The provision of the internal transport facilities in the current proposed MLP is determined in accordance with the latest updated HKPSG requirements and TD's further comment.

6.1.4 Traffic surveys have been conducted to establish the current traffic condition, the public transport utilization and footpath condition in the vicinity of the subject site.

6.1.5 The tentative operation year of proposed development is 2031. Thus, the design year of 2034 is adopted for traffic forecast and assessment purposes.

6.1.6 Subject to the project of San Tin Technopole, the proposed road network will be upgraded to provide better linkage and strengthen future connectivity for developments located at the North and South of the San Tin Highway.

6.1.7 Public transport service capacity has also been assessed upon the completion of the proposed development. The assessment results suggest that with appropriate bus service enhancements, the public transport service capacity in the vicinity could serve the additional passenger demands. Potential bus stops and other public transport with related facilities would be provided within the subject development for the potential bus route and public transport services. The public transport service enhancement and potential bus and public transport service provision will be subject to further review in later stage, if necessary.

6.1.8 Operational performance of the identified local junctions and road link capacity have been assessed based on the anticipated year 2034 traffic flows and the upgrade road junctions of San Tin Technopole project. The anticipated trip generation of the current proposed scheme would be larger in both AM and PM peak periods, compared with the previous approved scheme. The assessment results as shown in **Table 5.1** revealed that the majority of key junctions will operate with ample capacity upon completion of the proposed development. With the planned junction improvement at Fairview Park Interchange (Junction H), the results indicate that all the identified junctions would be operated within capacity and road links would operate with ample capacity with expected future road infrastructure in Year 2034.

6.1.9 Operational performance of pedestrian flows and queuing space assessment have been assessed based on the anticipated year 2034 pedestrian flows, subject to the induced pedestrian trips for additional franchised bus demand. With the proposed widening of existing queuing area at concerned bus stops, the LOS of the identified road link and queuing area at bus stops would be operating within capacity in Year 2034.

6.1.10 Therefore, it is anticipated that the proposed development would not cause any significant traffic impact to the road network.

6.1.11 Subject to TD comment, three sensitivity tests are also included in the assessment. In conservative hypothetical approach, with certain proposed junction improvements, all the identified junctions would be operated within capacity and road links would operate with ample capacity with expected future road infrastructure in Year 2034 and Year 2039.

6.2 Conclusion

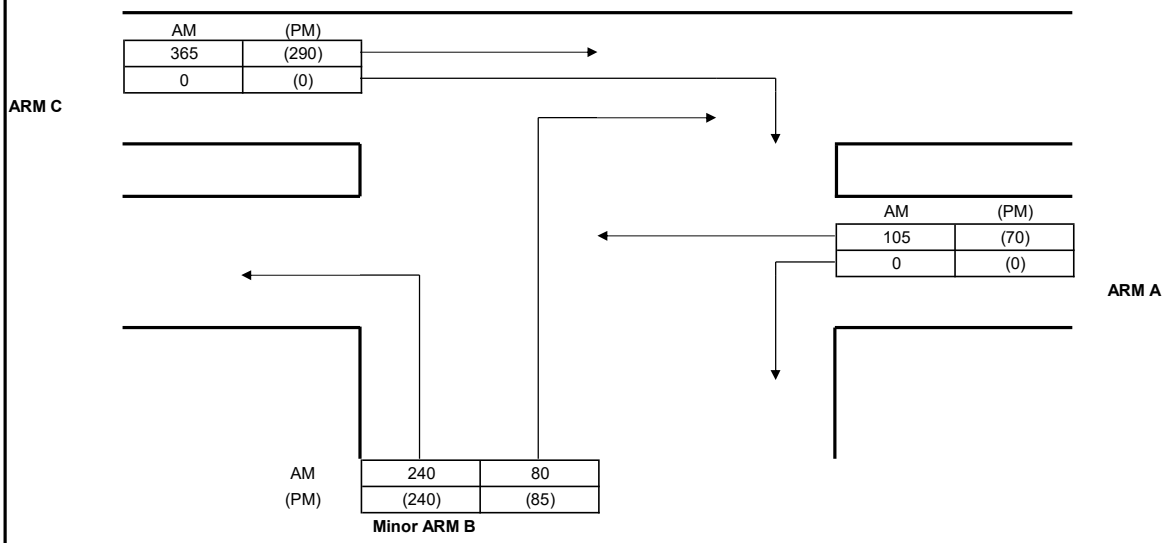
6.2.1 In conclusion, the traffic impact assessment has demonstrated that the traffic generated by the proposed development can be absorbed by the nearby road network. Hence, it can be concluded that the proposed development is considered acceptable in traffic terms.

ANNEX A –
DETAIL OF JUNCTION CALCULATION SHEETS

Calculation Spreadsheets
for
2024 Observed Scenario

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		365	290
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		105	70
	q(b-a)		80	85
	q(b-c)		240	240
	f		0.75	0.74
		Factor		
CAPACITIES	Q(b-a)	1	646	673
	Q(b-c)	1	937	949
	Q(c-b)	1	420	425
	Q(b-ac)	1	842	857
RFC's	b-a		0.124	0.126
	b-c		0.256	0.253
	c-b		0.000	0.000
	b-ac		0.380	0.379
Worst RFC			**0.380**	**0.379**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

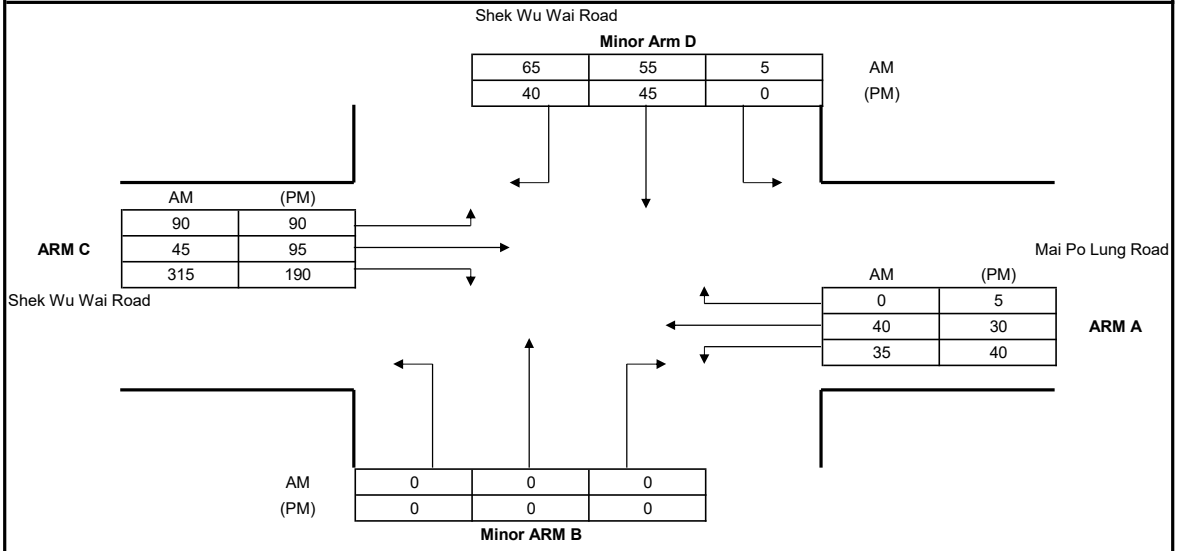
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	95	q(a-c)	40	30
	q(c-b)	315	190	q(a-d)	0	5
	q(a-b)	35	40	q(c-d)	90	90
	q(a-c)	105	70	q(c-a)	45	95
	q(b-a)	0	0	q(d-c)	120	85
	q(b-c)	0	0	q(d-a)	5	0
	f	0.00	0.00	f	0.04	0.00
CAPACITIES	Q(b-a)	259	282	Q(d-c)	598	586
	Q(b-c)	420	425	Q(d-a)	773	761
	Q(c-b)	652	658	Q(a-d)	634	624
	Q(b-ac)	259	282	Q(d-ca)	604	586
	Q(c-a)	930	1280	Q(a-c)	1800	1786
RFC's	b-a	0.000	0.000	d-c	0.201	0.145
	b-c	0.000	0.000	d-a	0.006	0.000
	c-b	0.483	0.289	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.207	0.145
	c-a	0.054	0.074	a-c	0.022	0.017

	AM	(PM)
Worst RFC	**0.483**	**0.289**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

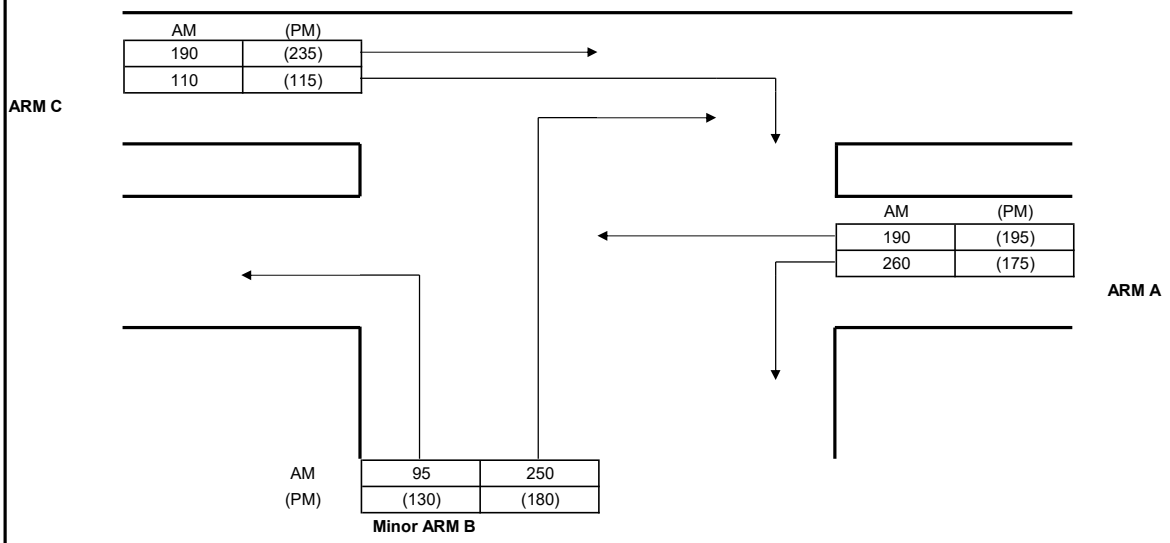
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road/ Mai Po Lung Road			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		190	235
	q(c-b)		110	115
	q(a-b)		260	175
	q(a-c)		190	195
	q(b-a)		250	180
	q(b-c)		95	130
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	418	416
	Q(b-c)	1	646	654
	Q(c-b)	1	565	586
	Q(b-ac)	1	463	491
RFC's	b-a		0.598	0.433
	b-c		0.147	0.199
	c-b		0.195	0.196
	b-ac		0.745	0.631
Worst RFC			**0.745**	**0.631**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

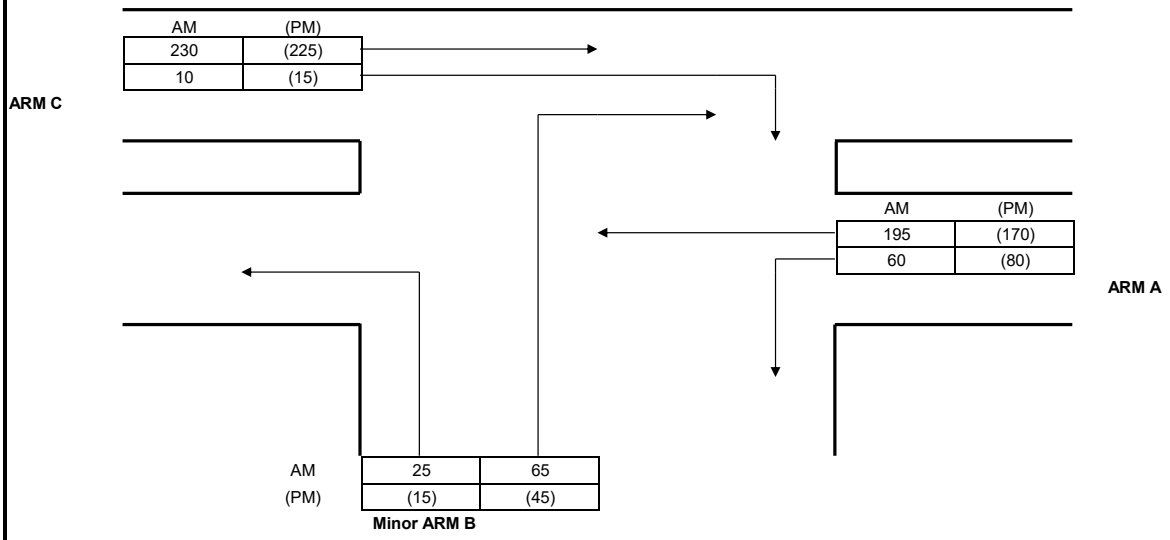
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	May-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		230	225
	q(c-b)		10	15
	q(a-b)		60	80
	q(a-c)		195	170
	q(b-a)		65	45
	q(b-c)		25	15
	f		0.28	0.25
		Factor		
CAPACITIES	Q(b-a)	1	448	451
	Q(b-c)	1	615	619
	Q(c-b)	1	660	661
	Q(b-ac)	1	485	484
RFC's	b-a		0.145	0.100
	b-c		0.041	0.024
	c-b		0.015	0.023
	b-ac		0.186	0.124
Worst RFC			**0.186**	**0.124**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

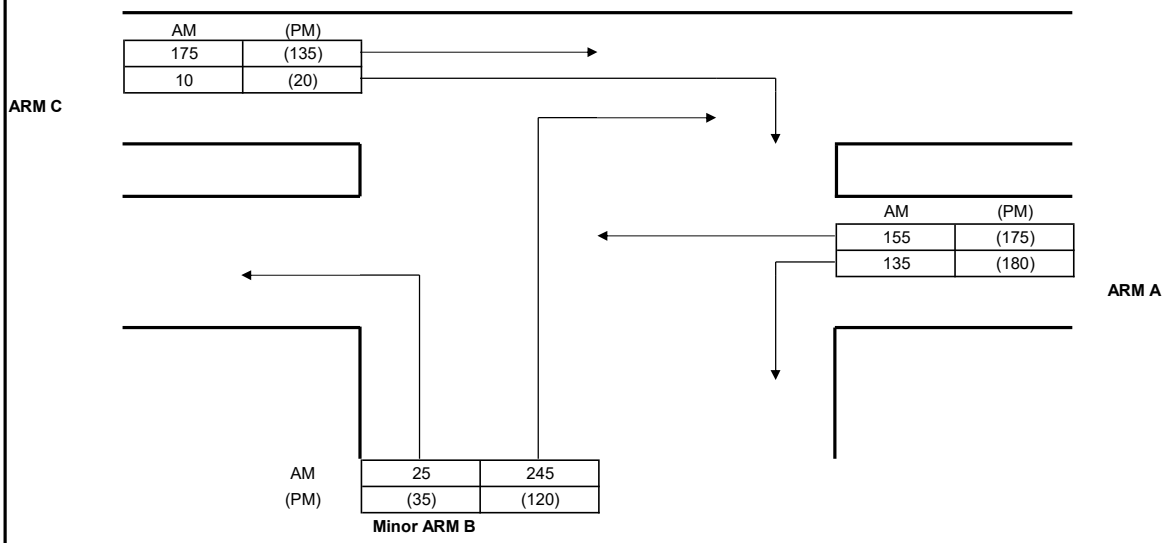
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		175	135
	q(c-b)		10	20
	q(a-b)		135	180
	q(a-c)		155	175
	q(b-a)		245	120
	q(b-c)		25	35
	f		0.09	0.23
		Factor		
CAPACITIES	Q(b-a)	1	471	465
	Q(b-c)	1	653	643
	Q(c-b)	1	574	558
	Q(b-ac)	1	483	496
RFC's	b-a		0.520	0.258
	b-c		0.038	0.054
	c-b		0.017	0.036
	b-ac		0.559	0.313
Worst RFC			**0.559**	**0.313**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

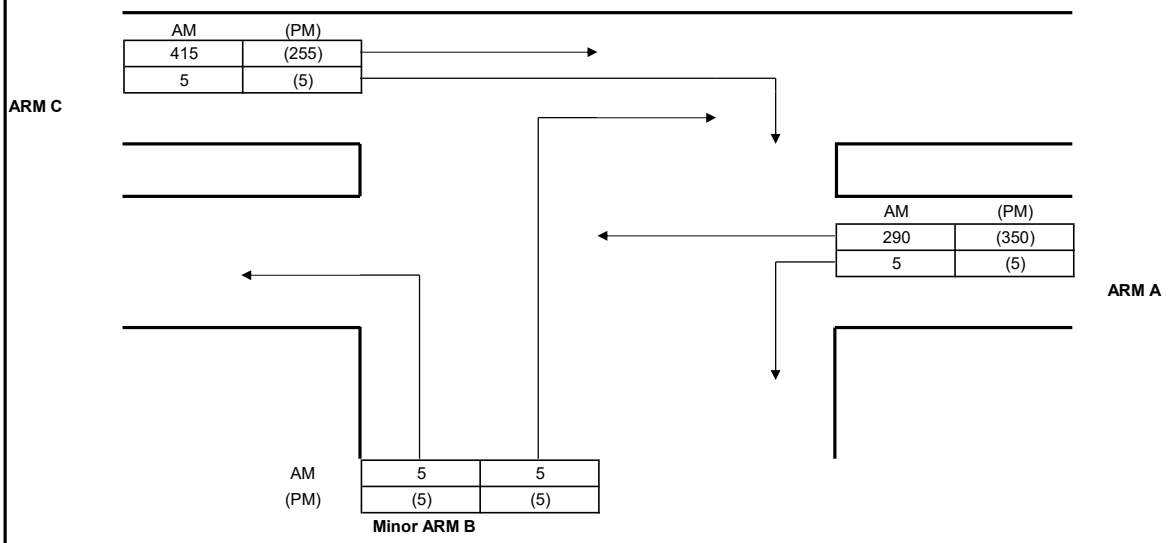
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		415	255
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	386	395
	Q(b-c)	1	584	570
	Q(c-b)	1	619	603
	Q(b-ac)	1	465	467
RFC's	b-a		0.013	0.013
	b-c		0.009	0.009
	c-b		0.008	0.008
	b-ac		0.022	0.021
Worst RFC			**0.022**	**0.021**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

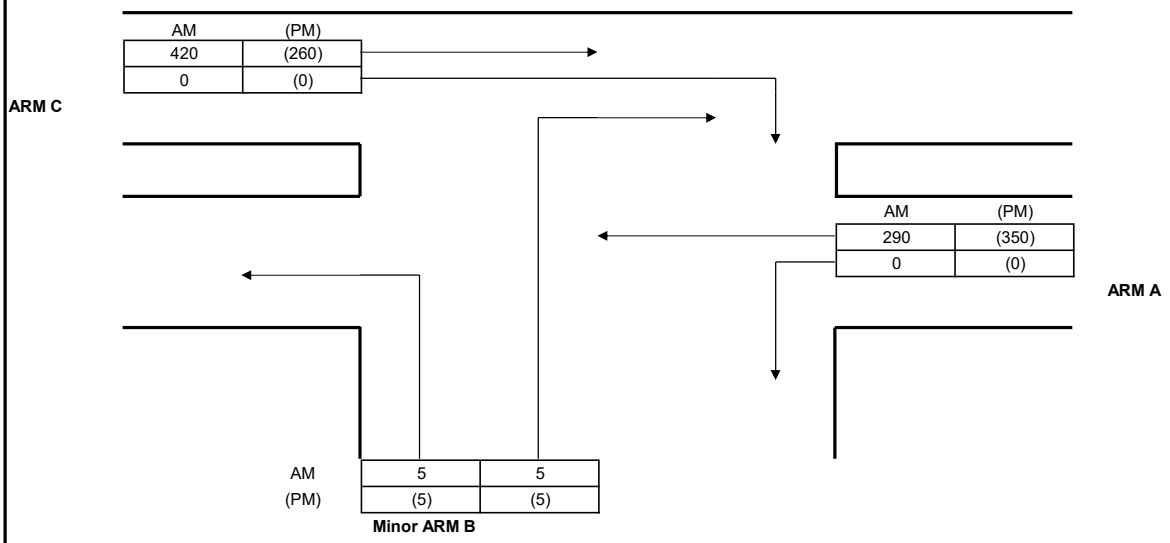
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		420	260
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		290	350
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	330	338
	Q(b-c)	1	501	488
	Q(c-b)	1	389	379
	Q(b-ac)	1	398	400
RFC's	b-a		0.015	0.015
	b-c		0.010	0.010
	c-b		0.000	0.000
	b-ac		0.025	0.025
Worst RFC			**0.025**	**0.025**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

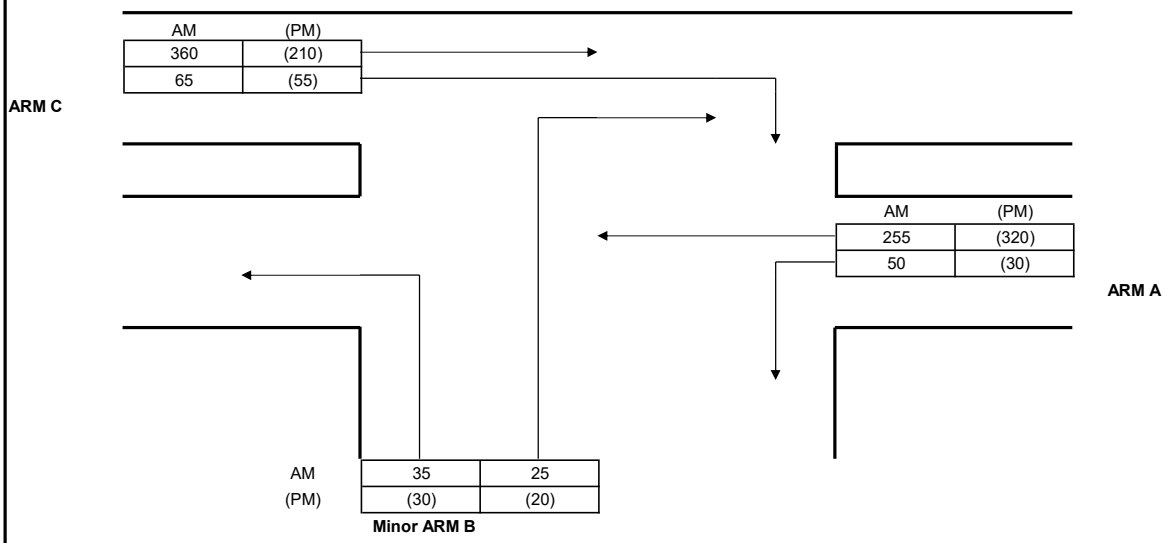
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	210
	q(c-b)		65	55
	q(a-b)		50	30
	q(a-c)		255	320
	q(b-a)		25	20
	q(b-c)		35	30
	f		0.58	0.60
		Factor		
CAPACITIES	Q(b-a)	1	398	410
	Q(b-c)	1	618	604
	Q(c-b)	1	610	599
	Q(b-ac)	1	502	508
RFC's	b-a		0.063	0.049
	b-c		0.057	0.050
	c-b		0.107	0.092
	b-ac		0.120	0.098
Worst RFC			**0.120**	**0.098**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

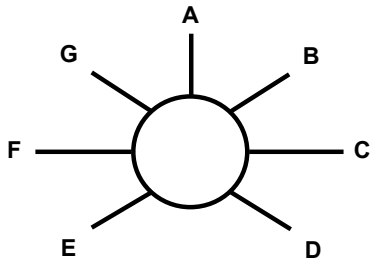
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	60	5	235	40	155	430	15	1395	940	600
B	15	25	55	5	115	250	5	1915	470	420
C	145	55	10	100	215	20	120	1765	665	620
D	35	10	40	55	160	195	10	1990	505	440
E	60	80	155	60	5	45	5	1685	410	810
F	255	145	15	140	100	30	120	980	805	1115
G	30	100	110	40	60	145	15	1495	500	290

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	50	20	140	35	140	240	20	1220	645	940
B	15	25	45	15	125	105	15	1475	345	390
C	175	45	20	100	265	5	100	1300	710	520
D	25	25	40	55	110	170	10	1600	435	410
E	50	35	140	40	10	35	5	1265	315	770
F	590	170	25	115	105	20	200	910	1225	670
G	35	70	110	50	15	95	10	1775	385	360

CALCULATIONS

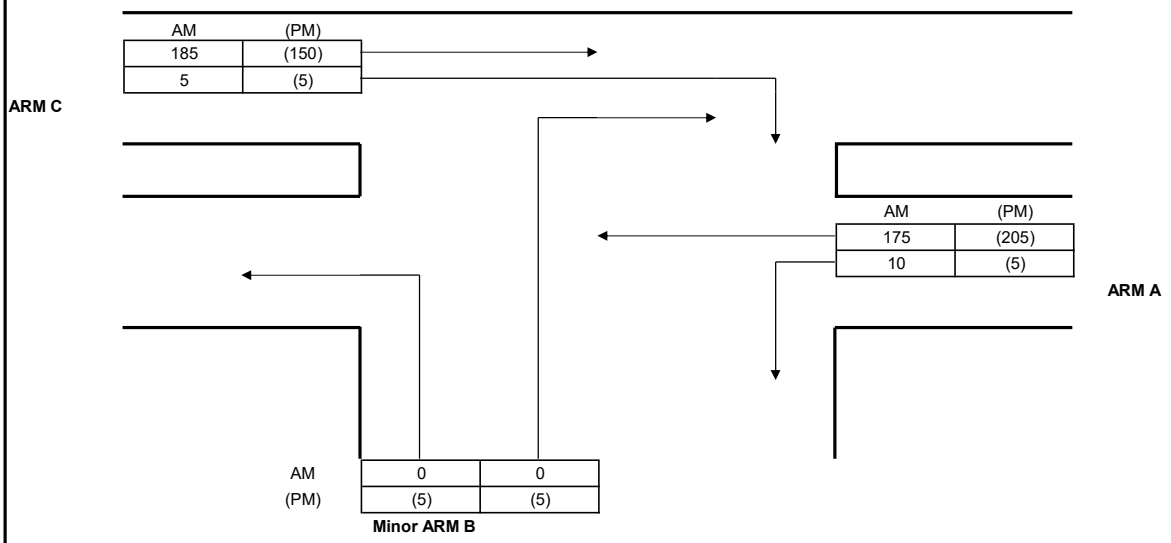
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1904	2006	0.49	0.32
B	0.98	7.92	3640.95	2400	1.00	0.54	1337	1571	0.35	0.22
C	1.01	6.82	3640.95	2065	1.00	0.50	1197	1429	0.56	0.50
D	1.02	7.87	3640.95	2385	1.00	0.54	1332	1546	0.38	0.28
E	0.98	7.19	3640.95	2180	1.00	0.51	1294	1505	0.32	0.21
F	0.98	8.13	3640.95	2464	1.00	0.55	1875	1913	0.43	0.64
G	1.00	5.91	3640.95	1790	1.00	0.46	1110	981	0.45	0.39
								Crtical Arm:	**C**	**F**
								RFC:	**0.56**	**0.64**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	8.40	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.20
Visibilities	Vr(b-a)	50	Calculated	D	0.91
	Vl(b-a)	30		E	0.99
	Vr(b-c)	50		F	0.99
	Vr(c-b)	50		Y	0.71

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		185	150
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		175	205
	q(b-a)		0	5
	q(b-c)		0	5
	f		0.00	0.50
		Factor		
CAPACITIES	Q(b-a)	1	502	500
	Q(b-c)	1	689	681
	Q(c-b)	1	687	681
	Q(b-ac)	1	502	577
RFC's	b-a		0.000	0.010
	b-c		0.000	0.007
	c-b		0.007	0.007
	b-ac		0.000	0.017
Worst RFC			**0.007**	**0.017**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

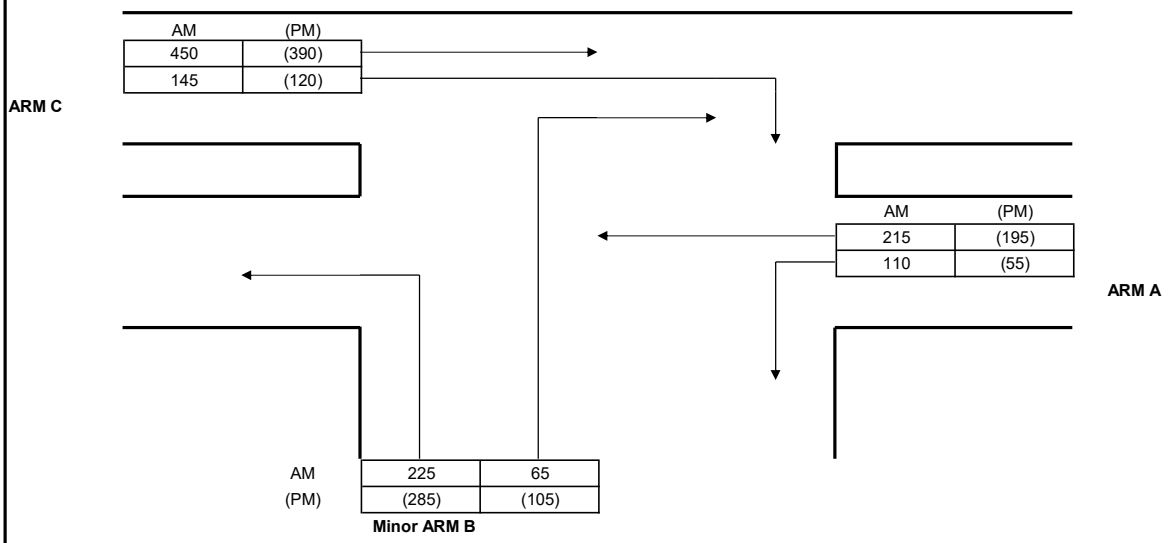
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Jan-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		450	390
	q(c-b)		145	120
	q(a-b)		110	55
	q(a-c)		215	195
	q(b-a)		65	105
	q(b-c)		225	285
	f		0.78	0.73
		Factor		
CAPACITIES	Q(b-a)	1	371	397
	Q(b-c)	1	622	632
	Q(c-b)	1	589	607
	Q(b-ac)	1	540	545
RFC's	b-a		0.175	0.264
	b-c		0.362	0.451
	c-b		0.246	0.198
	b-ac		0.537	0.716
Worst RFC			**0.537**	**0.716**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LTY	Date:	May-25	Checked by:	CFC

Roundabout Capacity Calculation

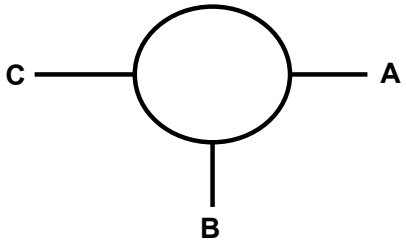
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	San Tin Interchange (K)			Ref. No.:	2024O
Scheme:	Observe			Ref. No.:	
Year:	2024	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	495	525	785	255	1805
B	455	0	0	1415	455
C	480	120	135	950	735

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	425	460	600	310	1485
B	610	0	0	1185	610
C	400	150	160	1035	710

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	12.91	73.70	3912	1.01	0.76	3650	3609	0.49	0.41
B	0.98	11.38	73.70	3448	1.01	0.69	2423	2579	0.19	0.24
C	1.04	11.35	73.70	3438	1.01	0.69	2891	2830	0.25	0.25

Crtical Arm:	**A**	**A**
RFC:	**0.49**	**0.41**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	LTY	Date:	May-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Reference Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway	→	A	1,2	3.650		12.5		96%	96%	1775	1775	127	0.072		132	0.074	
Slip Road (EB)	↘	A	1,2	3.650		10				1845	1845	133	0.072		138	0.075	
San Tin highway	↑	B	1	3.900		10				1865	1865	86	0.046		76	0.041	
Slip Road (WB)	↖	B	1	3.900		12.5		94%	93%	1800	1805	84	0.047	0.047	74	0.041	0.041
Shek Wu Wai	↓	C	2,3	3.500						1965	1965	385	0.196	0.196	380	0.193	0.193
Road (SB)	↙	C	2,3	3.500		15		78%	63%	1955	1980	382	0.195		382	0.193	
	↲	C	2,3	3.500		12.5				1880	1880	368	0.196		363	0.193	
Shek Wu Wai	↑	D	4	3.500						1965	1965	264	0.134	0.134	163	0.083	
Road (NB)	↱	D	4	3.500		15		30%	26%	2045	2050	274	0.134		171	0.083	0.083
	↱	D	4	3.500		12.5				1880	1880	252	0.134		156	0.083	
Shek Wu Wai	↓	E	3	3.500						2105	2105	300	0.143		291	0.138	
Road (SB)	↓	E	3	3.500						2105	2105	300	0.143		292	0.139	
	↓	E	3	3.500						1965	1965	280	0.142		272	0.138	
Shek Wu Wai	↑	F	4	3.500						1965	1965	199	0.101		110	0.056	
Road (NB)	↑	F	4	3.500						2105	2105	213	0.101		117	0.056	
	↑	F	4	3.500						2105	2105	213	0.101		118	0.056	

- In accordance with TPDM V4 - Road Traffic Signals

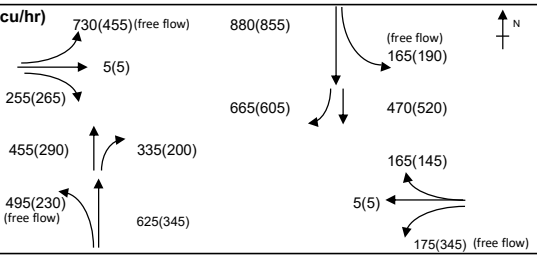
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: B,C,D L = (6-1)+(8-1)+(5-1) = 16

PM peak Group: B,C,D L = (7-1)+(5-1)+(5-1) = 16

Notes:

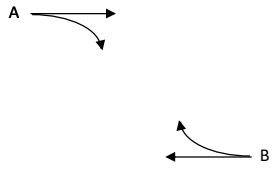
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.344	0.377	y	0.290	0.318
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	115%	96%	R.C. (%)	155%	133%

Stage / Phase Diagrams

1.



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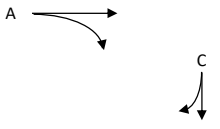
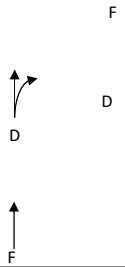


3.



4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: AUG, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	150	0.082		100	0.055	
		A	1	4.000	17.5	20		0% / 18%	0% / 7%	2125	2145	233	0.110	0.110	254	0.118	
		A	1	4.000		17.5				1985	1985	217	0.109		236	0.119	0.119
Road D2 NB		B	2	3.200	15					1760	1760	240	0.136		169	0.096	
		B	2	3.200	17.5			0%	18%	2075	2045	326	0.157	0.157	196	0.096	
		B	2	3.200						2075	2075	326	0.157		200	0.096	
		B	2	3.200		12.5		77%	100%	1900	1855	298	0.157		185	0.100	0.100
Road L11 WB		C	3	3.300	12.5					1735	1735	141	0.081	0.081	109	0.063	
		C	3	3.300	15			83%	45%	1925	1995	155	0.081		125	0.063	
		C	3	3.300		20		3%	4%	2080	2080	169	0.081		131	0.063	0.063
Road D3 SB		D	4	4.000	12.5			2%	2%	2010	2010	232	0.115		307	0.153	
		D	4	4.000						2155	2155	249	0.116	0.116	328	0.152	
		D	4	4.000		20		81%	100%	2030	2005	234	0.115		420	0.209	0.209

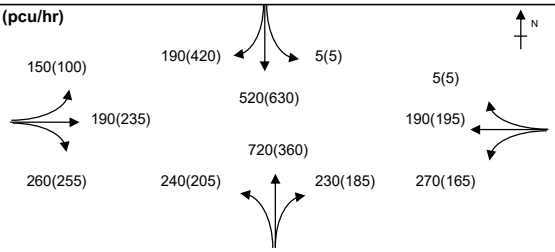
- In accordance with TPDM V4 - Road Traffic Signals

Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak	Group:	A,B,C,D	L	=	(6-1)+(6-1)+(7-1)+(7-1)	=	22
PM peak	Group:	A,B,C,D	L	=	(6-1)+(6-1)+(7-1)+(7-1)	=	22

Notes:

Flow: (pcu/hr)



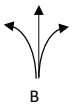
Group		A,B,C,D	Group		A,B,C,D
y		0.464	y		0.491
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		53%	R.C. (%)		45%

Stage / Phase Diagrams

1.



2.



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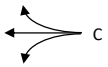


4.



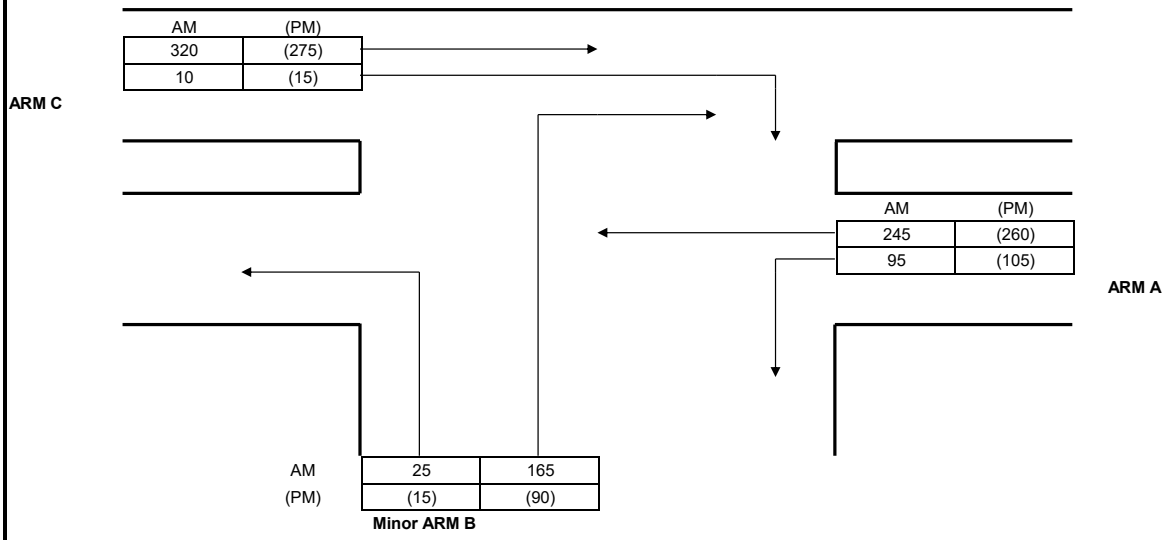
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: AUG, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		320	275
	q(c-b)		10	15
	q(a-b)		95	105
	q(a-c)		245	260
	q(b-a)		165	90
	q(b-c)		25	15
	f		0.13	0.14
		Factor		
CAPACITIES	Q(b-a)	1	420	421
	Q(b-c)	1	600	595
	Q(c-b)	1	638	631
	Q(b-ac)	1	437	439
RFC's	b-a		0.393	0.214
	b-c		0.042	0.025
	c-b		0.016	0.024
	b-ac		0.435	0.239
Worst RFC			**0.435**	**0.239**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

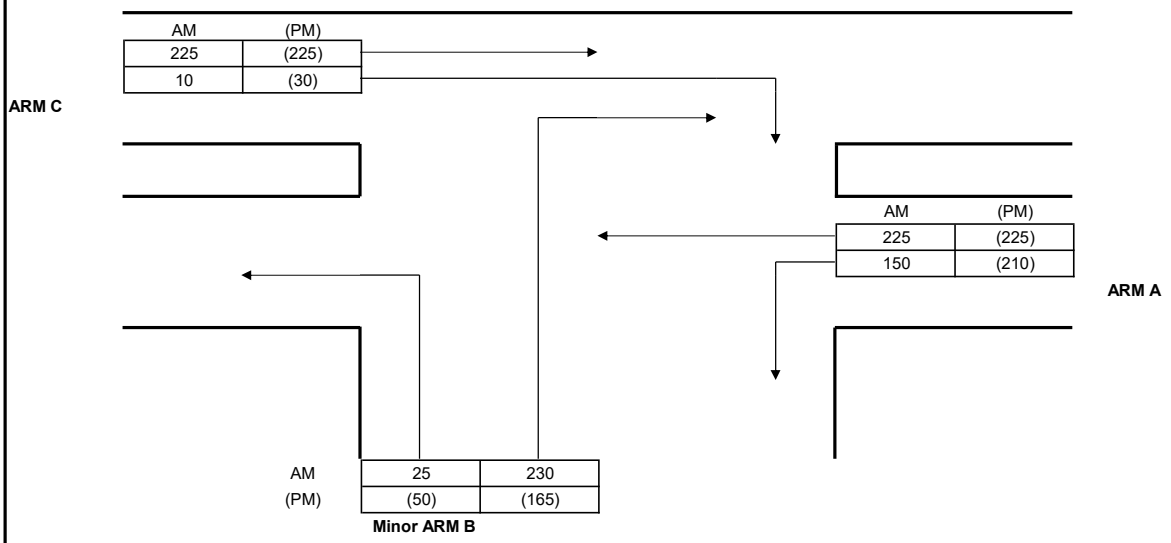
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		225	225
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		225	225
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	445	433
	Q(b-c)	1	633	626
	Q(c-b)	1	553	539
	Q(b-ac)	1	458	467
RFC's	b-a		0.517	0.381
	b-c		0.039	0.080
	c-b		0.018	0.056
	b-ac		0.557	0.460
Worst RFC			**0.557**	**0.460**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

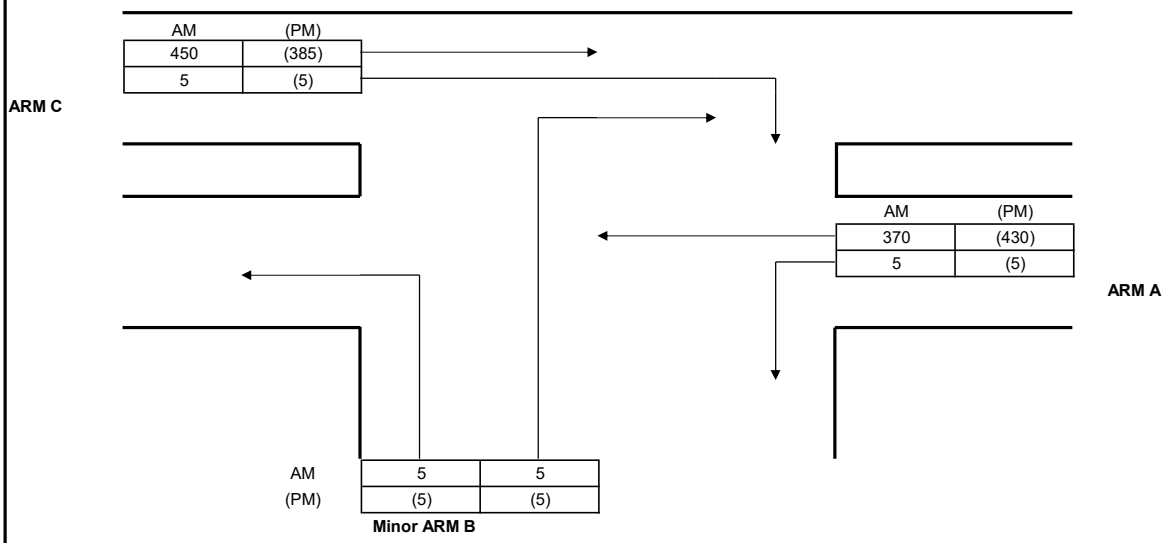
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		450	385
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		370	430
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	363	358
	Q(b-c)	1	565	550
	Q(c-b)	1	598	583
	Q(b-ac)	1	442	434
RFC's	b-a		0.014	0.014
	b-c		0.009	0.009
	c-b		0.008	0.009
	b-ac		0.023	0.023
Worst RFC			**0.023**	**0.023**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

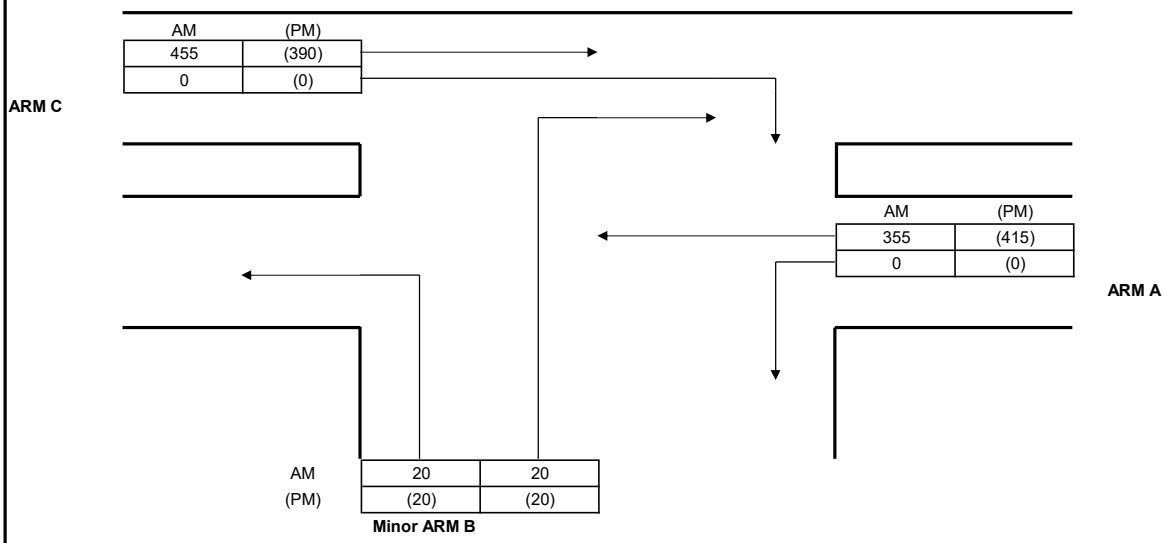
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

roject\000 - WSW 12A\20250811 WSW_12A_Calculation\Junction Calculation_12A_Main case\[J05_P-Castle_Peak_Road_Mai_Po-Geranium_Path.xlsm]2034R

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		455	390
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		355	415
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	313	309
	Q(b-c)	1	487	474
	Q(c-b)	1	378	368
	Q(b-ac)	1	381	374
RFC's	b-a		0.064	0.065
	b-c		0.041	0.042
	c-b		0.000	0.000
	b-ac		0.105	0.107
Worst RFC			**0.105**	**0.107**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

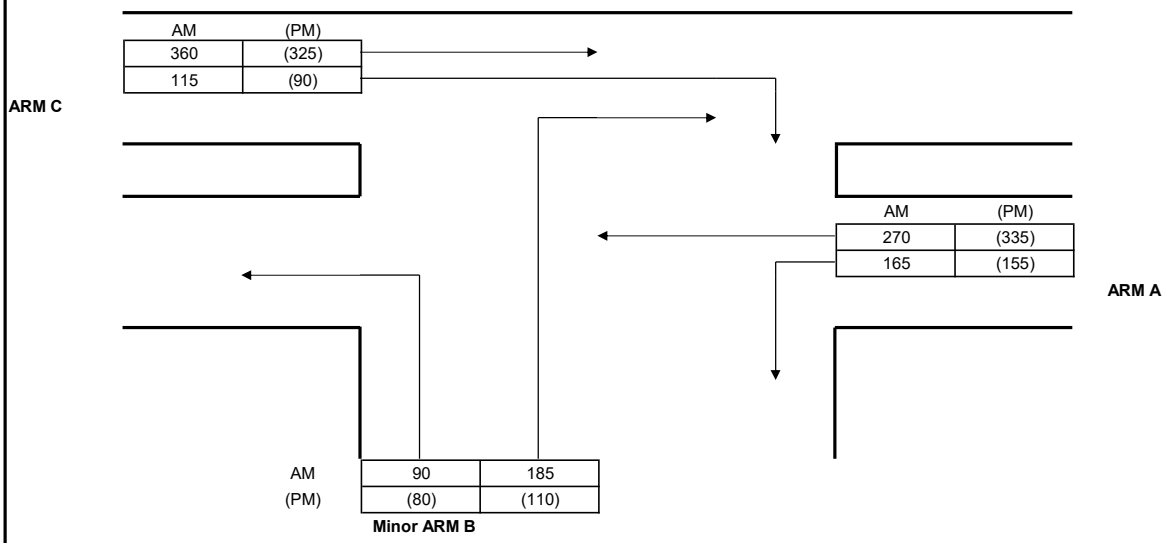
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	325
	q(c-b)		115	90
	q(a-b)		165	155
	q(a-c)		270	335
	q(b-a)		185	110
	q(b-c)		90	80
	f		0.33	0.42
		Factor		
CAPACITIES	Q(b-a)	1	367	366
	Q(b-c)	1	603	587
	Q(c-b)	1	577	563
	Q(b-ac)	1	421	435
RFC's	b-a		0.504	0.301
	b-c		0.149	0.136
	c-b		0.199	0.160
	b-ac		0.653	0.437
Worst RFC			**0.653**	**0.437**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

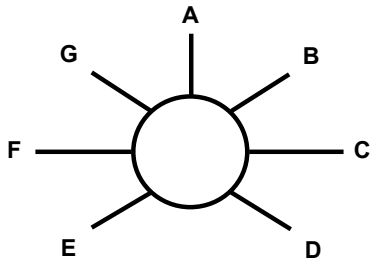
Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

oject\000 - WSW 12A\20250811 WSW_12A_Calculation\Junction Calculation_12A_Main case\[J07_P-Castle_Peak_Road_Tam_Mi-Kam_Pok_Road.xlsm]2034R

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	200	40	220	460	30	2635	980	640
B	10	10	140	10	240	250	30	3065	690	550
C	90	70	10	95	460	10	210	2555	945	1200
D	60	20	45	10	250	255	90	3050	730	450
E	40	35	445	65	10	510	20	1990	1125	1790
F	320	245	10	150	600	10	360	1310	1695	1805
G	110	150	350	80	10	310	0	2265	1010	740

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	160	50	200	330	30	2205	790	970
B	35	10	90	10	160	130	30	2490	465	505
C	180	120	20	80	405	20	200	2160	1025	795
D	75	20	55	20	200	145	70	2765	585	420
E	95	30	270	70	10	280	20	1740	775	1610
F	485	225	10	140	625	20	270	1380	1775	1135
G	90	90	190	50	10	210	10	2525	650	630

CALCULATIONS

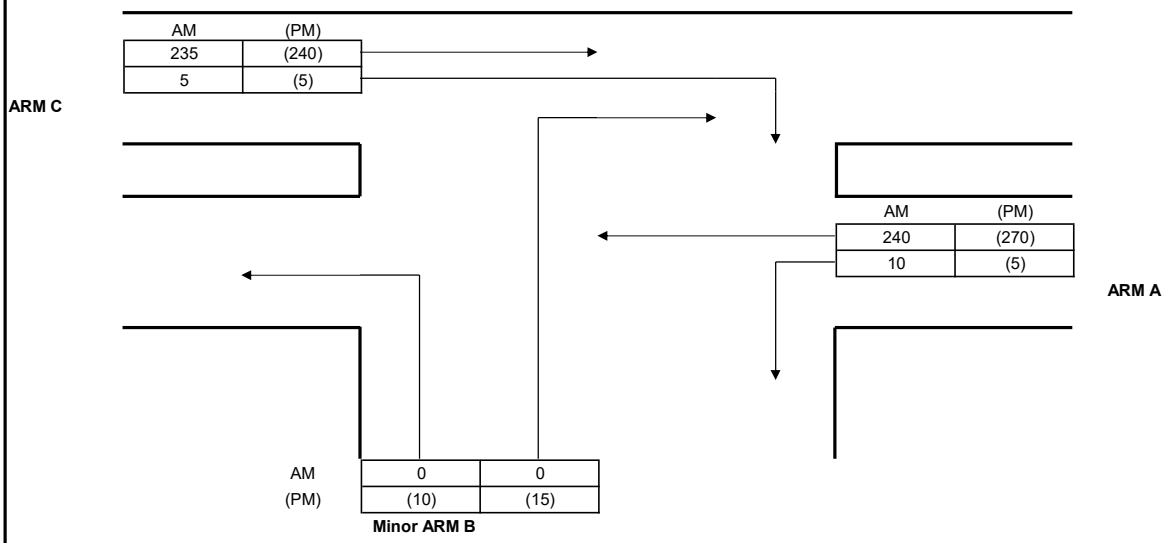
ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	9.09	3640.95	2754	1.00	0.59	1179	1430	0.83	0.55
B	0.98	7.92	3640.95	2400	1.00	0.54	723	1030	0.95	0.45
C	1.01	6.82	3640.95	2065	1.00	0.50	802	999	1.18	1.03
D	1.02	7.87	3640.95	2385	1.00	0.54	749	906	0.97	0.65
E	0.98	7.19	3640.95	2180	1.00	0.51	1141	1266	0.99	0.61
F	0.98	8.13	3640.95	2464	1.00	0.55	1698	1660	1.00	1.07
G	1.00	5.91	3640.95	1790	1.00	0.46	755	636	1.34	1.02
								Crtical Arm:	**G**	**F**
								RFC:	**1.34**	**1.07**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		235	240
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		240	270
	q(b-a)		0	15
	q(b-c)		0	10
	f		0.00	0.40
		Factor		
CAPACITIES	Q(b-a)	1	447	439
	Q(b-c)	1	632	624
	Q(c-b)	1	612	606
	Q(b-ac)	1	447	498
RFC's	b-a		0.000	0.034
	b-c		0.000	0.016
	c-b		0.008	0.008
	b-ac		0.000	0.050
Worst RFC			**0.008**	**0.050**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

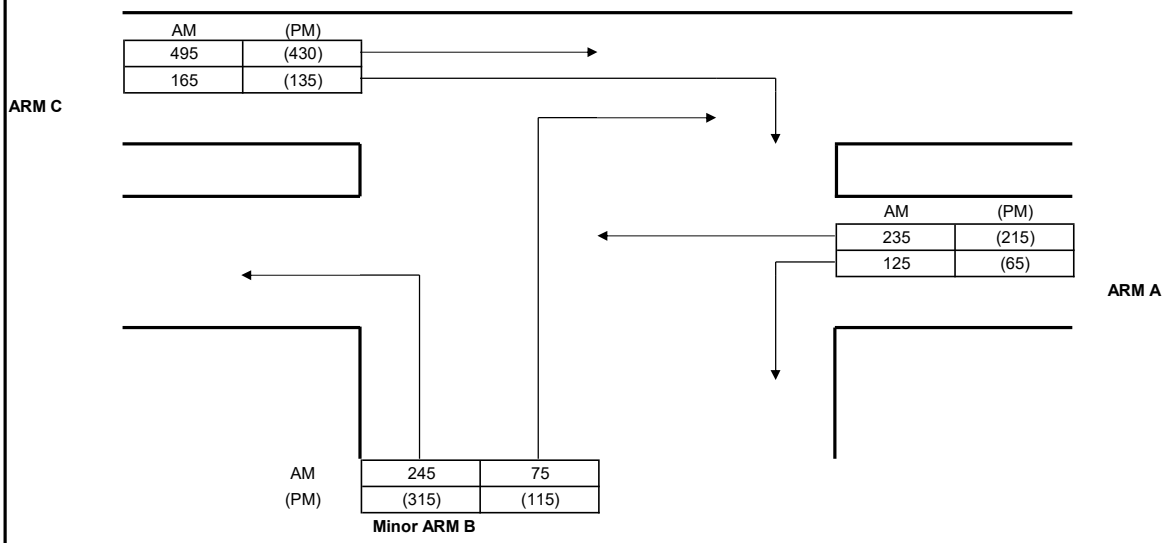
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	430
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		235	215
	q(b-a)		75	115
	q(b-c)		245	315
	f		0.77	0.73
		Factor		
CAPACITIES	Q(b-a)	1	352	381
	Q(b-c)	1	616	626
	Q(c-b)	1	581	599
	Q(b-ac)	1	524	535
RFC's	b-a		0.213	0.302
	b-c		0.398	0.503
	c-b		0.284	0.225
	b-ac		0.611	0.804
Worst RFC			**0.611**	**0.804**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LTY	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

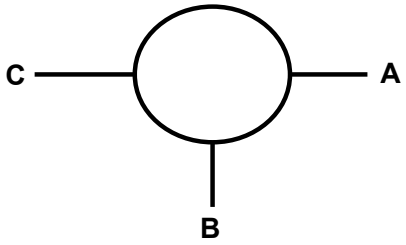
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	San Tin Interchange (K)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	950	645	1300	360	2895
B	570	0	0	2515	570
C	635	95	265	1520	995

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	675	560	855	390	2090
B	775	0	0	1795	775
C	570	125	265	1450	960

CALCULATIONS

							Q_E		RFC	
ARM	K	X_2	M	F	t_D	f_c	AM	PM	AM	PM
A	0.98	12.91	73.70	3912	1.01	0.76	3572	3550	0.81	0.59
B	0.98	11.38	73.70	3448	1.01	0.69	1675	2165	0.34	0.36
C	1.04	11.35	73.70	3438	1.01	0.69	2481	2531	0.40	0.38

Crtical Arm:	**A**	**A**
RFC:	**0.81**	**0.59**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		96%	96%	1775	1775	127	0.072		132	0.074	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	133	0.072		138	0.075	
San Tin highway		B	1	3.900		10				1865	1865	127	0.068		120	0.064	0.064
Slip Road (WB)		B	1	3.900		12.5		96%	96%	1800	1800	123	0.068	0.068	115	0.064	
Shek Wu Wai		C	2,3	3.500						1965	1965	429	0.218		405	0.206	0.206
Road (SB)		C	2,3	3.500		15		82%	63%	1945	1980	425	0.219		408	0.206	
		C	2,3	3.500		12.5				1880	1880	411	0.219	0.219	387	0.206	
Shek Wu Wai		D	4	3.500						1965	1965	302	0.154		202	0.103	0.103
Road (NB)		D	4	3.500		15		14%	3%	2075	2100	319	0.154	0.154	215	0.102	
		D	4	3.500		12.5				1880	1880	289	0.154		193	0.103	
Shek Wu Wai		E	3	3.500						2105	2105	346	0.164		317	0.151	
Road (SB)		E	3	3.500						2105	2105	346	0.164		317	0.151	
		E	3	3.500						1965	1965	323	0.164		296	0.151	
Shek Wu Wai		F	4	3.500						1965	1965	212	0.108		121	0.062	
Road (NB)		F	4	3.500						2105	2105	226	0.107		129	0.061	
		F	4	3.500						2105	2105	227	0.108		130	0.062	

- In accordance with TPDM V4 - Road Traffic Signals

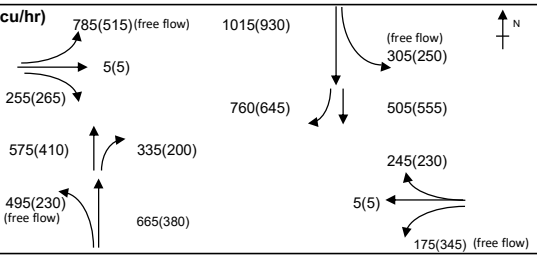
Formual of Total lost time per cycle $L = \sum (I - 1)$

AM peak Group: B,C,D $L = (6-1)+(8-1)+(5-1) = 16$

PM peak Group: B,C,D $L = (7-1)+(5-1)+(5-1) = 16$

Notes:

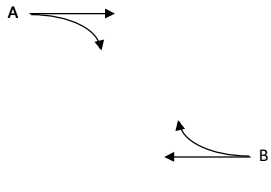
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.395	0.441	y	0.332	0.373
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	87%	68%	R.C. (%)	123%	98%

Stage / Phase Diagrams

1.



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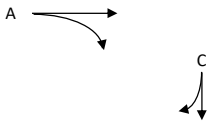
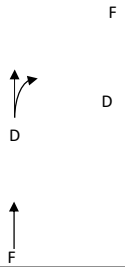


3.



4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: AUG, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	150	0.082		100	0.055	
		A	1	4.000	17.5	20		0% / 48%	0% / 27%	2080	2115	368	0.177		327	0.155	
		A	1	4.000		17.5				1985	1985	352	0.177	0.177	308	0.155	0.155
Road D2 NB		B	2	3.200	15					1760	1760	309	0.176	0.176	213	0.121	
		B	2	3.200	17.5			30%	73%	2025	1955	355	0.175		237	0.121	0.121
		B	2	3.200						2075	2075	364	0.175		251	0.121	
		B	2	3.200		12.5		68%	81%	1920	1890	337	0.176		229	0.121	
Road L11 WB		C	3	3.300	12.5					1735	1735	142	0.082		110	0.063	
		C	3	3.300	15			81%	43%	1930	2000	158	0.082	0.082	128	0.064	0.064
		C	3	3.300		20		3%	4%	2080	2080	170	0.082		132	0.063	
Road D3 SB		D	4	4.000	12.5			2%	2%	2010	2010	232	0.115		307	0.153	
		D	4	4.000						2155	2155	249	0.116	0.116	328	0.152	
		D	4	4.000		20		81%	100%	2030	2005	234	0.115		420	0.209	0.209

- In accordance with TPDM V4 - Road Traffic Signals

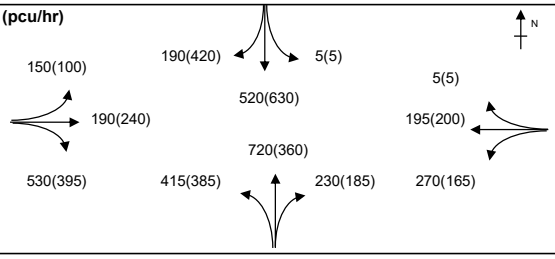
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

PM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

Notes:

Flow: (pcu/hr)



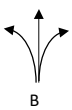
Group		A,B,C,D	Group		A,B,C,D
y		0.550	y		0.550
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		29%	R.C. (%)		29%

Stage / Phase Diagrams

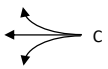
1.



2.



3.



4.



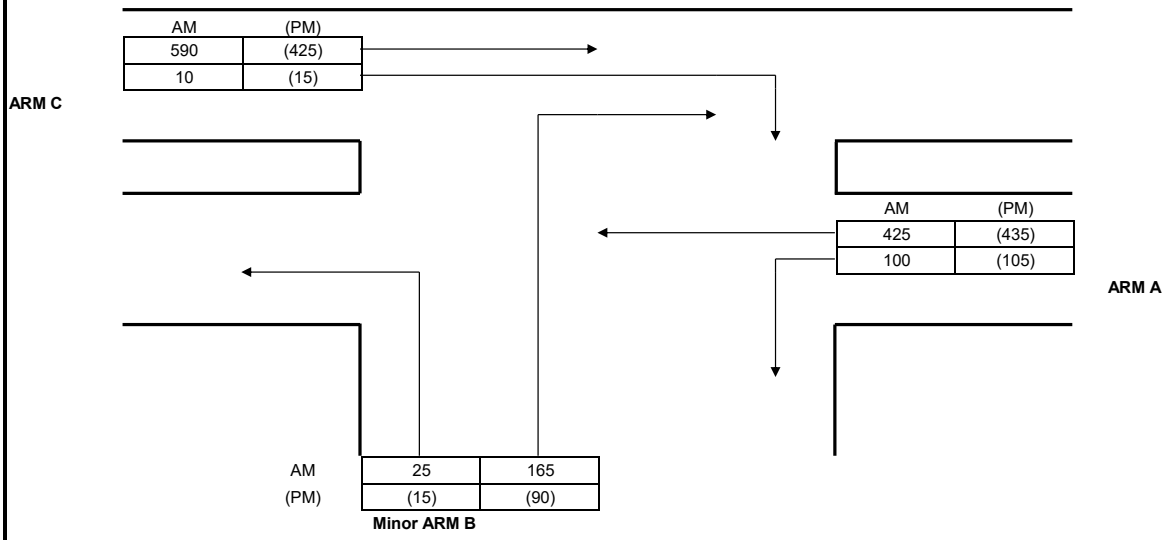
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: SEPT, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		590	425
	q(c-b)		10	15
	q(a-b)		100	105
	q(a-c)		425	435
	q(b-a)		165	90
	q(b-c)		25	15
	f		0.13	0.14
		Factor		
CAPACITIES	Q(b-a)	1	339	358
	Q(b-c)	1	556	553
	Q(c-b)	1	589	585
	Q(b-ac)	1	357	377
RFC's	b-a		0.487	0.251
	b-c		0.045	0.027
	c-b		0.017	0.026
	b-ac		0.532	0.279
Worst RFC			**0.532**	**0.279**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

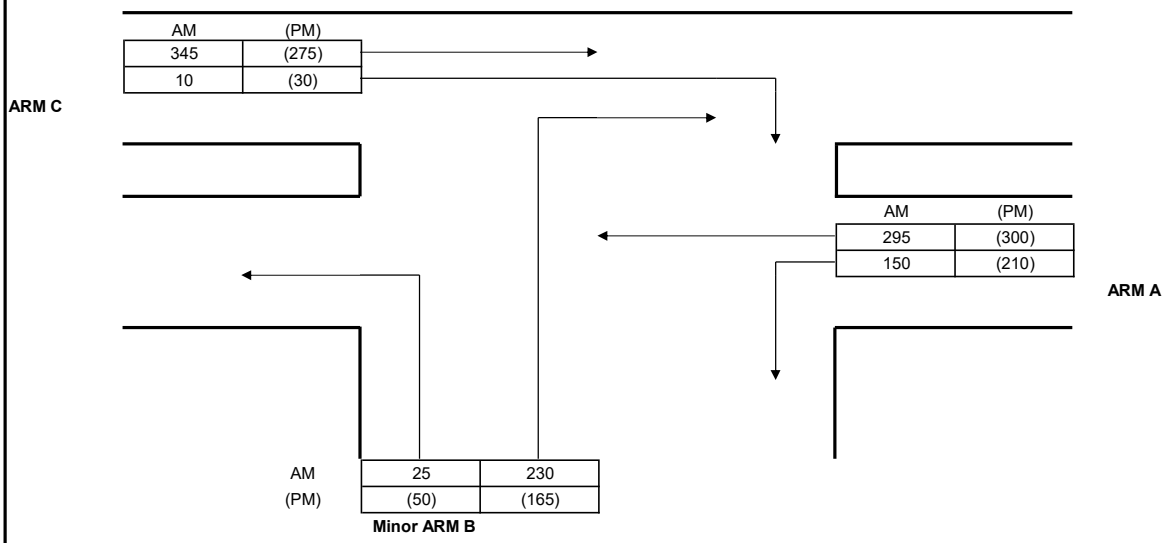
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		345	275
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		295	300
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	410	407
	Q(b-c)	1	614	607
	Q(c-b)	1	537	521
	Q(b-ac)	1	424	441
RFC's	b-a		0.561	0.405
	b-c		0.041	0.082
	c-b		0.019	0.058
	b-ac		0.601	0.488
Worst RFC			**0.601**	**0.488**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

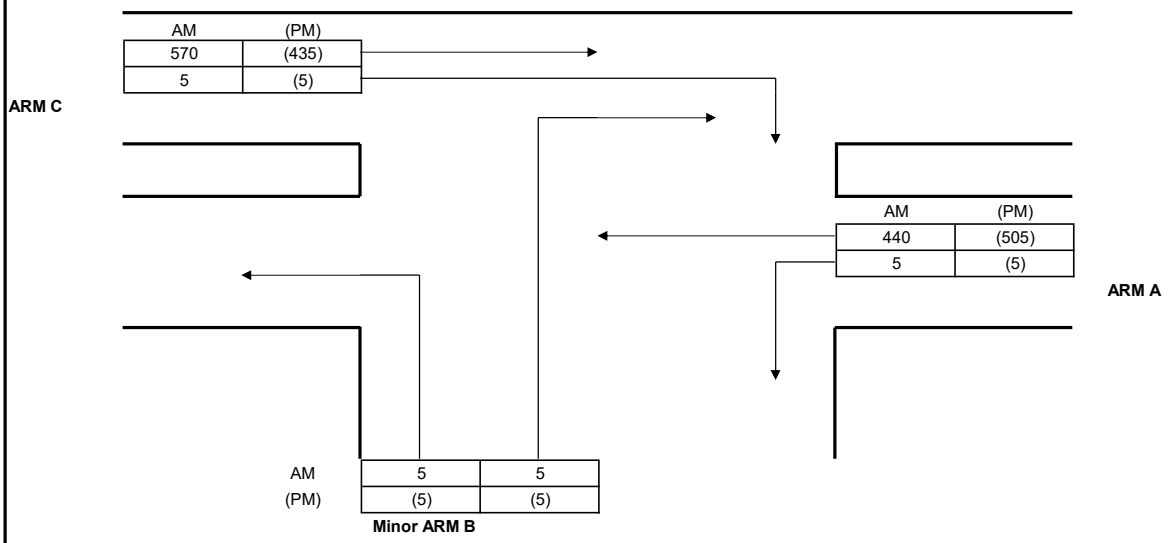
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		570	435
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		440	505
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	330	334
	Q(b-c)	1	548	532
	Q(c-b)	1	580	563
	Q(b-ac)	1	412	411
RFC's	b-a		0.015	0.015
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.024	0.024
Worst RFC			**0.024**	**0.024**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

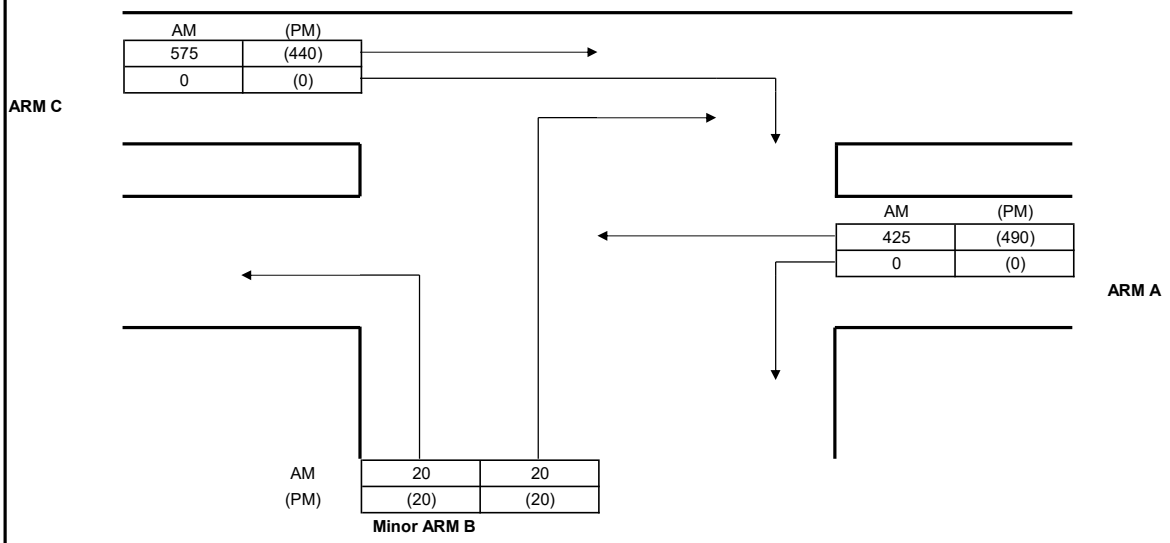
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		575	440
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		425	490
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	284	288
	Q(b-c)	1	472	458
	Q(c-b)	1	366	355
	Q(b-ac)	1	355	354
RFC's	b-a		0.070	0.069
	b-c		0.042	0.044
	c-b		0.000	0.000
	b-ac		0.113	0.113
Worst RFC			**0.113**	**0.113**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

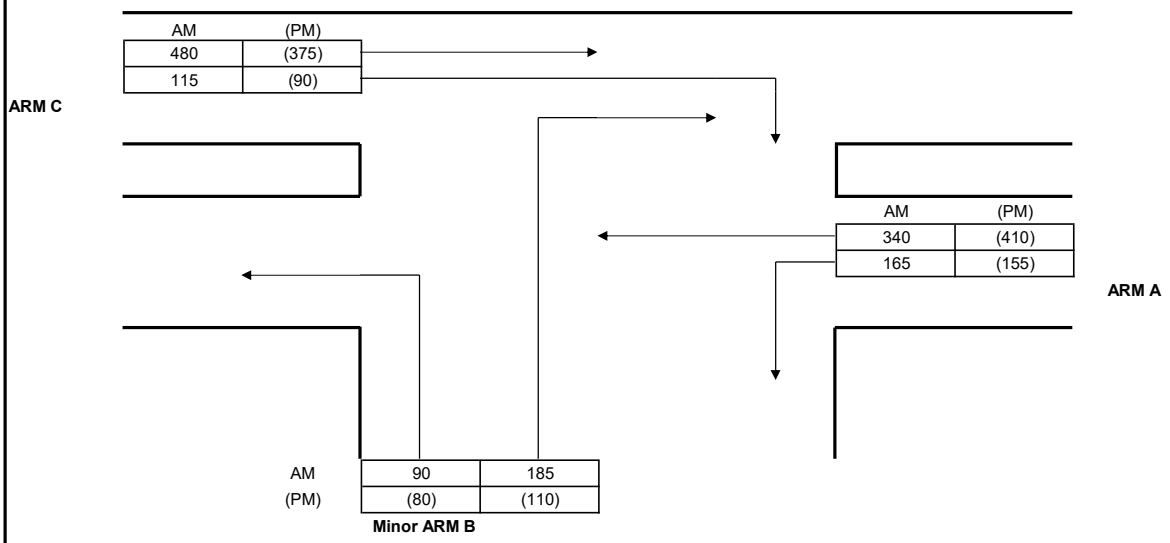
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		480	375
	q(c-b)		115	90
	q(a-b)		165	155
	q(a-c)		340	410
	q(b-a)		185	110
	q(b-c)		90	80
	f		0.33	0.42
		Factor		
CAPACITIES	Q(b-a)	1	332	341
	Q(b-c)	1	585	568
	Q(c-b)	1	559	544
	Q(b-ac)	1	387	410
RFC's	b-a		0.557	0.323
	b-c		0.154	0.141
	c-b		0.206	0.165
	b-ac		0.711	0.463
Worst RFC			**0.711**	**0.463**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

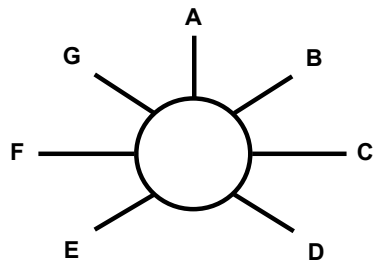
Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

oject\000 - WSW 12A\20250811 WSW_12A_Calculation\Junction Calculation_12A_Main case\[J07_P-Castle_Peak_Road_Tam_Mi-Kam_Pok_Road.xlsm]2034D

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.00	14	22	142	35	0.46
B	5.50	10.50	15	20	142	35	0.53
C	5.50	8.50	7.5	23	142	30	0.64
D	6.75	8.50	10	20	142	25	0.28
E	6.00	8.00	9.5	20	142	35	0.34
F	6.50	9.00	15	25	142	40	0.27
G	5.50	6.00	7	22	142	30	0.11

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	200	40	220	460	30	2705	980	640
B	10	10	140	10	240	370	30	3065	810	620
C	90	70	10	95	460	10	210	2675	945	1200
D	60	20	45	10	255	255	90	3170	735	450
E	40	35	445	65	10	510	20	2110	1125	1795
F	320	315	10	150	600	10	360	1310	1765	1925
G	110	150	350	80	10	310	0	2335	1010	740

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	160	50	200	330	30	2280	790	970
B	35	10	90	10	160	180	30	2490	515	580
C	180	120	20	80	405	20	200	2210	1025	795
D	75	20	55	20	205	145	70	2815	590	420
E	95	30	270	70	10	280	20	1790	775	1615
F	485	295	10	140	625	20	270	1380	1845	1185
G	90	95	190	50	10	210	10	2595	655	630

CALCULATIONS

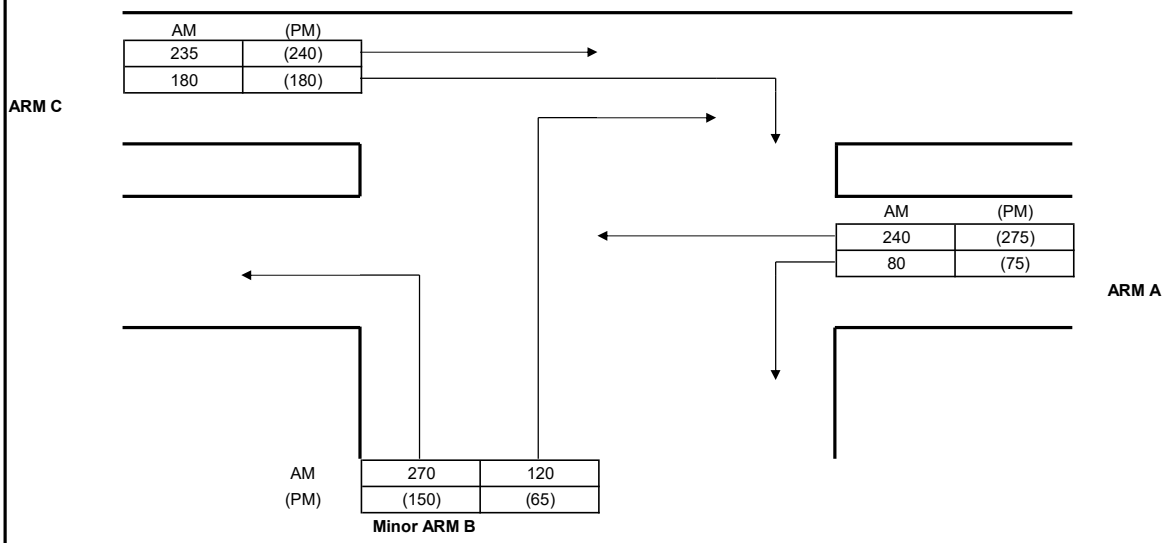
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.09	3640.95	2754	1.00	0.59	1138	1387	0.86	0.57
B	0.98	7.92	3640.95	2400	1.00	0.54	723	1030	1.12	0.50
C	1.01	6.82	3640.95	2065	1.00	0.50	742	974	1.27	1.05
D	1.02	7.87	3640.95	2385	1.00	0.54	683	878	1.08	0.67
E	0.98	7.19	3640.95	2180	1.00	0.51	1080	1241	1.04	0.62
F	0.98	8.13	3640.95	2464	1.00	0.55	1698	1660	1.04	1.11
G	1.00	5.91	3640.95	1790	1.00	0.46	723	604	1.40	1.09
								Crtical Arm:	**G**	**F**
								RFC:	**1.40**	**1.11**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		235	240
	q(c-b)		180	180
	q(a-b)		80	75
	q(a-c)		240	275
	q(b-a)		120	65
	q(b-c)		270	150
	f		0.69	0.70
		Factor		
CAPACITIES	Q(b-a)	1	380	372
	Q(b-c)	1	625	616
	Q(c-b)	1	595	587
	Q(b-ac)	1	521	514
RFC's	b-a		0.316	0.175
	b-c		0.432	0.244
	c-b		0.303	0.307
	b-ac		0.749	0.418
Worst RFC			**0.749**	**0.418**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

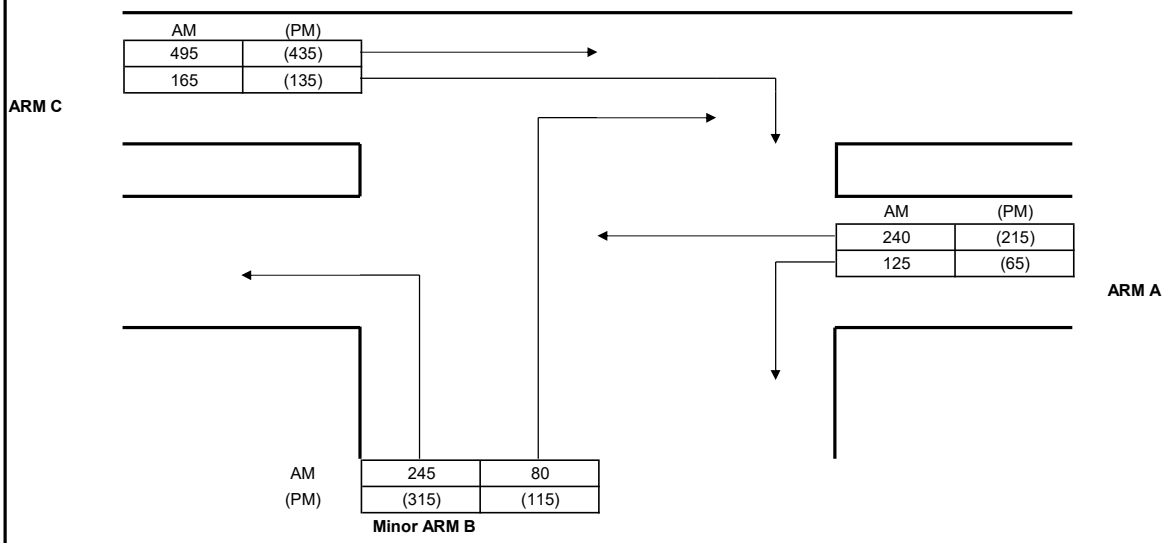
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	435
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		240	215
	q(b-a)		80	115
	q(b-c)		245	315
	f		0.75	0.73
		Factor		
CAPACITIES	Q(b-a)	1	351	380
	Q(b-c)	1	615	626
	Q(c-b)	1	579	599
	Q(b-ac)	1	519	534
RFC's	b-a		0.228	0.303
	b-c		0.398	0.503
	c-b		0.285	0.225
	b-ac		0.626	0.805
Worst RFC			**0.626**	**0.805**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LTY	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

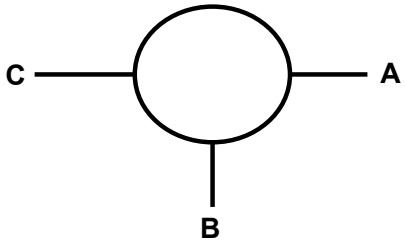
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	San Tin Interchange (K)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	950	645	1300	360	2895
B	570	0	0	2515	570
C	635	95	265	1520	995

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	675	560	855	390	2090
B	775	0	0	1795	775
C	570	125	265	1450	960

CALCULATIONS

							Q_E		RFC	
ARM	K	X_2	M	F	t_D	f_c	AM	PM	AM	PM
A	0.98	12.91	73.70	3912	1.01	0.76	3572	3550	0.81	0.59
B	0.98	11.38	73.70	3448	1.01	0.69	1675	2165	0.34	0.36
C	1.04	11.35	73.70	3438	1.01	0.69	2481	2531	0.40	0.38

Crtical Arm:	**A**	**A**
RFC:	**0.81**	**0.59**
	AM	**PM**

- In accordance with TPDM V2.4

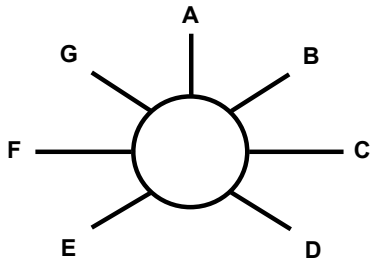
Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Reference Scenario
(With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	200	40	220	460	30	2635	980	640
B	10	10	140	10	240	250	30	3065	690	550
C	90	70	10	95	460	10	210	2555	945	1200
D	60	20	45	10	250	255	90	3050	730	450
E	40	35	445	65	10	510	20	1990	1125	1790
F	320	245	10	150	600	10	0	1310	1335	1805
G	110	150	350	80	10	310	0	2265	1010	380

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	160	50	200	330	30	2205	790	970
B	35	10	90	10	160	130	30	2490	465	505
C	180	120	20	80	405	20	200	2160	1025	795
D	75	20	55	20	200	145	70	2765	585	420
E	95	30	270	70	10	280	20	1740	775	1610
F	485	225	10	140	625	20	0	1380	1505	1135
G	90	90	190	50	10	210	10	2525	650	360

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.71	2980.96	2944	1.00	0.62	1305	1569	0.75	0.50
B	1.03	10.62	2980.96	3216	1.00	0.66	1246	1636	0.55	0.28
C	1.03	9.67	2980.96	2931	1.00	0.62	1393	1643	0.68	0.62
D	0.99	9.74	2980.96	2952	1.00	0.62	1055	1230	0.69	0.48
E	0.96	10.32	2980.96	3127	1.00	0.64	1768	1922	0.64	0.40
F	0.98	9.19	2980.96	2783	1.00	0.60	1953	1912	0.68	0.79
G	0.99	9.29	2980.96	2815	1.00	0.60	1445	1290	0.70	0.50
								Crtical Arm:	**A**	**F**
								RFC:	**0.75**	**0.79**
									AM	**PM**

- In accordance with TPDM V2.4

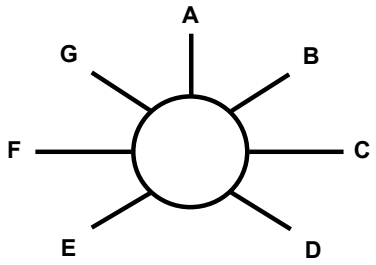
Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Calculation Spreadsheets
for
2034 Design Scenario
(With Improvement)

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	200	40	220	460	30	2705	980	640
B	10	10	140	10	240	370	30	3065	810	620
C	90	70	10	95	460	10	210	2675	945	1200
D	60	20	45	10	255	255	90	3170	735	450
E	40	35	445	65	10	510	20	2110	1125	1795
F	320	315	10	150	600	10	0	1310	1405	1925
G	110	150	350	80	10	310	0	2335	1010	380

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	160	50	200	330	30	2280	790	970
B	35	10	90	10	160	180	30	2490	515	580
C	180	120	20	80	405	20	200	2210	1025	795
D	75	20	55	20	205	145	70	2815	590	420
E	95	30	270	70	10	280	20	1790	775	1615
F	485	295	10	140	625	20	0	1380	1575	1185
G	90	95	190	50	10	210	10	2595	655	360

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	9.71	2980.96	2944	1.00	0.62	1262	1523	0.78	0.52
B	1.03	10.62	2980.96	3216	1.00	0.66	1246	1636	0.65	0.31
C	1.03	9.67	2980.96	2931	1.00	0.62	1317	1611	0.72	0.64
D	0.99	9.74	2980.96	2952	1.00	0.62	981	1200	0.75	0.49
E	0.96	10.32	2980.96	3127	1.00	0.64	1694	1891	0.66	0.41
F	0.98	9.19	2980.96	2783	1.00	0.60	1953	1912	0.72	0.82
G	0.99	9.29	2980.96	2815	1.00	0.60	1403	1248	0.72	0.52
								Crtical Arm:	**A**	**F**
								RFC:	**0.78**	**0.82**
									AM	**PM**

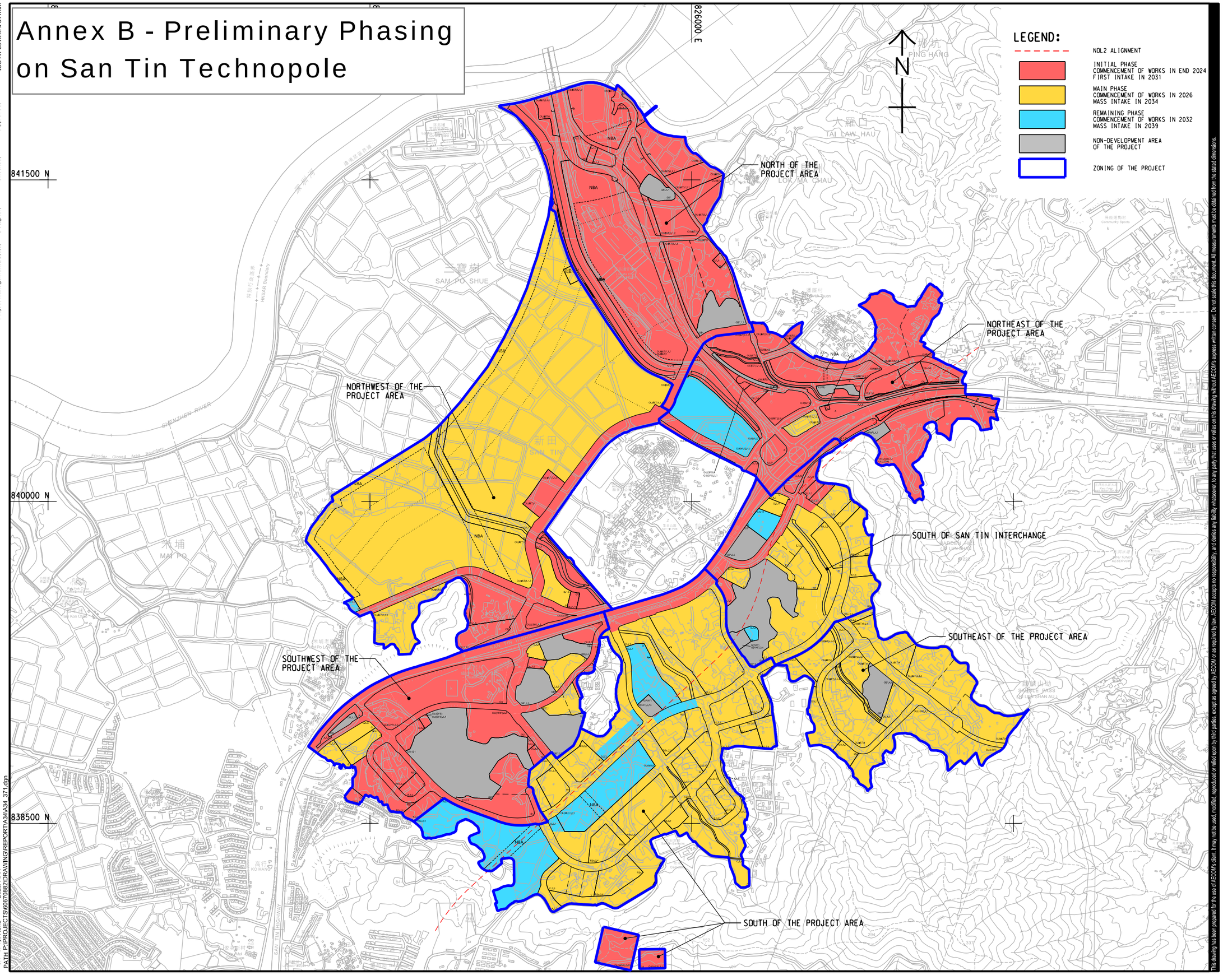
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

ANNEX B –

PRELIMINARY PHASING ON SAN TIN TECHNOPOLE

Annex B - Preliminary Phasing on San Tin Technopole



ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Plot File by: RenS 2023/11/14
PATH: P:\PROJECTS\60670882\DRAWING\REPORT\A34\A34_371.dgn

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PROJECT
項目

FIRST PHASE DEVELOPMENT OF THE NEW TERRITORIES NORTH – SAN TIN / LOK MA CHAU DEVELOPMENT NODE – INVESTIGATION

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Civil Engineering and Development Department

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ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
階段

SCALE 比例
A3 1 : 16000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60670882

AGREEMENT NO. 協議編號
CE 20/2021

SHEET TITLE
圖紙名稱

PRELIMINIARY CONSTRUCTION AND POPULATION INTAKE SCHEDULE

SHEET NUMBER
圖紙編號

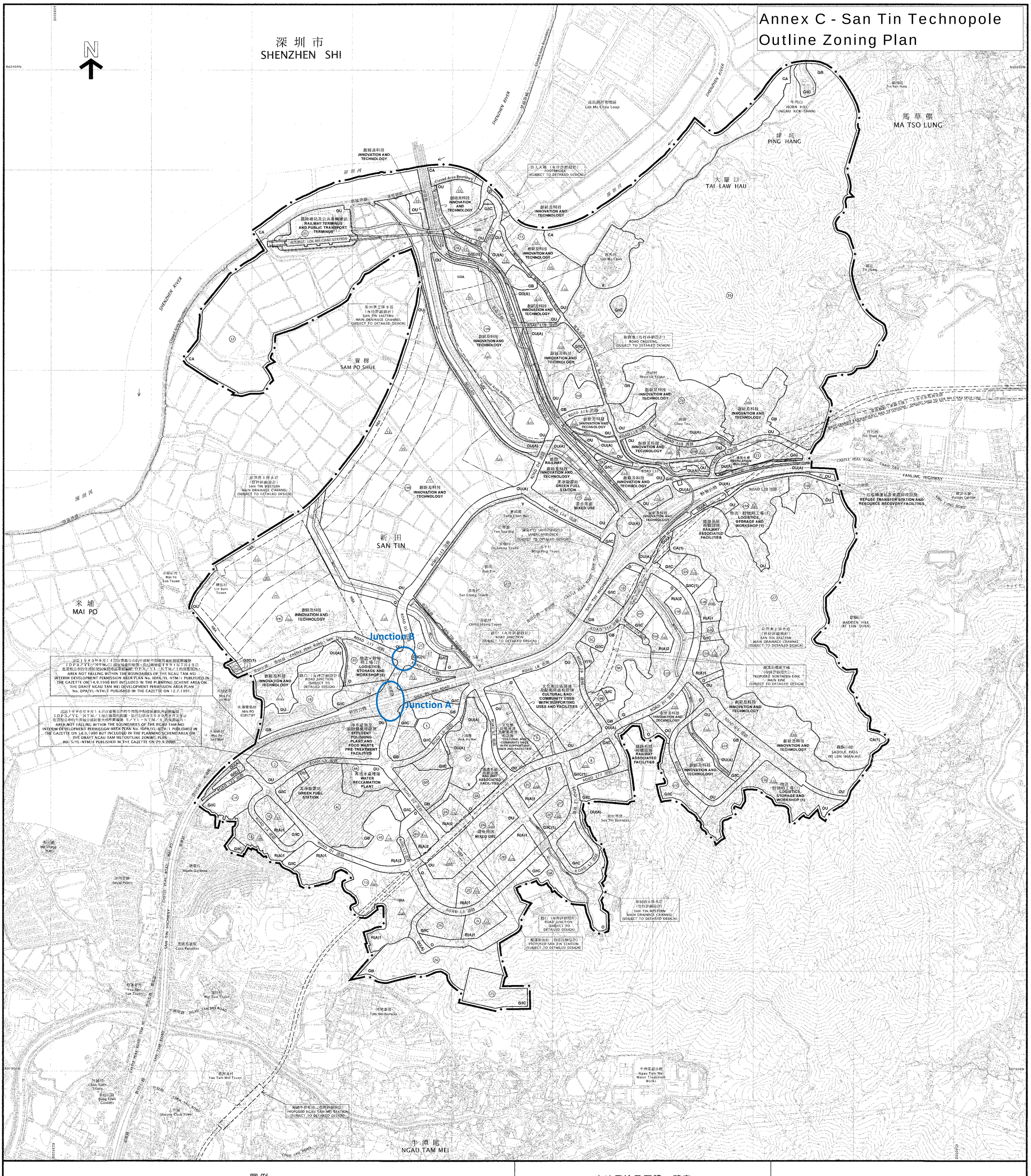
60670882/A34/APPENDIX 2.1

ANNEX C –

SAN TIN TECHNOPOLE –

OUTLINE ZONING PLAN

Annex C - San Tin Technopole Outline Zoning Plan



這是1990年9月14日在憲報公布的牛潭尾分區計劃大綱圖編號IDPA/YL-NTM/1經修訂後的圖則，包括但不限於2000年8月25日在憲報公布的牛潭尾分區計劃大綱草圖編號S/YL-NTM/4。
AREA NOT FALLING WITHIN THE BOUNDARIES OF THE NGAU TAM MEI INTERIM DEVELOPMENT PERMISSION AREA PLAN No. IDPA/YL-NTM/1 PUBLISHED IN THE GAZETTE ON 14.9.1990 BUT INCLUDED IN THE PLANNING SCHEME AREA ON THE DRAFT NGAU TAM MEI OUTLINE ZONING PLAN No. S/YL-NTM/4 PUBLISHED IN THE GAZETTE ON 29.9.2000.

這是1990年9月14日在憲報公布的牛潭尾發展審批地區圖編號IDPA/YL-NTM/1經修訂後的圖，包括但不限於2000年8月25日在憲報公布的牛潭尾分區計劃大綱草圖編號S/YL-NTM/4。
AREA NOT FALLING WITHIN THE BOUNDARIES OF THE NGAU TAM MEI INTERIM DEVELOPMENT PERMISSION AREA PLAN No. IDPA/YL-NTM/1 PUBLISHED IN THE GAZETTE ON 14.9.1990 BUT INCLUDED IN THE PLANNING SCHEME AREA ON THE DRAFT NGAU TAM MEI OUTLINE ZONING PLAN No. S/YL-NTM/4 PUBLISHED IN THE GAZETTE ON 29.9.2000.

圖例 NOTATION

ZONES		地帶
RESIDENTIAL (GROUP A)	R(A)	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	V	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	G/IC	政府、機構或社區
OPEN SPACE	O	休憩用地
OTHER SPECIFIED USES	OU	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	OU(A)	其他指定用途（美化市容地帶）
GREEN BELT	GB	綠化地帶
CONSERVATION AREA	CA	自然保育區

COMMUNICATIONS		交通
RAILWAY AND STATION	鐵路 STATION	鐵路及車站
RAILWAY AND STATION (UNDERGROUND)	鐵路 STATION	鐵路及車站（地下）
RAILWAY AND STATION (ELEVATED)	鐵路 STATION	鐵路及車站（高架）
MAJOR ROAD AND JUNCTION		主要道路及路口
ELEVATED ROAD		高架道路

MISCELLANEOUS		其他
BOUNDARY OF PLANNING SCHEME		規劃範圍界線
PLANNING AREA NUMBER	(3)	規劃區編號
BUILDING HEIGHT CONTROL ZONE BOUNDARY		建築物高度管制區界線
MAXIMUM BUILDING HEIGHT (IN METRES ABOVE PRINCIPAL DATUM)	170	最高建築物高度（在主水平基準上若干米）
MAXIMUM BUILDING HEIGHT (IN NUMBER OF STOREYS)	2	最高建築物高度（樓層數目）
NON-BUILDING AREA	NBA	非建築用地

土地用途及面積一覽表 SCHEDULE OF USES AND AREAS

USES	大約面積及百分率 APPROXIMATE AREA & % 公頃 HECTARES	% 百分率	用途
RESIDENTIAL (GROUP A)	44.78	4.46	住宅（甲類）
VILLAGE TYPE DEVELOPMENT	78.48	7.82	鄉村式發展
GOVERNMENT, INSTITUTION OR COMMUNITY	56.52	5.63	政府、機構或社區
OPEN SPACE	55.88	5.57	休憩用地
OTHER SPECIFIED USES	284.63	28.35	其他指定用途
OTHER SPECIFIED USES (AMENITY AREA)	28.61	2.85	其他指定用途（美化市容地帶）
GREEN BELT	207.29	20.65	綠化地帶
CONSERVATION AREA	139.36	13.88	自然保育區
MAJOR ROAD ETC.	108.45	10.79	主要道路等
TOTAL PLANNING SCHEME AREA	1004.00	100.00	規劃範圍總面積

夾附的《註釋》屬這份圖則的一部分，
THE ATTACHED NOTES ALSO FORM PART OF THIS PLAN

2024年3月8日 按照城市規劃條例第5條展示的草圖
DRAFT PLAN EXHIBITED UNDER SECTION 5 OF THE TOWN PLANNING ORDINANCE ON 8 MARCH 2024

C K YIP 葉子季
SECRETARY 城市規劃委員會秘書
TOWN PLANNING BOARD

香港城市規劃委員會依據城市規劃條例擬備的新田科技城分區計劃大綱圖
TOWN PLANNING ORDINANCE, HONG KONG TOWN PLANNING BOARD
SAN TIN TECHNOPOLE - OUTLINE ZONING PLAN

SCALE 1:7 500 比例尺
米 METRES 200 0 200 400 600 800 1 000 METRES 米

規劃署遵照城市規劃委員會指示擬備
PREPARED BY THE PLANNING DEPARTMENT UNDER THE DIRECTION OF THE TOWN PLANNING BOARD

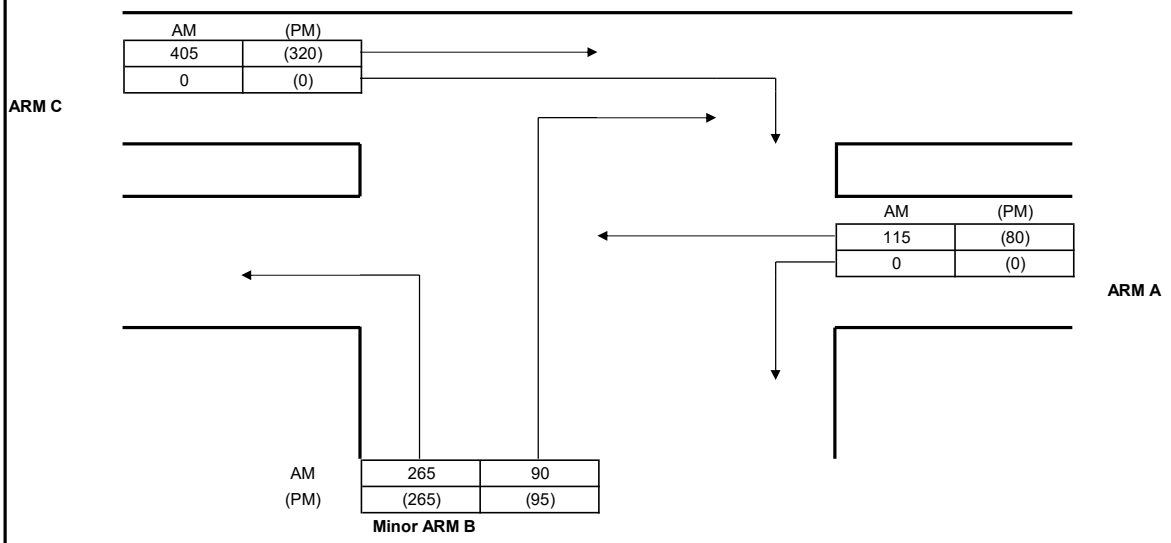
圖則編號 PLAN No. S/STT/1

ANNEX D –
DETAIL OF JUNCTION CALCULATION SHEETS (SENSITIVITY TEST)

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	k Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		405	320
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		115	80
	q(b-a)		90	95
	q(b-c)		265	265
	f		0.75	0.74
		Factor		
CAPACITIES	Q(b-a)	1	634	663
	Q(b-c)	1	933	946
	Q(c-b)	1	418	424
	Q(b-ac)	1	833	850
RFC's	b-a		0.142	0.143
	b-c		0.284	0.280
	c-b		0.000	0.000
	b-ac		0.426	0.424
Worst RFC			**0.426**	**0.424**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

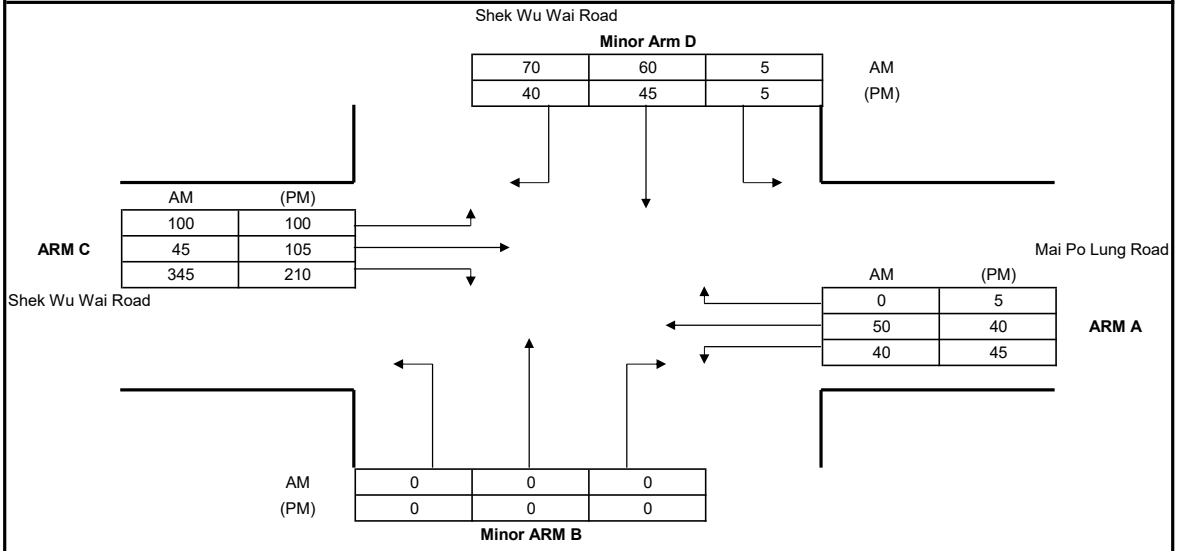
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	110	q(a-c)	50	40
	q(c-b)	345	210	q(a-d)	0	5
	q(a-b)	40	45	q(c-d)	100	100
	q(a-c)	120	80	q(c-a)	45	105
	q(b-a)	0	0	q(d-c)	130	85
	q(b-c)	0	0	q(d-a)	5	5
	f	0.00	0.00	f	0.04	0.06
CAPACITIES	Q(b-a)	252	276	Q(d-c)	596	581
	Q(b-c)	418	423	Q(d-a)	772	757
	Q(c-b)	647	655	Q(a-d)	632	619
	Q(b-ac)	252	276	Q(d-ca)	601	589
	Q(c-a)	840	1223	Q(a-c)	1800	1785
RFC's	b-a	0.000	0.000	d-c	0.218	0.146
	b-c	0.000	0.000	d-a	0.006	0.007
	c-b	0.533	0.321	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.225	0.153
	c-a	0.060	0.090	a-c	0.028	0.022

	AM	(PM)
Worst RFC	**0.533**	**0.321**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

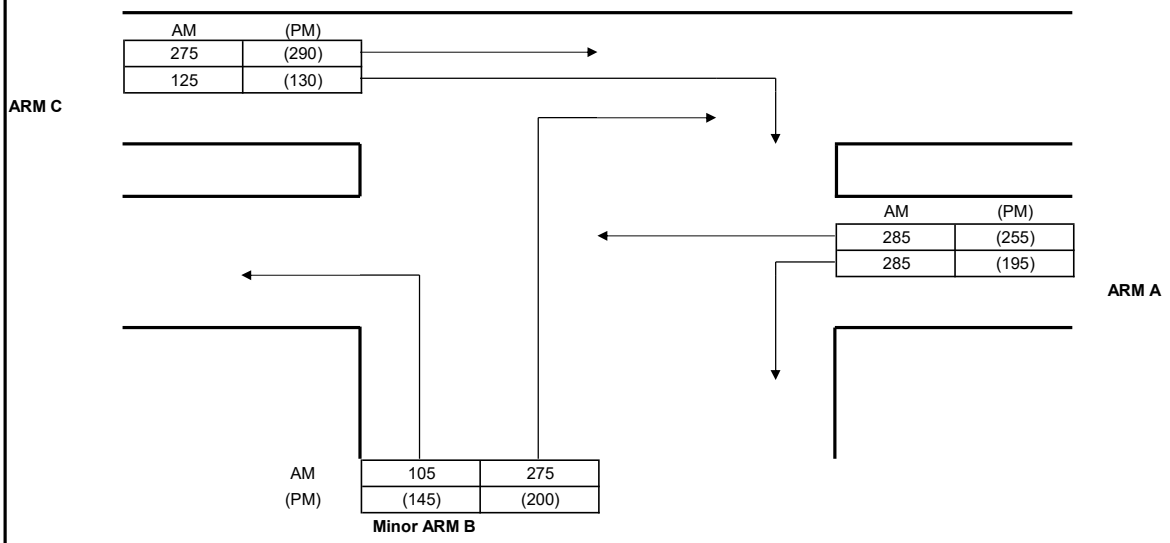
Capacity of combined streams

- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		275	290
	q(c-b)		125	130
	q(a-b)		285	195
	q(a-c)		285	255
	q(b-a)		275	200
	q(b-c)		105	145
	f		0.28	0.42
		Factor		
CAPACITIES	Q(b-a)	1	373	385
	Q(b-c)	1	617	636
	Q(c-b)	1	534	565
	Q(b-ac)	1	419	461
RFC's	b-a		0.737	0.519
	b-c		0.170	0.228
	c-b		0.234	0.230
	b-ac		0.907	0.748
Worst RFC			**0.907**	**0.748**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

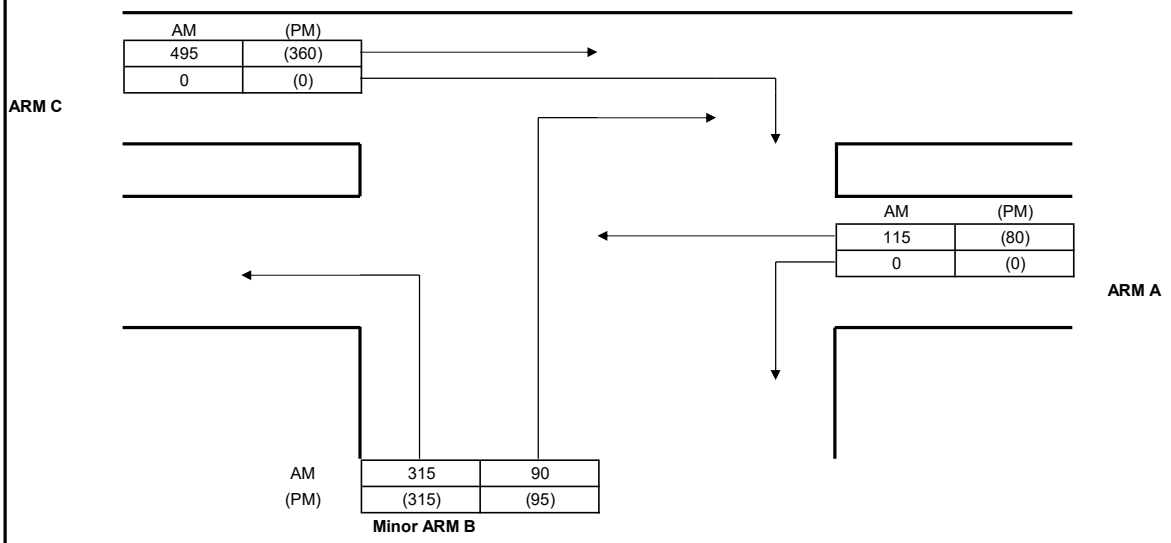
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	k Wu Wai Road / San Tin Highway Slip Road (A1)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Shek Wu Wai Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				



GEOMETRY					
Major road width	W	7.20	Lane widths	w(b-a)	8.30
Central Reserve width	Wcr	0.00		w(b-c)	8.30
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.21
	Vl(b-a)	20		E	1.31
	Vr(b-c)	20		F	0.59
	Vr(c-b)			Y	0.75

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	360
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		115	80
	q(b-a)		90	95
	q(b-c)		315	315
	f		0.78	0.77
		Factor		
CAPACITIES	Q(b-a)	1	615	655
	Q(b-c)	1	933	946
	Q(c-b)	1	418	424
	Q(b-ac)	1	837	857
RFC's	b-a		0.146	0.145
	b-c		0.338	0.333
	c-b		0.000	0.000
	b-ac		0.484	0.478
Worst RFC			**0.484**	**0.478**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

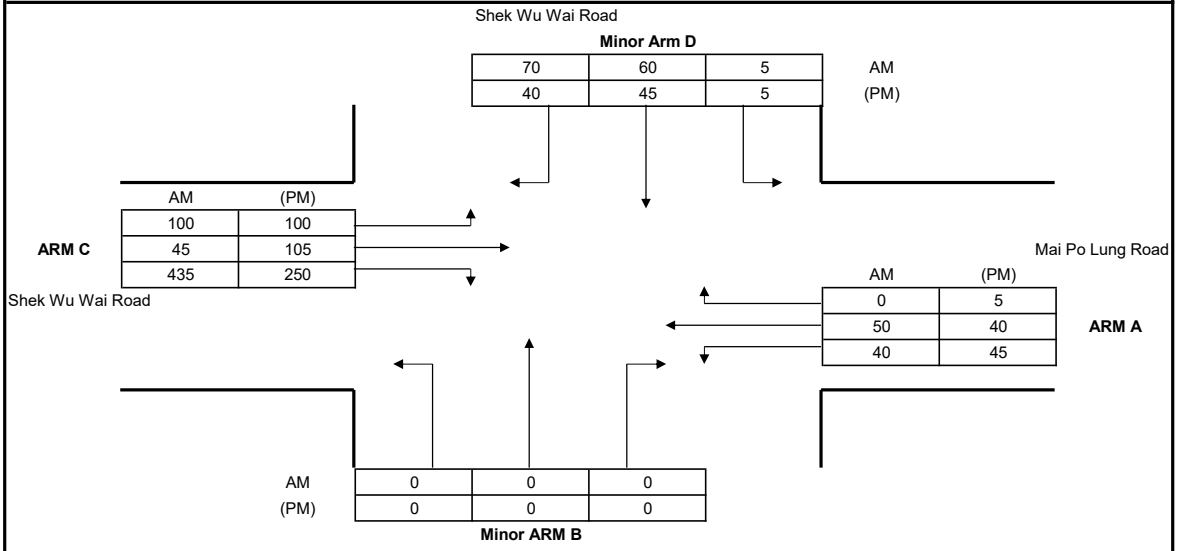
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Shek Wu Wai Road / Mai Po Lung Road (A2)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Mai Po Lung Road				
ARM B:	San Tin Highway Slip Road				
ARM C:	Shek Wu Wai Road				
ARM D:	Shek Wu Wai Road				



GEOMETRY					ARM B		ARM D	
Major road width	W	10.30	Lane widths		w(b-a)	0.00	w(b-a)	5.40
Central Reserve width	Wcr	0.00			w(b-c)	0.00	w(b-c)	5.40
					w(c-b)	3.50	w(c-b)	3.30
Visibilities	Vr(b-a)	0	Vr(d-c)	30	D	0.53	D	0.99
	Vl(b-a)	0	Vl(d-c)	30	E	0.59	E	1.06
	Vr(b-c)	0	Vr(d-a)	25	F	0.91	F	0.89
	Vr(c-b)	40	Vr(a-d)	30	Y	0.64	Y	0.64

ANALYSIS		Arm B AM PEAK	Arm B (PM) PEAK		Arm D AM PEAK	Arm D (PM) PEAK
TRAFFIC FLOWS	q(c-a)	50	110	q(a-c)	50	40
	q(c-b)	435	250	q(a-d)	0	5
	q(a-b)	40	45	q(c-d)	100	100
	q(a-c)	120	80	q(c-a)	45	105
	q(b-a)	0	0	q(d-c)	130	85
	q(b-c)	0	0	q(d-a)	5	5
	f	0.00	0.00	f	0.04	0.06
CAPACITIES	Q(b-a)	236	269	Q(d-c)	596	581
	Q(b-c)	418	423	Q(d-a)	772	757
	Q(c-b)	647	655	Q(a-d)	632	619
	Q(b-ac)	236	269	Q(d-ca)	601	589
	Q(c-a)	590	1113	Q(a-c)	1800	1785
RFC's	b-a	0.000	0.000	d-c	0.218	0.146
	b-c	0.000	0.000	d-a	0.006	0.007
	c-b	0.672	0.382	a-d	0.000	0.008
	b-ac	0.000	0.000	d-ca	0.225	0.153
	c-a	0.085	0.099	a-c	0.028	0.022

	AM	(PM)
Worst RFC	**0.672**	**0.382**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4

Appendix 1

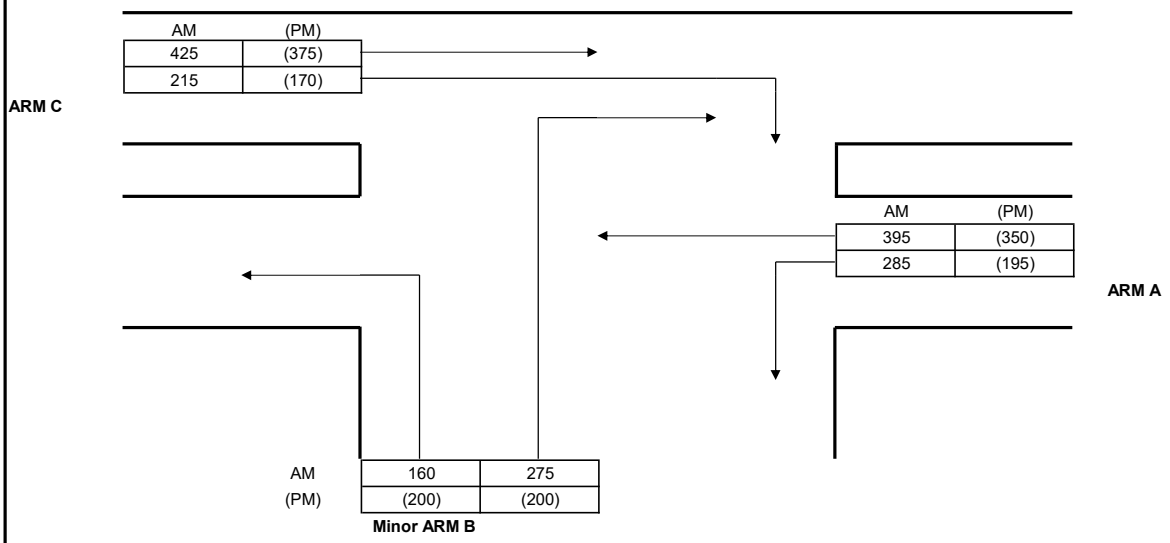
Capacity of combined streams

- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Shek Wu Wai Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	4.20
Central Reserve width	Wcr	0.00		w(b-c)	4.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	30	Calculated	D	0.90
	Vl(b-a)	30		E	0.98
	Vr(b-c)	40		F	0.91
	Vr(c-b)	30		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		425	375
	q(c-b)		215	170
	q(a-b)		285	195
	q(a-c)		395	350
	q(b-a)		275	200
	q(b-c)		160	200
	f		0.37	0.50
		Factor		
CAPACITIES	Q(b-a)	1	288	333
	Q(b-c)	1	587	609
	Q(c-b)	1	506	541
	Q(b-ac)	1	355	431
RFC's	b-a		0.955	0.601
	b-c		0.273	0.328
	c-b		0.425	0.314
	b-ac		1.225	0.928
Worst RFC			**1.225**	**0.928**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 1) (With Improvement)

Roundabout Capacity Calculation

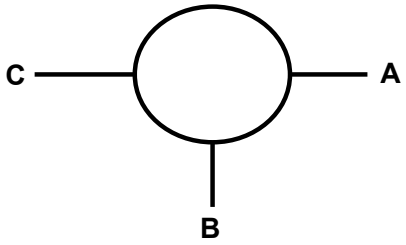
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement in Sensitivity Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	285	285	125	570
B	275	0	105	285	380
C	275	125	0	275	400

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	195	255	130	450
B	200	0	145	255	345
C	290	130	0	200	420

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1229	1226	0.46	0.37
B	1.10	4.41	0.02	1335	1.49	0.59	1289	1308	0.29	0.26
C	1.01	3.94	0.02	1194	1.49	0.56	1051	1093	0.38	0.38

	AM	PM
Crtical Arm:	**A**	**C**
RFC:	**0.46**	**0.38**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

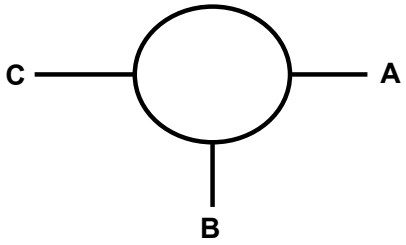
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road San Tin / Shek Wu Wai Road (B)			Ref. No.:	2034D
Scheme:	Design (Under Improvement Sensitivity in Test 1)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Castle Peak Road-San Tin

ARM B: Shek Wu Wai Road

ARM C: Castle Peak Road-San Tin



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	3.50	5.90	5	14	23	34	0.77
B	4.00	4.50	7	25	23	3	0.11
C	3.50	4.00	12	10	23	13	0.07

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	285	395	215	680
B	275	0	160	395	435
C	425	215	0	275	640

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	0	195	350	170	545
B	200	0	200	350	400
C	375	170	0	200	545

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.97	4.45	0.02	1347	1.49	0.59	1178	1203	0.58	0.45
B	1.10	4.41	0.02	1335	1.49	0.59	1217	1246	0.36	0.32
C	1.01	3.94	0.02	1194	1.49	0.56	1051	1093	0.61	0.50

	AM	PM
Crtical Arm:	**C**	**C**
RFC:	**0.61**	**0.50**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 2)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway	→	A	1,2	3.650		12.5		96%	96%	1775	1775	127	0.072		132	0.074	
Slip Road (EB)	↘	A	1,2	3.650		10				1845	1845	133	0.072		138	0.075	
San Tin highway	↑	B	1	3.900		10				1865	1865	86	0.046		76	0.041	
Slip Road (WB)	↖	B	1	3.900		12.5		94%	93%	1800	1805	84	0.047	0.047	74	0.041	0.041
Shek Wu Wai	↓	C	2,3	3.500						1965	1965	385	0.196	0.196	380	0.193	0.193
Road (SB)	↙	C	2,3	3.500		15		78%	63%	1955	1980	382	0.195		382	0.193	
	↲	C	2,3	3.500		12.5				1880	1880	368	0.196		363	0.193	
Shek Wu Wai	↑	D	4	3.500						1965	1965	264	0.134	0.134	163	0.083	
Road (NB)	↱	D	4	3.500		15		30%	26%	2045	2050	274	0.134		171	0.083	0.083
	↱	D	4	3.500		12.5				1880	1880	252	0.134		156	0.083	
Shek Wu Wai	↓	E	3	3.500						2105	2105	300	0.143		291	0.138	
Road (SB)	↓	E	3	3.500						2105	2105	300	0.143		292	0.139	
	↓	E	3	3.500						1965	1965	280	0.142		272	0.138	
Shek Wu Wai	↑	F	4	3.500						1965	1965	199	0.101		110	0.056	
Road (NB)	↑	F	4	3.500						2105	2105	213	0.101		117	0.056	
	↑	F	4	3.500						2105	2105	213	0.101		118	0.056	

- In accordance with TPDM V4 - Road Traffic Signals

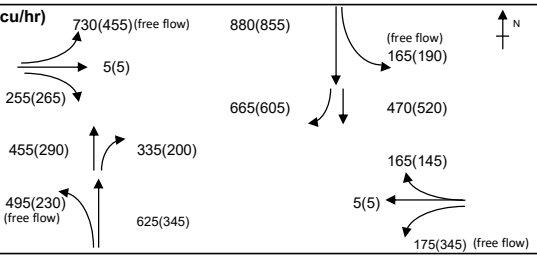
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: B,C,D L = (6-1)+(8-1)+(5-1) = 16

PM peak Group: B,C,D L = (7-1)+(5-1)+(5-1) = 16

Notes:

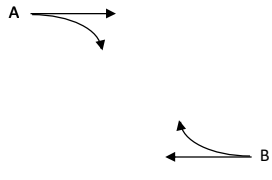
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.344	0.377	y	0.290	0.318
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	115%	96%	R.C. (%)	155%	133%

Stage / Phase Diagrams

1.



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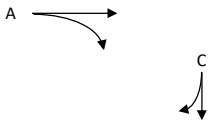
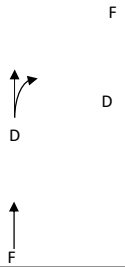


3.



4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: AUG, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	200	0.109		125	0.068	
		A	1	4.000	17.5	20		0% / 18%	0% / 7%	2125	2145	233	0.110	0.110	254	0.118	
		A	1	4.000		17.5				1985	1985	217	0.109		236	0.119	0.119
Road D2 NB		B	2	3.200	15					1760	1760	240	0.136		169	0.096	
		B	2	3.200	17.5			0%	18%	2075	2045	326	0.157	0.157	196	0.096	
		B	2	3.200						2075	2075	326	0.157		200	0.096	
		B	2	3.200		12.5		77%	100%	1900	1855	298	0.157		185	0.100	0.100
Road L11 WB		C	3	3.300	12.5					1735	1735	141	0.081	0.081	109	0.063	
		C	3	3.300	15			83%	45%	1925	1995	155	0.081		125	0.063	
		C	3	3.300		20		3%	4%	2080	2080	169	0.081		131	0.063	0.063
Road D3 SB		D	4	4.000	12.5			2%	2%	2010	2010	251	0.125	0.125	307	0.153	
		D	4	4.000						2155	2155	269	0.125		328	0.152	
		D	4	4.000		20		98%	100%	2005	2005	250	0.125		440	0.219	0.219

- In accordance with TPDM V4 - Road Traffic Signals

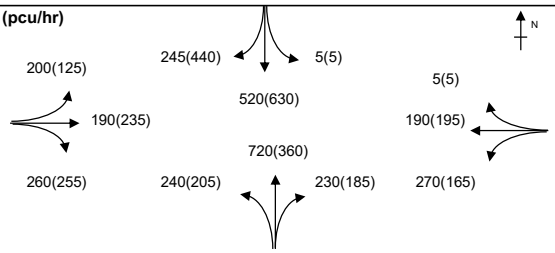
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

PM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

Notes:

Flow: (pcu/hr)



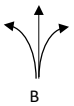
Group		A,B,C,D	Group		A,B,C,D
y		0.473	y		0.501
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		50%	R.C. (%)		42%

Stage / Phase Diagrams

1.



2.



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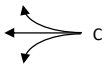


4.



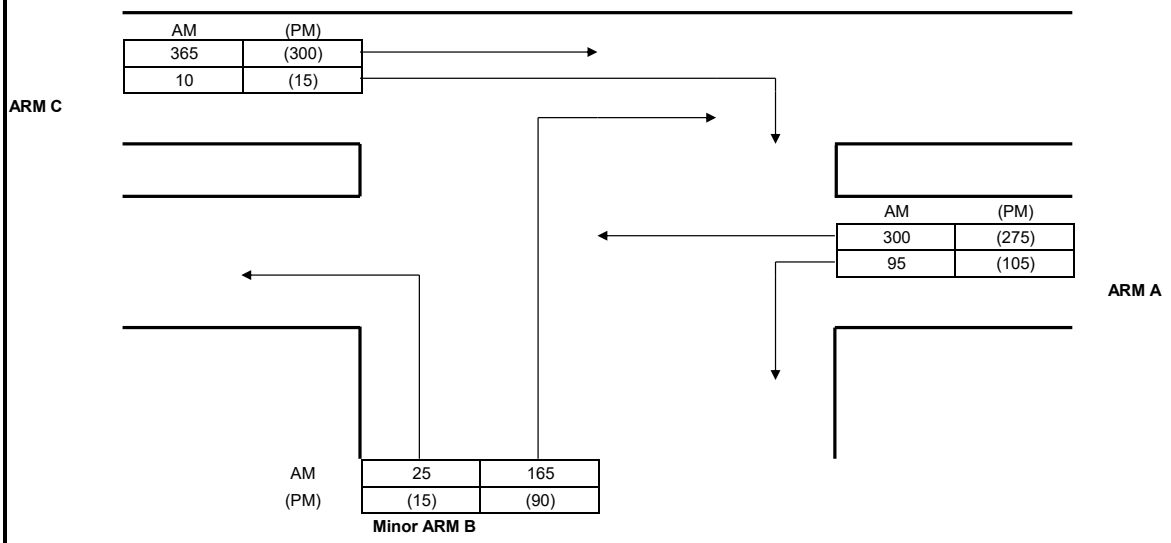
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: AUG, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		365	300
	q(c-b)		10	15
	q(a-b)		95	105
	q(a-c)		300	275
	q(b-a)		165	90
	q(b-c)		25	15
	f		0.13	0.14
		Factor		
CAPACITIES	Q(b-a)	1	401	414
	Q(b-c)	1	586	592
	Q(c-b)	1	623	627
	Q(b-ac)	1	419	432
RFC's	b-a		0.411	0.217
	b-c		0.043	0.025
	c-b		0.016	0.024
	b-ac		0.453	0.243
Worst RFC			**0.453**	**0.243**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

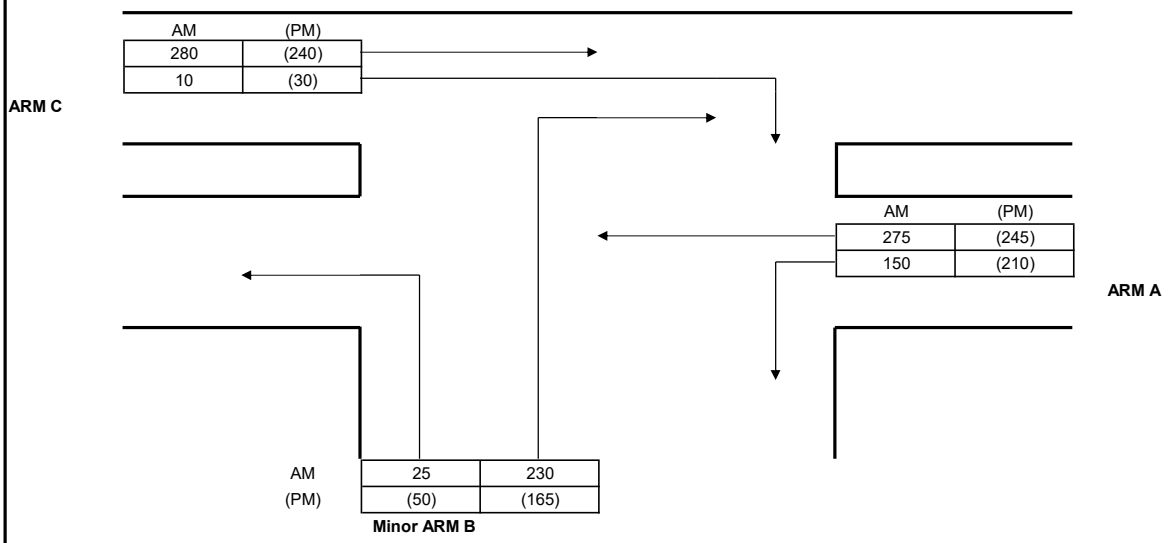
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		280	240
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		275	245
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	425	425
	Q(b-c)	1	620	621
	Q(c-b)	1	542	534
	Q(b-ac)	1	438	459
RFC's	b-a		0.541	0.388
	b-c		0.040	0.081
	c-b		0.018	0.056
	b-ac		0.582	0.468
Worst RFC			**0.582**	**0.468**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

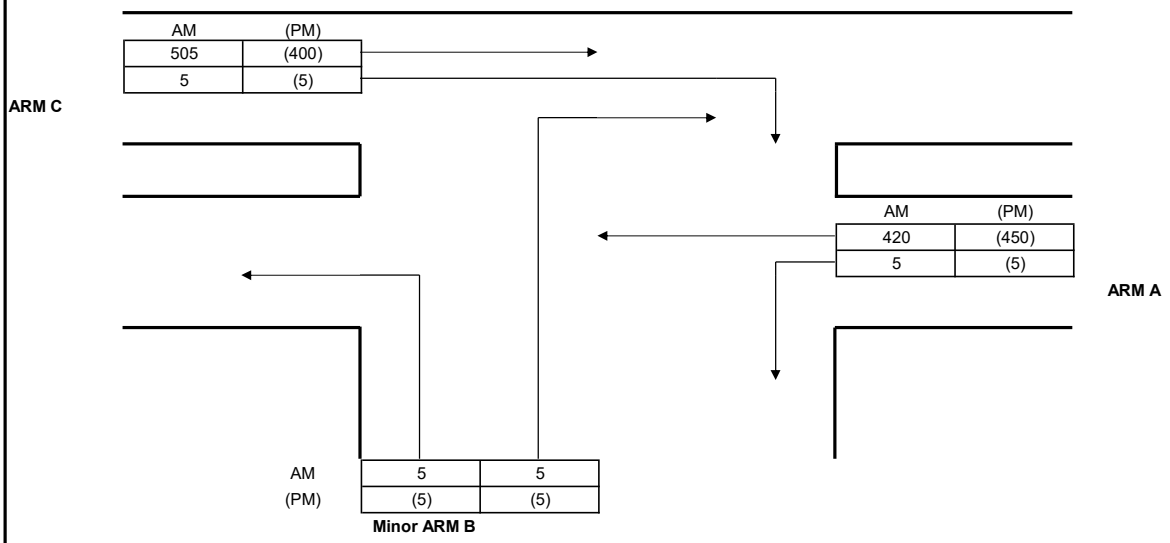
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		505	400
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		420	450
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	344	352
	Q(b-c)	1	553	546
	Q(c-b)	1	585	578
	Q(b-ac)	1	424	428
RFC's	b-a		0.015	0.014
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.024	0.023
Worst RFC			**0.024**	**0.023**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

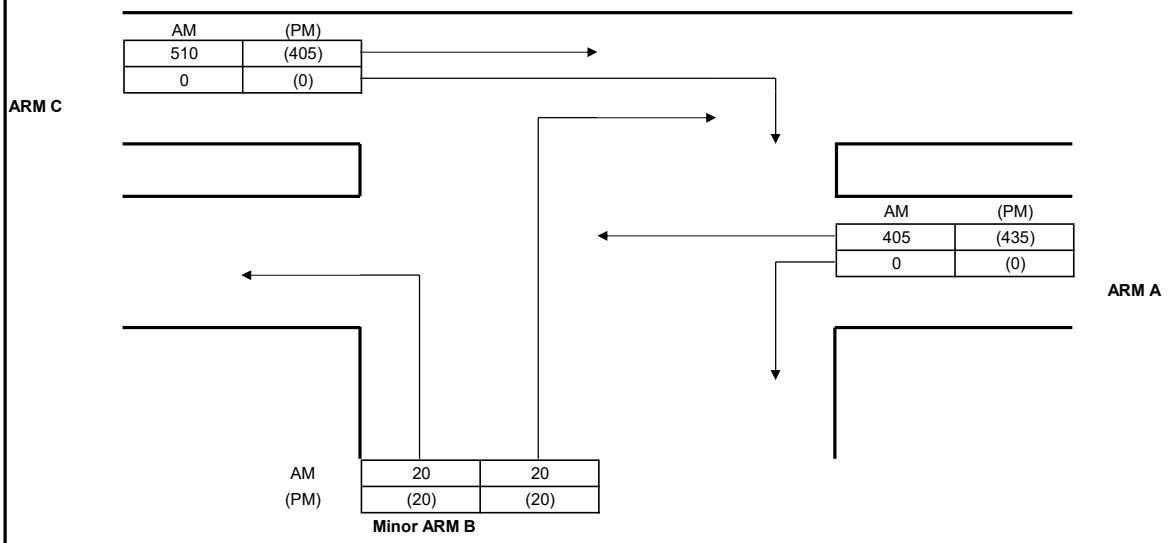
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		510	405
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		405	435
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	296	303
	Q(b-c)	1	477	470
	Q(c-b)	1	370	365
	Q(b-ac)	1	365	369
RFC's	b-a		0.068	0.066
	b-c		0.042	0.043
	c-b		0.000	0.000
	b-ac		0.110	0.108
Worst RFC			**0.110**	**0.108**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

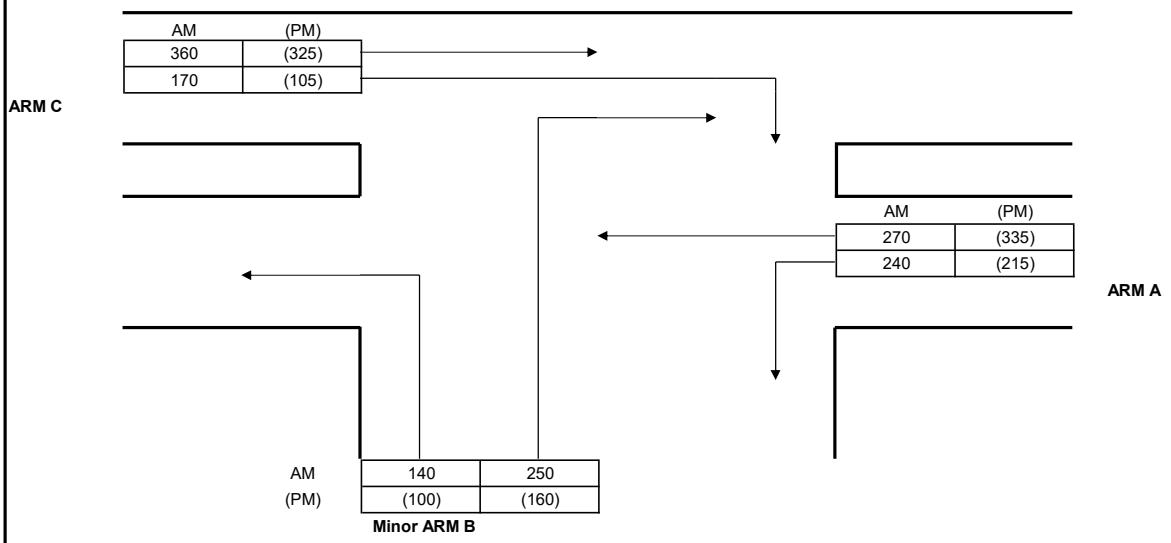
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	325
	q(c-b)		170	105
	q(a-b)		240	215
	q(a-c)		270	335
	q(b-a)		250	160
	q(b-c)		140	100
	f		0.36	0.38
		Factor		
CAPACITIES	Q(b-a)	1	341	355
	Q(b-c)	1	595	581
	Q(c-b)	1	558	548
	Q(b-ac)	1	403	418
RFC's	b-a		0.733	0.451
	b-c		0.235	0.172
	c-b		0.305	0.192
	b-ac		0.968	0.622
Worst RFC			**0.968**	**0.622**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

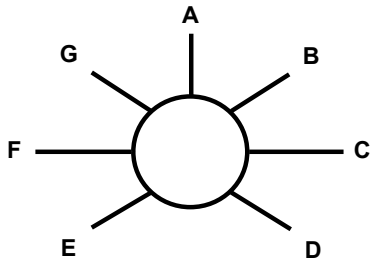
Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034R
Scheme:	Reference (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: Fairview Park Boulevard
ARM B: Castle Peak Rd E
ARM C: NTCR E
ARM D: San Tam Rd E
ARM E: San Tam Rd W
ARM F: NTCR W
ARM G: Castle Peak Rd W



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	225	530	30	2710	1080	640
B	10	10	155	10	245	295	30	3165	755	625
C	90	75	10	95	460	10	210	2680	950	1240
D	60	20	45	10	250	255	90	3180	730	450
E	40	35	445	65	10	510	20	2110	1125	1800
F	320	315	10	150	600	10	0	1315	1405	1920
G	110	150	350	80	10	310	0	2340	1010	380

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	170	50	200	345	30	2265	815	970
B	35	10	105	10	160	170	30	2515	520	565
C	180	135	20	80	405	20	200	2215	1040	820
D	75	20	55	20	200	145	70	2835	585	420
E	95	30	270	70	10	280	20	1810	775	1610
F	485	270	10	140	625	20	0	1395	1550	1190
G	90	90	190	50	10	210	10	2585	650	360

CALCULATIONS

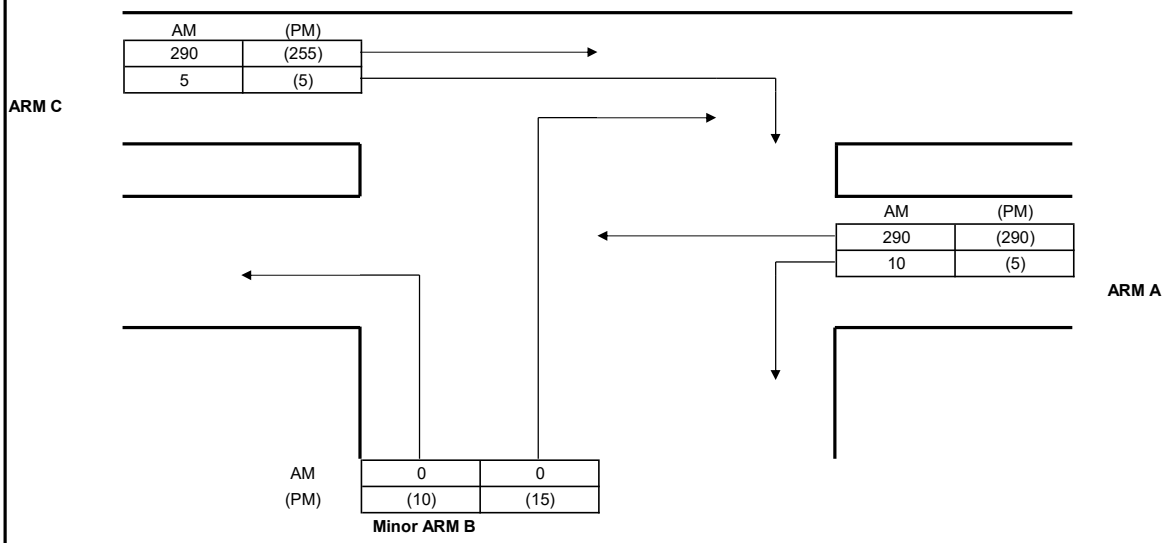
ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	9.71	2980.96	2944	1.00	0.62	1259	1532	0.86	0.53
B	1.03	10.62	2980.96	3216	1.00	0.66	1179	1619	0.64	0.32
C	1.03	9.67	2980.96	2931	1.00	0.62	1314	1608	0.72	0.65
D	0.99	9.74	2980.96	2952	1.00	0.62	975	1187	0.75	0.49
E	0.96	10.32	2980.96	3127	1.00	0.64	1694	1879	0.66	0.41
F	0.98	9.19	2980.96	2783	1.00	0.60	1950	1903	0.72	0.81
G	0.99	9.29	2980.96	2815	1.00	0.60	1400	1254	0.72	0.52
								Crtical Arm:	**A**	**F**
								RFC:	**0.86**	**0.81**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		290	255
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		290	290
	q(b-a)		0	15
	q(b-c)		0	10
	f		0.00	0.40
		Factor		
CAPACITIES	Q(b-a)	1	427	432
	Q(b-c)	1	619	619
	Q(c-b)	1	600	601
	Q(b-ac)	1	427	492
RFC's	b-a		0.000	0.035
	b-c		0.000	0.016
	c-b		0.008	0.008
	b-ac		0.000	0.051
Worst RFC			**0.008**	**0.051**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

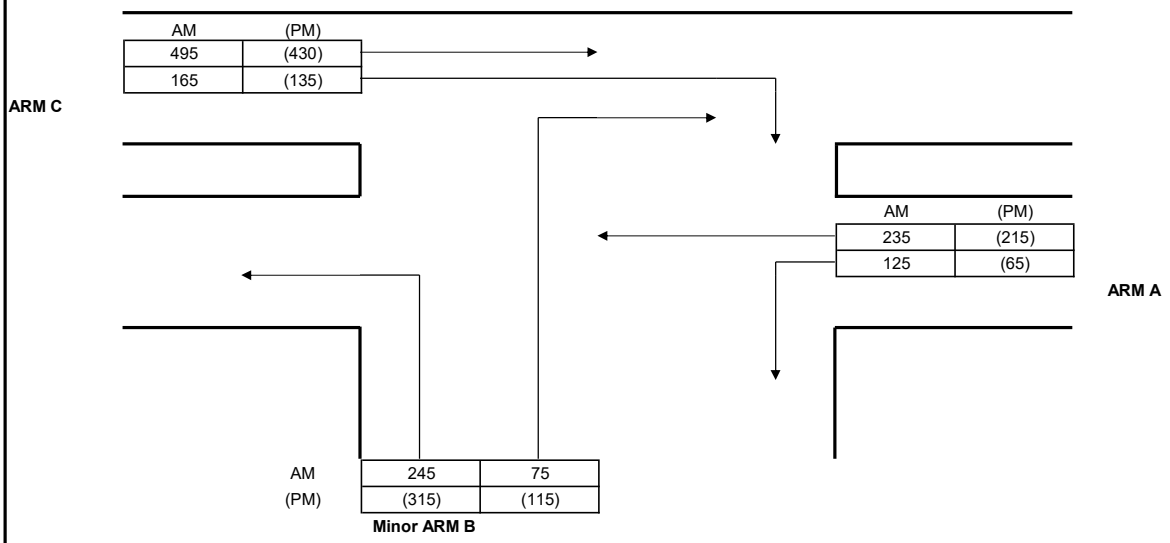
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	430
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		235	215
	q(b-a)		75	115
	q(b-c)		245	315
	f		0.77	0.73
		Factor		
CAPACITIES	Q(b-a)	1	352	381
	Q(b-c)	1	616	626
	Q(c-b)	1	581	599
	Q(b-ac)	1	524	535
RFC's	b-a		0.213	0.302
	b-c		0.398	0.503
	c-b		0.284	0.225
	b-ac		0.611	0.804
Worst RFC			**0.611**	**0.804**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

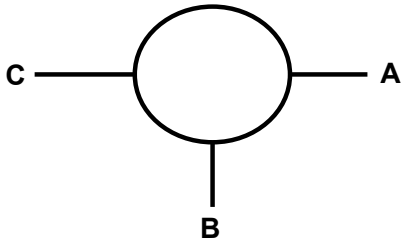
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	San Tin Interchange (K)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	950	645	1300	360	2895
B	570	0	0	2515	570
C	635	95	265	1520	995

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	675	560	855	390	2090
B	775	0	0	1795	775
C	570	125	265	1450	960

CALCULATIONS

							Q_E		RFC	
ARM	K	X_2	M	F	t_D	f_c	AM	PM	AM	PM
A	0.98	12.91	73.70	3912	1.01	0.76	3572	3550	0.81	0.59
B	0.98	11.38	73.70	3448	1.01	0.69	1675	2165	0.34	0.36
C	1.04	11.35	73.70	3438	1.01	0.69	2481	2531	0.40	0.38

Crtical Arm:	**A**	**A**
RFC:	**0.81**	**0.59**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2034

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		96%	96%	1775	1775	127	0.072		132	0.074	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	133	0.072		138	0.075	
San Tin highway		B	1	3.900		10				1865	1865	127	0.068		120	0.064	0.064
Slip Road (WB)		B	1	3.900		12.5		96%	96%	1800	1800	123	0.068	0.068	115	0.064	
Shek Wu Wai		C	2,3	3.500						1965	1965	429	0.218		405	0.206	0.206
Road (SB)		C	2,3	3.500		15		82%	63%	1945	1980	425	0.219		408	0.206	
		C	2,3	3.500		12.5				1880	1880	411	0.219	0.219	387	0.206	
Shek Wu Wai		D	4	3.500						1965	1965	302	0.154		202	0.103	0.103
Road (NB)		D	4	3.500		15		14%	3%	2075	2100	319	0.154	0.154	215	0.102	
		D	4	3.500		12.5				1880	1880	289	0.154		193	0.103	
Shek Wu Wai		E	3	3.500						2105	2105	346	0.164		317	0.151	
Road (SB)		E	3	3.500						2105	2105	346	0.164		317	0.151	
		E	3	3.500						1965	1965	323	0.164		296	0.151	
Shek Wu Wai		F	4	3.500						1965	1965	212	0.108		121	0.062	
Road (NB)		F	4	3.500						2105	2105	226	0.107		129	0.061	
		F	4	3.500						2105	2105	227	0.108		130	0.062	

- In accordance with TPDM V4 - Road Traffic Signals

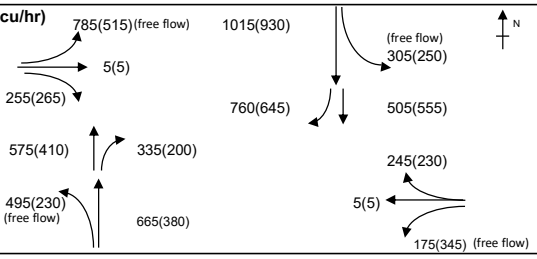
Formual of Total lost time per cycle $L = \sum (I - 1)$

AM peak Group: B,C,D $L = (6-1)+(8-1)+(5-1) = 16$

PM peak Group: B,C,D $L = (7-1)+(5-1)+(5-1) = 16$

Notes:

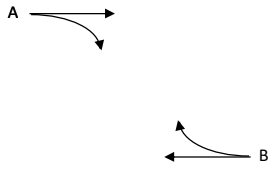
Flow: (pcu/hr)



Group	B,C,F	B,C,D	Group	B,C,F	B,C,D
y	0.395	0.441	y	0.332	0.373
L (sec)	16	16	L (sec)	16	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.740	y pract.	0.740	0.740
R.C. (%)	87%	68%	R.C. (%)	123%	98%

Stage / Phase Diagrams

1.



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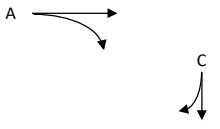

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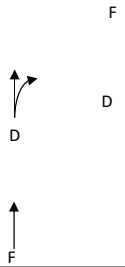


5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: AUG, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2034

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	200	0.109		125	0.068	
		A	1	4.000	17.5	20		0% / 48%	0% / 27%	2080	2115	368	0.177		327	0.155	
		A	1	4.000		17.5				1985	1985	352	0.177	0.177	308	0.155	0.155
Road D2 NB		B	2	3.200	15					1760	1760	309	0.176	0.176	213	0.121	
		B	2	3.200	17.5			30%	73%	2025	1955	355	0.175		237	0.121	0.121
		B	2	3.200						2075	2075	364	0.175		251	0.121	
		B	2	3.200		12.5		68%	81%	1920	1890	337	0.176		229	0.121	
Road L11 WB		C	3	3.300	12.5					1735	1735	142	0.082		110	0.063	
		C	3	3.300	15			81%	43%	1930	2000	158	0.082	0.082	128	0.064	0.064
		C	3	3.300		20		3%	4%	2080	2080	170	0.082		132	0.063	
Road D3 SB		D	4	4.000	12.5			2%	2%	2010	2010	251	0.125	0.125	307	0.153	
		D	4	4.000						2155	2155	269	0.125		328	0.152	
		D	4	4.000		20		98%	100%	2005	2005	250	0.125		440	0.219	0.219

- In accordance with TPDM V4 - Road Traffic Signals

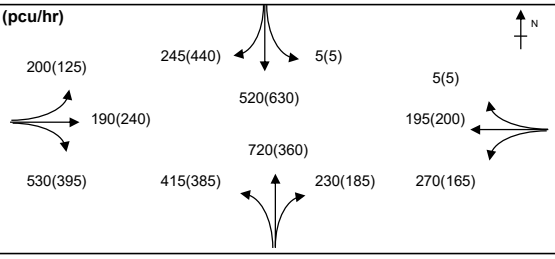
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

PM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

Notes:

Flow: (pcu/hr)



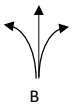
Group		A,B,C,D	Group		A,B,C,D
y		0.560	y		0.560
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		27%	R.C. (%)		27%

Stage / Phase Diagrams

1.



2.



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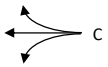


4.



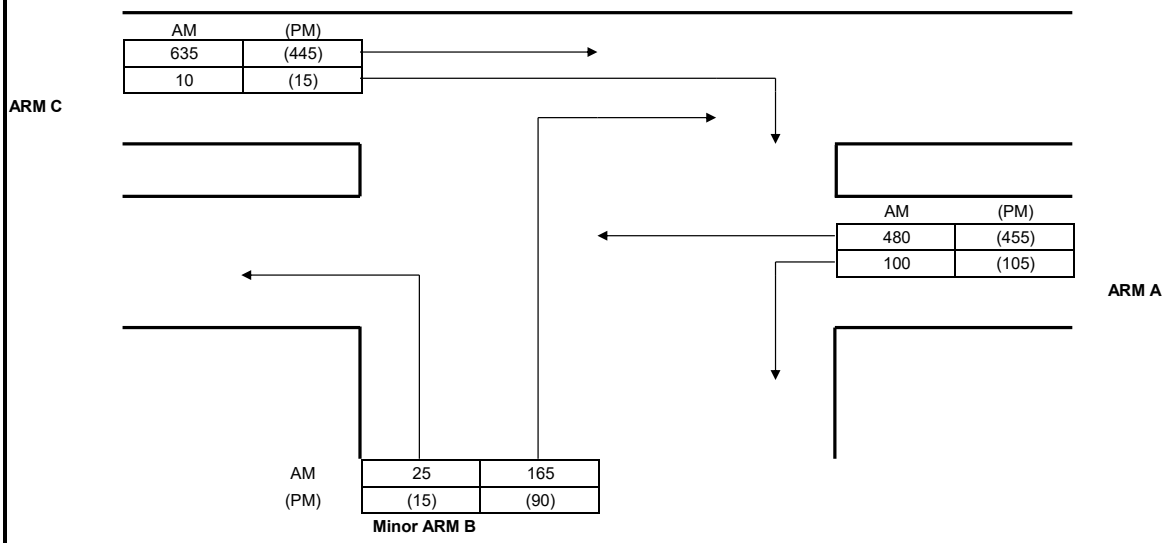
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: SEPT, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		635	445
	q(c-b)		10	15
	q(a-b)		100	105
	q(a-c)		480	455
	q(b-a)		165	90
	q(b-c)		25	15
	f		0.13	0.14
		Factor		
CAPACITIES	Q(b-a)	1	320	351
	Q(b-c)	1	542	548
	Q(c-b)	1	574	579
	Q(b-ac)	1	338	370
RFC's	b-a		0.516	0.256
	b-c		0.046	0.027
	c-b		0.017	0.026
	b-ac		0.562	0.284
Worst RFC			**0.562**	**0.284**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

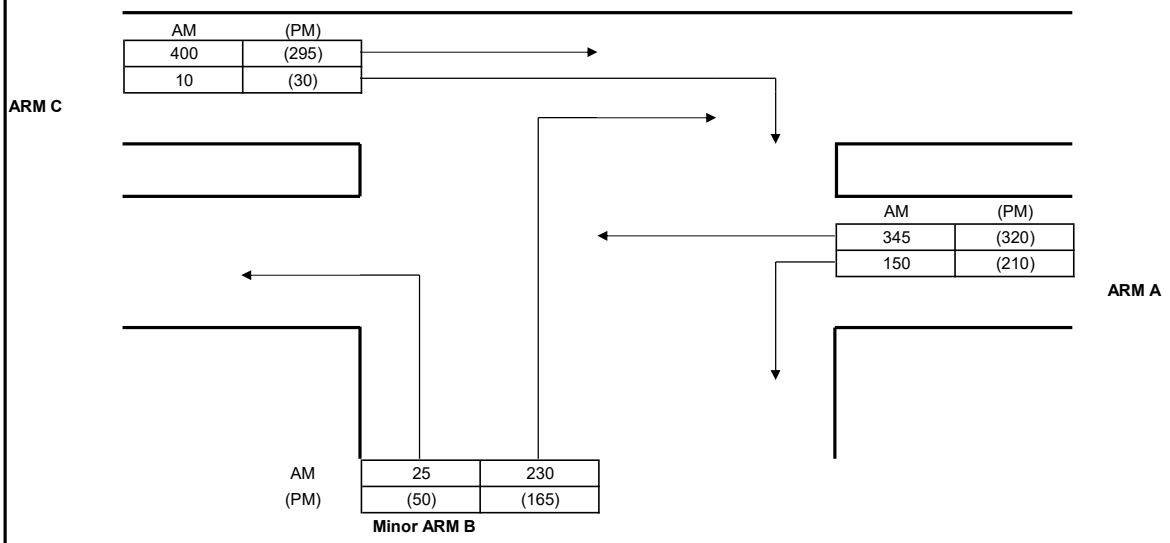
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		400	295
	q(c-b)		10	30
	q(a-b)		150	210
	q(a-c)		345	320
	q(b-a)		230	165
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	389	399
	Q(b-c)	1	601	602
	Q(c-b)	1	525	517
	Q(b-ac)	1	403	433
RFC's	b-a		0.591	0.414
	b-c		0.042	0.083
	c-b		0.019	0.058
	b-ac		0.633	0.497
Worst RFC			**0.633**	**0.497**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

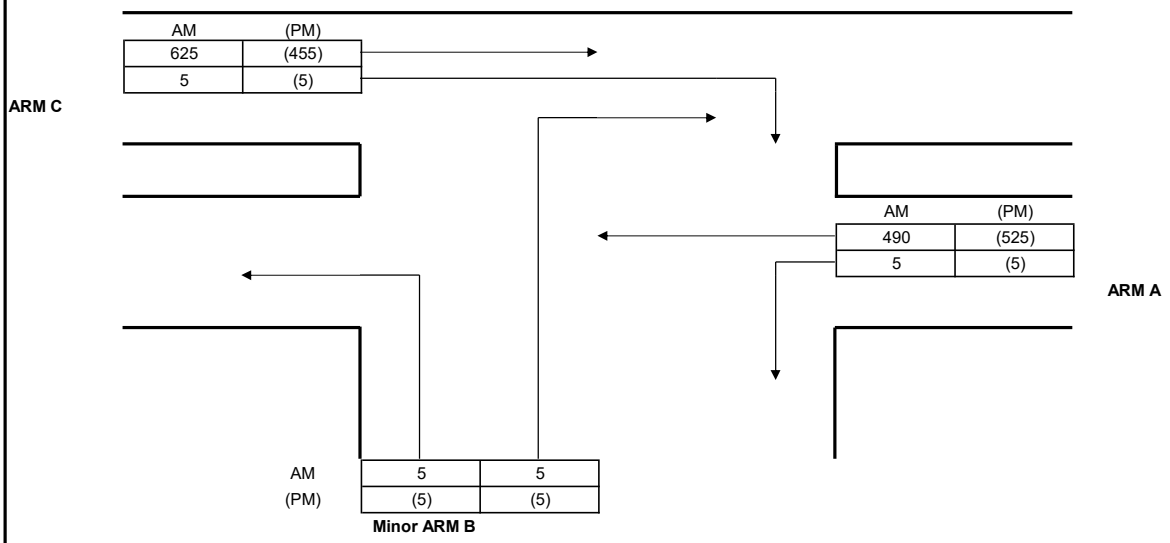
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		625	455
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		490	525
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	311	327
	Q(b-c)	1	536	527
	Q(c-b)	1	567	558
	Q(b-ac)	1	394	404
RFC's	b-a		0.016	0.015
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.025	0.025
Worst RFC			**0.025**	**0.025**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

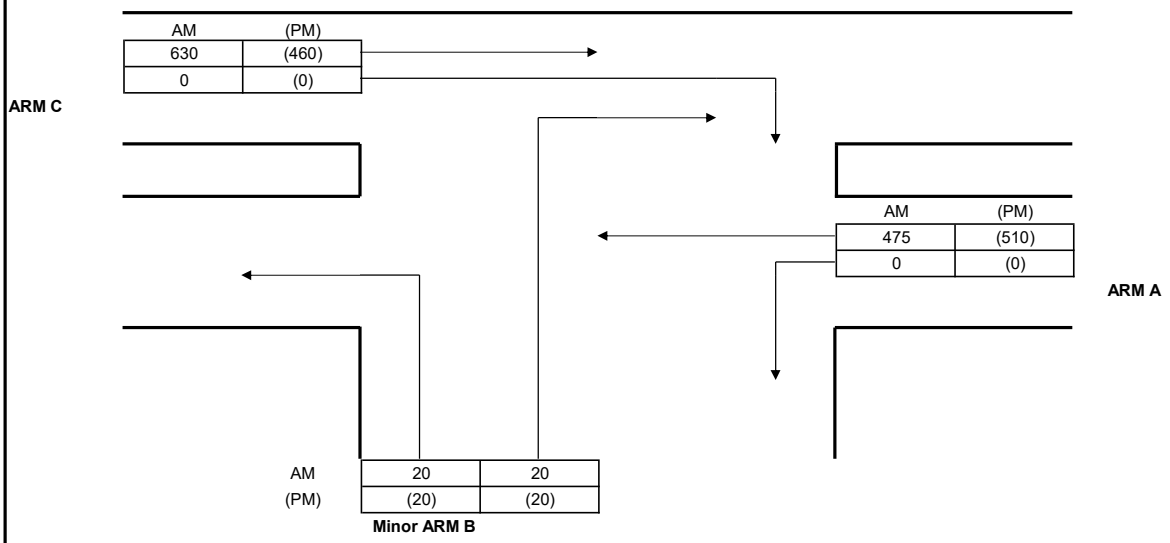
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		630	460
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		475	510
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	267	282
	Q(b-c)	1	462	454
	Q(c-b)	1	358	352
	Q(b-ac)	1	338	348
RFC's	b-a		0.075	0.071
	b-c		0.043	0.044
	c-b		0.000	0.000
	b-ac		0.118	0.115
Worst RFC			**0.118**	**0.115**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

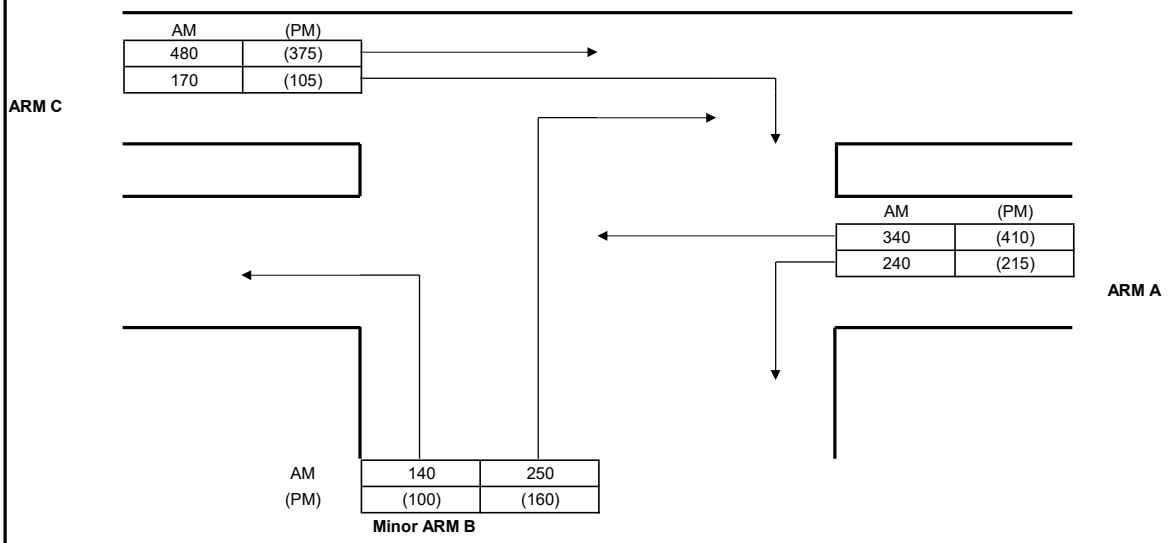
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		480	375
	q(c-b)		170	105
	q(a-b)		240	215
	q(a-c)		340	410
	q(b-a)		250	160
	q(b-c)		140	100
	f		0.36	0.38
		Factor		
CAPACITIES	Q(b-a)	1	307	330
	Q(b-c)	1	577	562
	Q(c-b)	1	540	529
	Q(b-ac)	1	369	392
RFC's	b-a		0.814	0.485
	b-c		0.243	0.178
	c-b		0.315	0.198
	b-ac		1.057	0.663
Worst RFC			**1.057**	**0.663**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

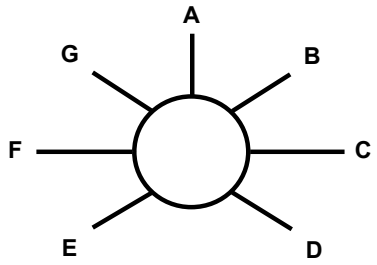
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2034D
Scheme:	Design (Under Improvement 2)			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM	PM	
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	225	40	225	530	30	2780	1080	640
B	10	10	155	10	245	415	30	3165	875	695
C	90	75	10	95	460	10	210	2800	950	1240
D	60	20	45	10	255	255	90	3300	735	450
E	40	35	445	65	10	510	20	2230	1125	1805
F	320	385	10	150	600	10	0	1315	1475	2040
G	110	150	350	80	10	310	0	2410	1010	380

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	170	50	200	345	30	2340	815	970
B	35	10	105	10	160	220	30	2515	570	640
C	180	135	20	80	405	20	200	2265	1040	820
D	75	20	55	20	205	145	70	2885	590	420
E	95	30	270	70	10	280	20	1860	775	1615
F	485	340	10	140	625	20	0	1395	1620	1240
G	90	95	190	50	10	210	10	2655	655	360

CALCULATIONS

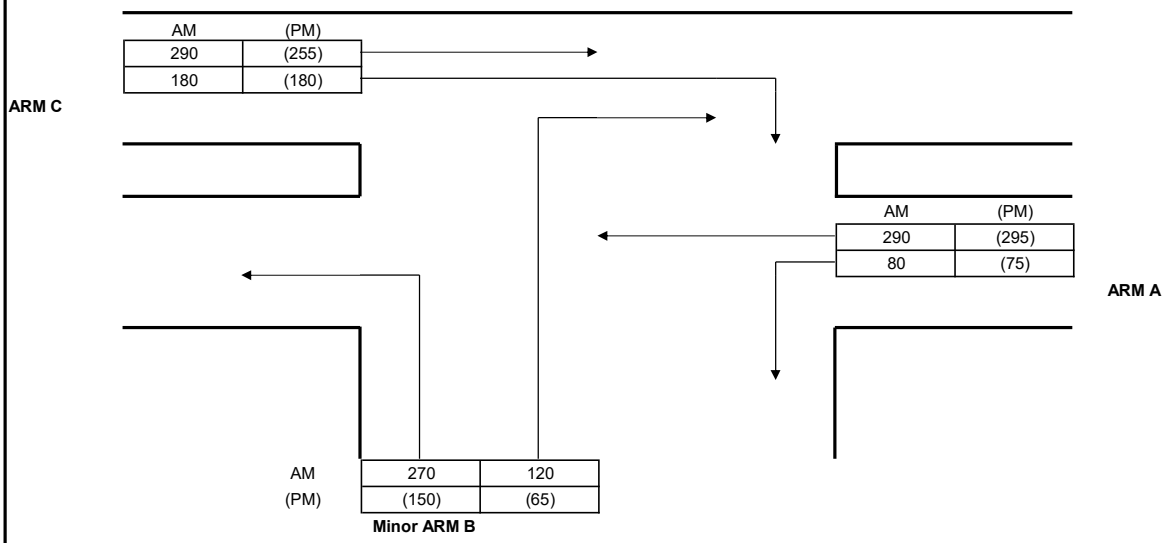
ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	9.71	2980.96	2944	1.00	0.62	1216	1486	0.89	0.55
B	1.03	10.62	2980.96	3216	1.00	0.66	1179	1619	0.74	0.35
C	1.03	9.67	2980.96	2931	1.00	0.62	1238	1576	0.77	0.66
D	0.99	9.74	2980.96	2952	1.00	0.62	901	1157	0.82	0.51
E	0.96	10.32	2980.96	3127	1.00	0.64	1620	1848	0.69	0.42
F	0.98	9.19	2980.96	2783	1.00	0.60	1950	1903	0.76	0.85
G	0.99	9.29	2980.96	2815	1.00	0.60	1358	1212	0.74	0.54
								Crtical Arm:	**A**	**F**
								RFC:	**0.89**	**0.85**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		290	255
	q(c-b)		180	180
	q(a-b)		80	75
	q(a-c)		290	295
	q(b-a)		120	65
	q(b-c)		270	150
	f		0.69	0.70
		Factor		
CAPACITIES	Q(b-a)	1	360	364
	Q(b-c)	1	612	611
	Q(c-b)	1	582	582
	Q(b-ac)	1	503	507
RFC's	b-a		0.333	0.179
	b-c		0.441	0.245
	c-b		0.309	0.309
	b-ac		0.775	0.424
Worst RFC			**0.775**	**0.424**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

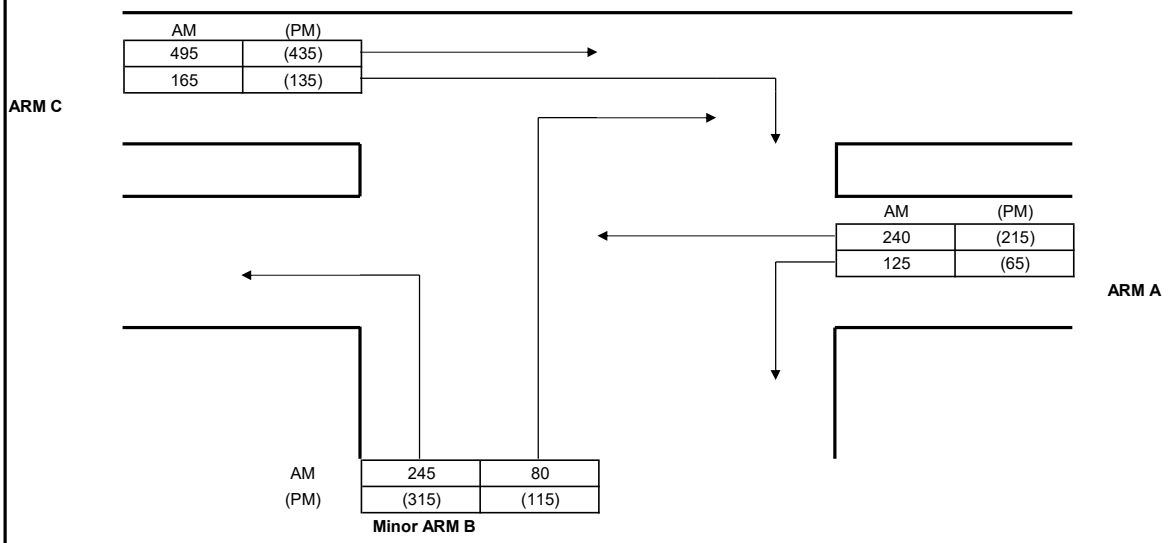
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		495	435
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		240	215
	q(b-a)		80	115
	q(b-c)		245	315
	f		0.75	0.73
		Factor		
CAPACITIES	Q(b-a)	1	351	380
	Q(b-c)	1	615	626
	Q(c-b)	1	579	599
	Q(b-ac)	1	519	534
RFC's	b-a		0.228	0.303
	b-c		0.398	0.503
	c-b		0.285	0.225
	b-ac		0.626	0.805
Worst RFC			**0.626**	**0.805**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

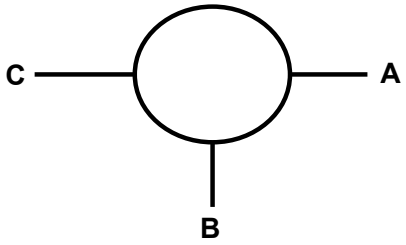
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	San Tin Interchange (K)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	950	645	1300	360	2895
B	570	0	0	2515	570
C	635	95	265	1520	995

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	675	560	855	390	2090
B	775	0	0	1795	775
C	570	125	265	1450	960

CALCULATIONS

							Q_E		RFC	
ARM	K	X_2	M	F	t_D	f_c	AM	PM	AM	PM
A	0.98	12.91	73.70	3912	1.01	0.76	3572	3550	0.81	0.59
B	0.98	11.38	73.70	3448	1.01	0.69	1675	2165	0.34	0.36
C	1.04	11.35	73.70	3438	1.01	0.69	2481	2531	0.40	0.38

Crtical Arm:	**A**	**A**
RFC:	**0.81**	**0.59**
	AM	**PM**

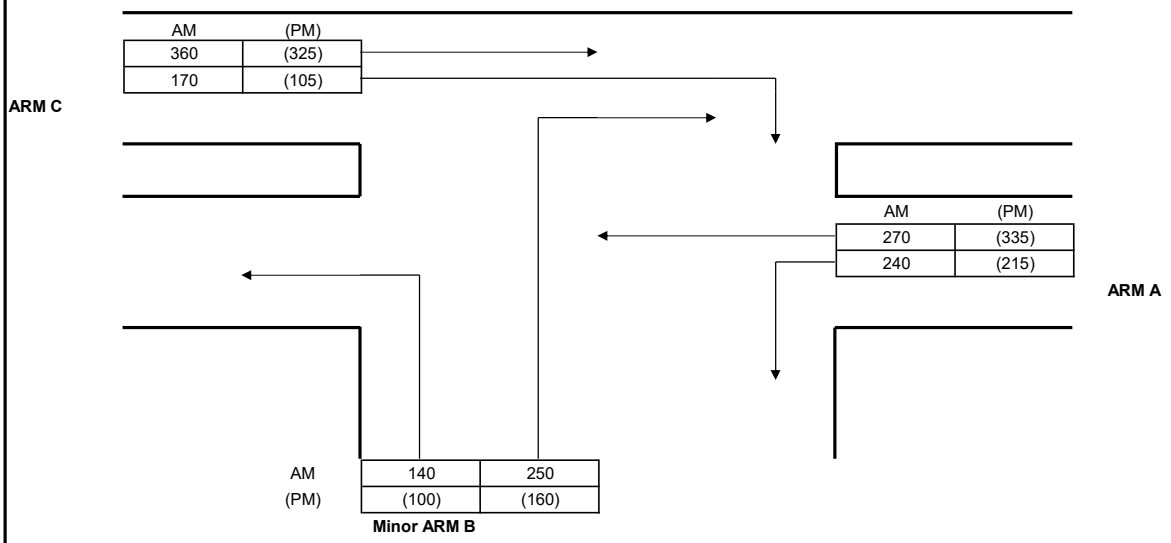
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Calculation Spreadsheets for 2034 Reference & Design Scenario (Sensitivity Test 2) (With Improvement)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034R
Scheme:	Reference			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	4.30
Central Reserve width	Wcr	0.00		w(b-c)	4.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	2.05
Visibilities	Vr(b-a)	53	Calculated	D	0.93
	Vl(b-a)	35		E	1.01
	Vr(b-c)	70		F	0.78
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		360	325
	q(c-b)		170	105
	q(a-b)		240	215
	q(a-c)		270	335
	q(b-a)		250	160
	q(b-c)		140	100
	f		0.36	0.38
		Factor		
CAPACITIES	Q(b-a)	1	367	383
	Q(b-c)	1	652	637
	Q(c-b)	1	471	463
	Q(b-ac)	1	436	452
RFC's	b-a		0.681	0.418
	b-c		0.215	0.157
	c-b		0.361	0.227
	b-ac		0.000	0.000
Worst RFC			**0.681**	**0.418**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

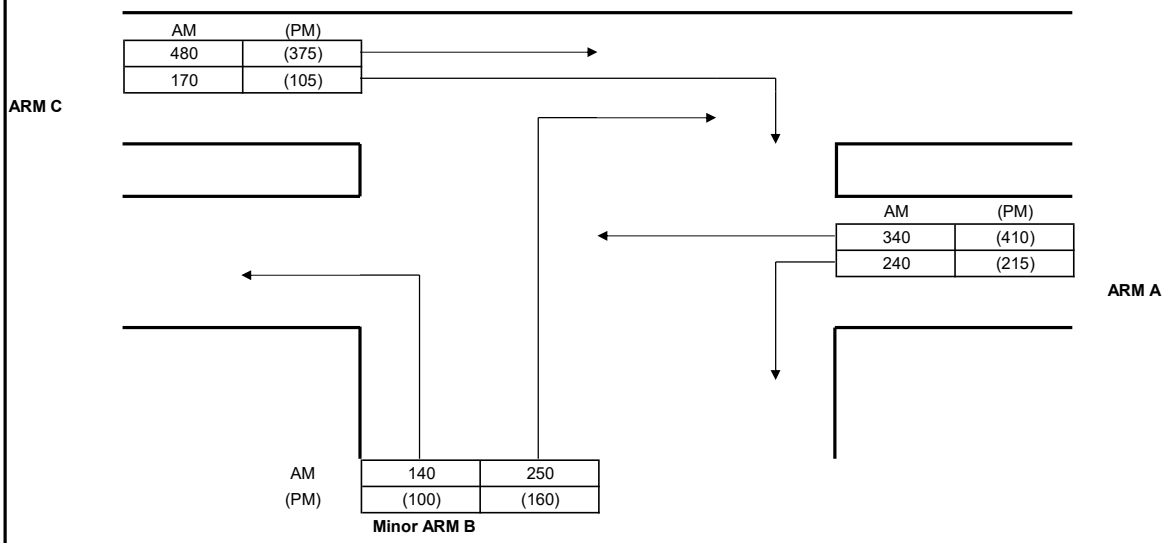
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	4.30
Central Reserve width	Wcr	0.00		w(b-c)	4.30
2 Lane Minor Arm (Y/N)		Y		w(c-b)	2.05
Visibilities	Vr(b-a)	53	Calculated	D	0.93
	Vl(b-a)	35		E	1.01
	Vr(b-c)	70		F	0.78
	Vr(c-b)	30		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		480	375
	q(c-b)		170	105
	q(a-b)		240	215
	q(a-c)		340	410
	q(b-a)		250	160
	q(b-c)		140	100
	f		0.36	0.38
		Factor		
CAPACITIES	Q(b-a)	1	330	355
	Q(b-c)	1	633	616
	Q(c-b)	1	456	446
	Q(b-ac)	1	398	424
RFC's	b-a		0.758	0.451
	b-c		0.221	0.162
	c-b		0.373	0.235
	b-ac		0.000	0.000
Worst RFC			**0.758**	**0.451**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Calculation Spreadsheets for 2039 Reference & Design Scenario (Sensitivity Test 3)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2039

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		98%	98%	1770	1770	309	0.175	0.175	316	0.179	0.179
Slip Road (EB)		A	1,2	3.650		10				1845	1845	321	0.174		329	0.178	
San Tin highway		B	1	3.900		10				1865	1865	86	0.046		76	0.041	
Slip Road (WB)		B	1	3.900		12.5		94%	93%	1800	1805	84	0.047		74	0.041	
Shek Wu Wai		C	2,3	3.500						1965	1965	529	0.269		530	0.270	
Road (SB)		C	2,3	3.500		15		30%	18%	2045	2070	550	0.269		558	0.270	
		C	2,3	3.500		12.5				1880	1880	506	0.269		507	0.270	
Shek Wu Wai		D	4	3.500						1965	1965	396	0.202		273	0.139	
Road (NB)		D	4	3.500		15		60%	65%	1985	1975	400	0.202		275	0.139	
		D	4	3.500		12.5				1880	1880	379	0.202	0.202	262	0.139	0.139
Shek Wu Wai		E	3	3.500						2105	2105	327	0.155		327	0.155	
Road (SB)		E	3	3.500						2105	2105	328	0.156	0.156	328	0.156	0.156
		E	3	3.500						1965	1965	305	0.155		305	0.155	
Shek Wu Wai		F	4	3.500						1965	1965	321	0.163		212	0.108	
Road (NB)		F	4	3.500						2105	2105	345	0.164		226	0.107	
		F	4	3.500						2105	2105	344	0.163		227	0.108	

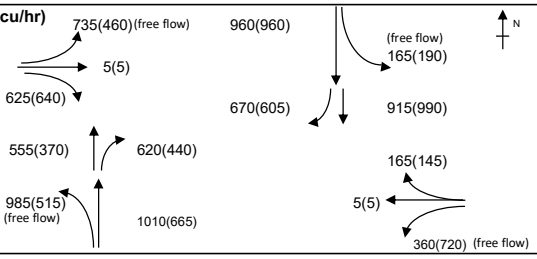
- In accordance with TPDM V4 - Road Traffic Signals

Formual of Total lost time per cycle $L = \sum (I - 1)$

AM peak	Group:	A,E,D	L =	(6-1)+(8-1)+(5-1)	=	14
PM peak	Group:	A,E,D	L =	(7-1)+(5-1)+(5-1)	=	14

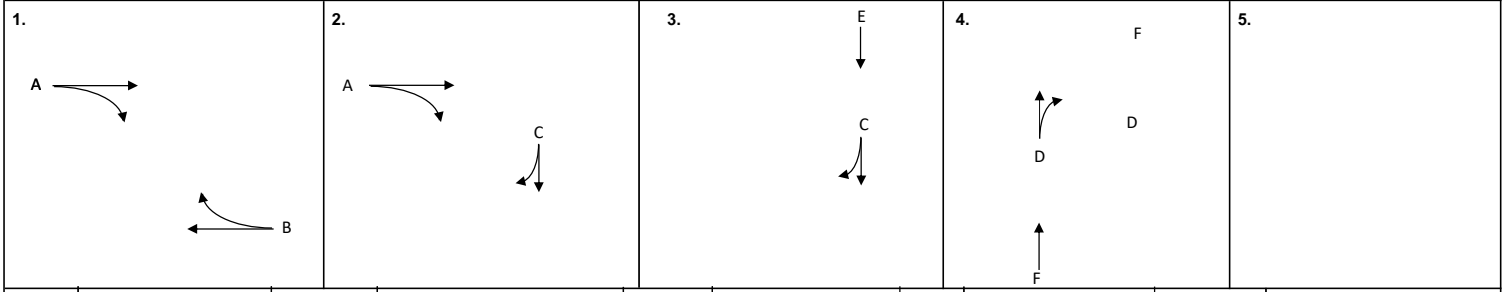
Notes:

Flow: (pcu/hr)



Group	B,C,D	A,E,D	Group	B,C,D	A,E,D
y	0.517	0.532	y	0.450	0.474
L (sec)	16	14	L (sec)	16	14
C (sec)	90	90	C (sec)	90	90
y pract.	0.740	0.760	y pract.	0.740	0.760
R.C. (%)	43%	43%	R.C. (%)	64%	60%

Stage / Phase Diagrams



I/G= 5		I/G=		I/G= 7		I/G= 5	I/G=
I/G= 5		I/G=		I/G= 7		I/G= 5	I/G=

Date: AUG, 2025 **Junction:** (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2039

Description: Reference Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	175	0.096		115	0.063	
		A	1	4.000	17.5	20		0% / 18%	0% / 7%	2125	2145	238	0.112	0.112	257	0.120	
		A	1	4.000		17.5				1985	1985	222	0.112		238	0.120	0.120
Road D2 NB		B	2	3.200	15					1760	1760	292	0.166	0.166	190	0.108	
		B	2	3.200	17.5			1%	30%	2075	2025	343	0.165		219	0.108	0.108
		B	2	3.200						2075	2075	344	0.166		224	0.108	
		B	2	3.200		12.5		74%	92%	1905	1870	316	0.166		202	0.108	
Road L11 WB		C	3	3.300	12.5					1735	1735	144	0.083	0.083	110	0.063	
		C	3	3.300	15			82%	43%	1925	2000	159	0.083		128	0.064	0.064
		C	3	3.300		20		3%	4%	2080	2080	172	0.083		132	0.063	
Road D3 SB		D	4	4.000	12.5			2%	1%	2010	2010	259	0.129		355	0.177	
		D	4	4.000						2155	2155	278	0.129		380	0.176	
		D	4	4.000		20		78%	100%	2035	2005	263	0.129	0.129	440	0.219	0.219

- In accordance with TPDM V4 - Road Traffic Signals

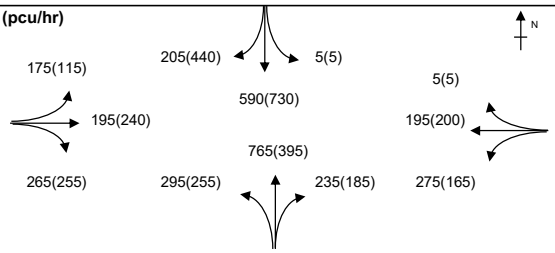
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

PM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

Notes:

Flow: (pcu/hr)



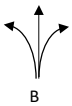
Group		A,B,C,D	Group		A,B,C,D
y		0.490	y		0.511
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		45%	R.C. (%)		39%

Stage / Phase Diagrams

1.



2.



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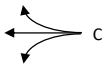


4.



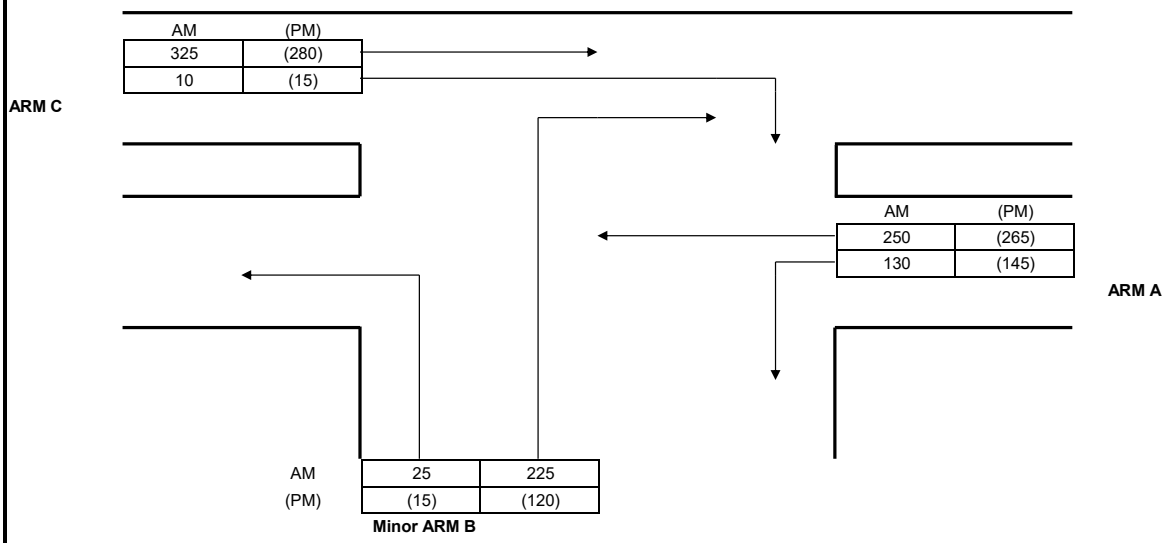
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: AUG, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		325	280
	q(c-b)		10	15
	q(a-b)		130	145
	q(a-c)		250	265
	q(b-a)		225	120
	q(b-c)		25	15
	f		0.10	0.11
		Factor		
CAPACITIES	Q(b-a)	1	415	415
	Q(b-c)	1	595	590
	Q(c-b)	1	627	619
	Q(b-ac)	1	428	429
RFC's	b-a		0.542	0.289
	b-c		0.042	0.025
	c-b		0.016	0.024
	b-ac		0.584	0.315
Worst RFC			**0.584**	**0.315**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

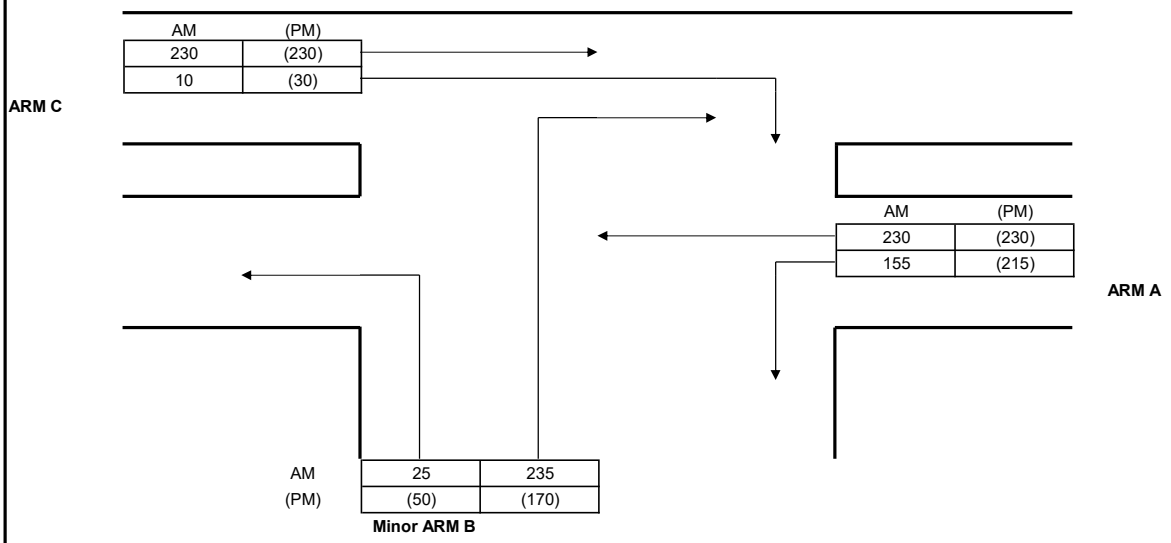
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		230	230
	q(c-b)		10	30
	q(a-b)		155	215
	q(a-c)		230	230
	q(b-a)		235	170
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	443	430
	Q(b-c)	1	631	625
	Q(c-b)	1	551	537
	Q(b-ac)	1	456	463
RFC's	b-a		0.530	0.395
	b-c		0.040	0.080
	c-b		0.018	0.056
	b-ac		0.570	0.475
Worst RFC			**0.570**	**0.475**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

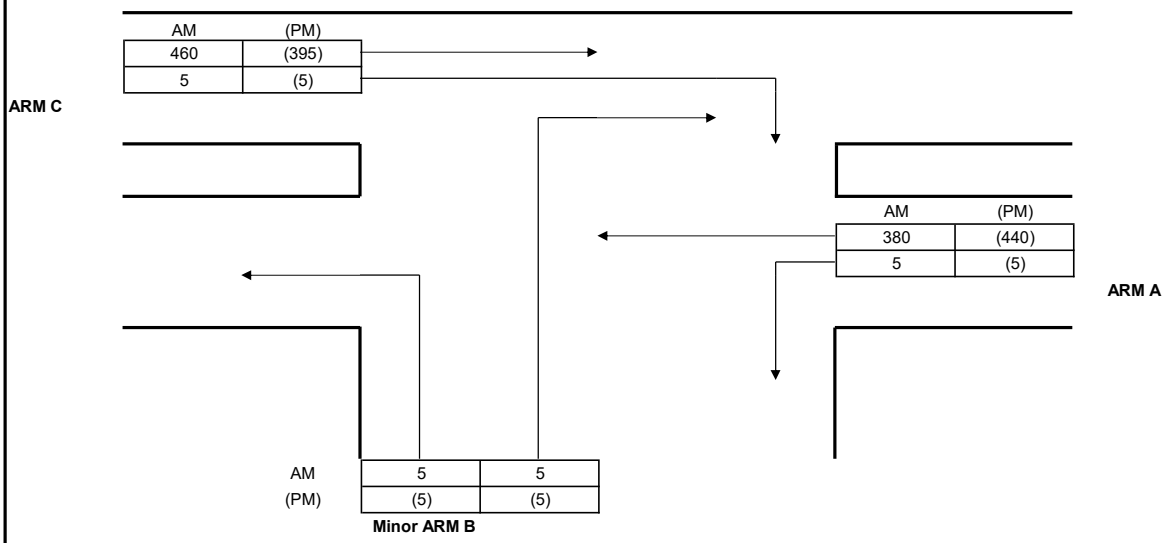
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		460	395
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		380	440
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	359	355
	Q(b-c)	1	563	548
	Q(c-b)	1	596	580
	Q(b-ac)	1	438	431
RFC's	b-a		0.014	0.014
	b-c		0.009	0.009
	c-b		0.008	0.009
	b-ac		0.023	0.023
Worst RFC			**0.023**	**0.023**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

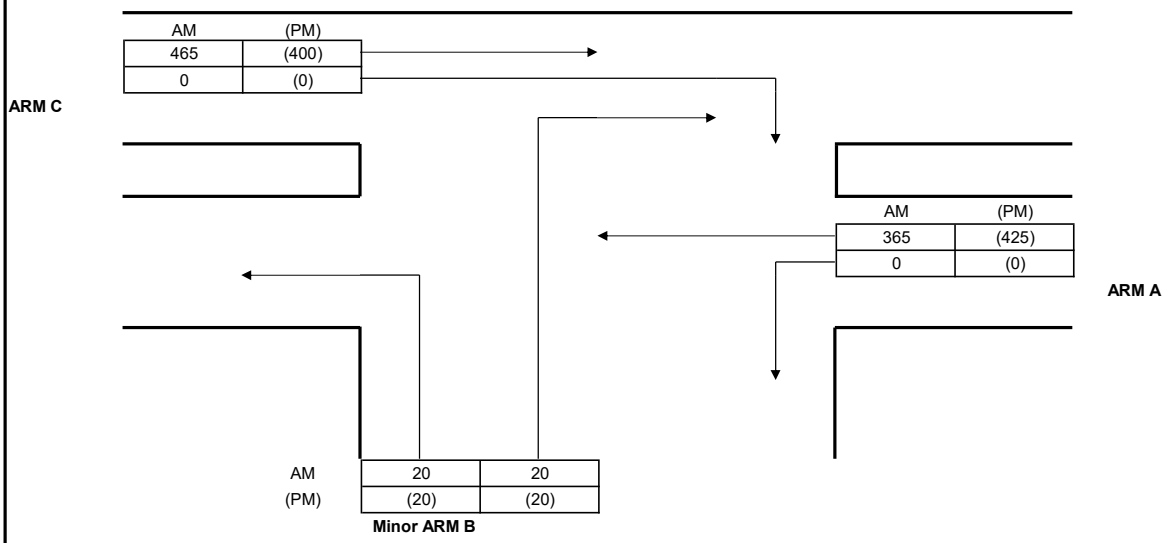
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		465	400
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		365	425
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	310	306
	Q(b-c)	1	485	472
	Q(c-b)	1	376	366
	Q(b-ac)	1	378	371
RFC's	b-a		0.065	0.065
	b-c		0.041	0.042
	c-b		0.000	0.000
	b-ac		0.106	0.108
Worst RFC			**0.106**	**0.108**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

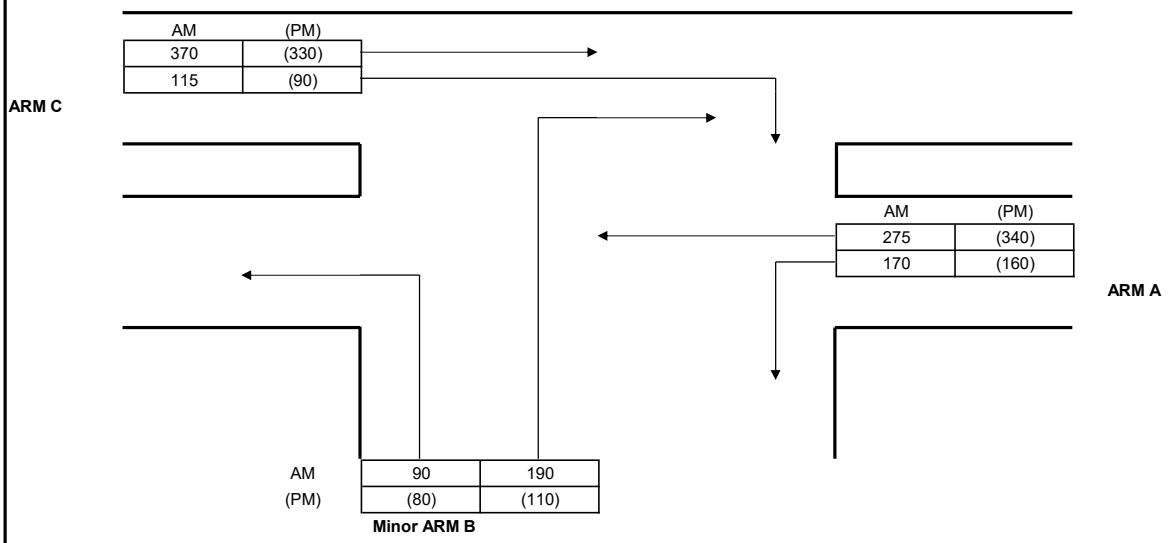
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		370	330
	q(c-b)		115	90
	q(a-b)		170	160
	q(a-c)		275	340
	q(b-a)		190	110
	q(b-c)		90	80
	f		0.32	0.42
		Factor		
CAPACITIES	Q(b-a)	1	364	364
	Q(b-c)	1	601	585
	Q(c-b)	1	575	561
	Q(b-ac)	1	417	433
RFC's	b-a		0.522	0.302
	b-c		0.150	0.137
	c-b		0.200	0.160
	b-ac		0.671	0.439
Worst RFC			**0.671**	**0.439**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

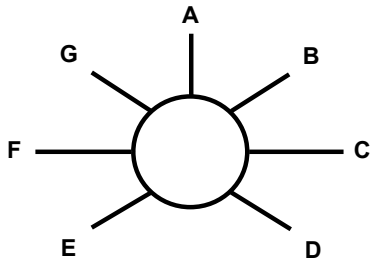
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2039R
Scheme:	Reference (Under Improvement 2)			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	205	40	225	470	30	2680	1000	655
B	10	10	145	10	245	255	30	3120	705	560
C	90	70	10	100	470	10	215	2595	965	1230
D	65	20	45	10	255	260	95	3105	750	455
E	40	35	455	65	10	520	20	2030	1145	1825
F	330	250	10	150	610	10	0	1335	1360	1840
G	110	155	360	80	10	315	0	2305	1030	390

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	165	50	205	335	30	2250	805	980
B	35	10	90	10	165	135	30	2540	475	515
C	185	125	20	80	410	20	200	2205	1040	810
D	70	20	55	20	200	145	65	2820	575	425
E	95	30	275	70	10	285	20	1755	785	1640
F	495	230	10	145	640	20	0	1385	1540	1155
G	90	90	195	50	10	215	10	2570	660	355

CALCULATIONS

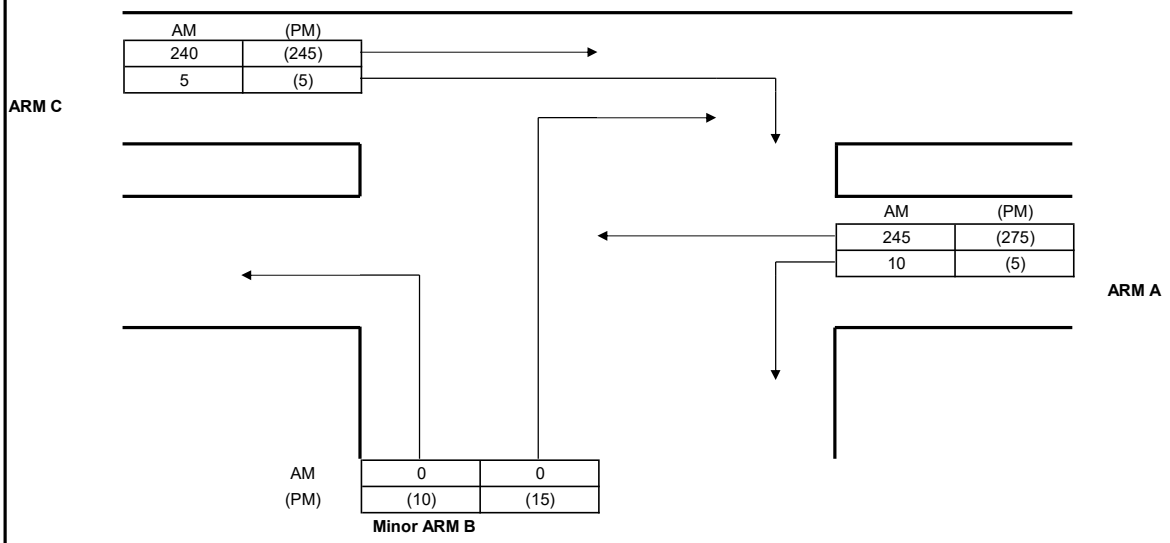
ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.99	9.71	2980.96	2944	1.00	0.62	1277	1541	0.78	0.52
B	1.03	10.62	2980.96	3216	1.00	0.66	1209	1602	0.58	0.30
C	1.03	9.67	2980.96	2931	1.00	0.62	1367	1614	0.71	0.64
D	0.99	9.74	2980.96	2952	1.00	0.62	1021	1196	0.73	0.48
E	0.96	10.32	2980.96	3127	1.00	0.64	1743	1913	0.66	0.41
F	0.98	9.19	2980.96	2783	1.00	0.60	1938	1909	0.70	0.81
G	0.99	9.29	2980.96	2815	1.00	0.60	1421	1263	0.72	0.52
								Crtical Arm:	**A**	**F**
								RFC:	**0.78**	**0.81**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		240	245
	q(c-b)		5	5
	q(a-b)		10	5
	q(a-c)		245	275
	q(b-a)		0	15
	q(b-c)		0	10
	f		0.00	0.40
		Factor		
CAPACITIES	Q(b-a)	1	445	437
	Q(b-c)	1	630	623
	Q(c-b)	1	611	605
	Q(b-ac)	1	445	496
RFC's	b-a		0.000	0.034
	b-c		0.000	0.016
	c-b		0.008	0.008
	b-ac		0.000	0.050
Worst RFC			**0.008**	**0.050**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

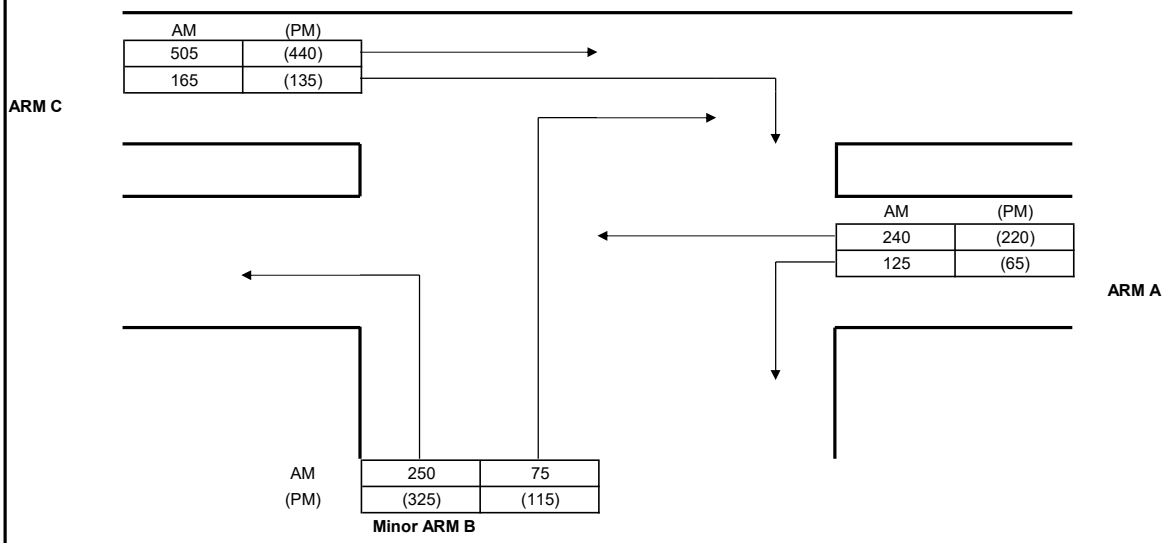
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		505	440
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		240	220
	q(b-a)		75	115
	q(b-c)		250	325
	f		0.77	0.74
		Factor		
CAPACITIES	Q(b-a)	1	349	378
	Q(b-c)	1	615	625
	Q(c-b)	1	579	598
	Q(b-ac)	1	523	534
RFC's	b-a		0.215	0.304
	b-c		0.407	0.520
	c-b		0.285	0.226
	b-ac		0.621	0.824
Worst RFC			**0.621**	**0.824**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

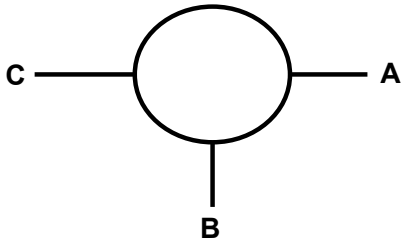
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD102				
Junction:	San Tin Interchange (K)			Ref. No.:	2039R
Scheme:	Reference			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	1060	655	1315	365	3030
B	585	0	0	2645	585
C	645	95	270	1645	1010

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	770	570	870	395	2210
B	790	0	0	1910	790
C	580	125	270	1560	975

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	12.91	73.70	3912	1.01	0.76	3569	3546	0.85	0.62
B	0.98	11.38	73.70	3448	1.01	0.69	1587	2086	0.37	0.38
C	1.04	11.35	73.70	3438	1.01	0.69	2391	2452	0.42	0.40

Crtical Arm:	**A**	**A**
RFC:	**0.85**	**0.62**
	AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / San Tin Highway Slip Road (A) Design Year: 2039

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
San Tin highway		A	1,2	3.650		12.5		98%	98%	1770	1770	309	0.175		316	0.179	
Slip Road (EB)		A	1,2	3.650		10				1845	1845	321	0.174		329	0.178	
San Tin highway		B	1	3.900		10				1865	1865	130	0.070	0.070	120	0.064	0.064
Slip Road (WB)		B	1	3.900		12.5		96%	96%	1800	1800	125	0.069		115	0.064	
Shek Wu Wai		C	2,3	3.500						1965	1965	574	0.292	0.292	557	0.283	
Road (SB)		C	2,3	3.500		15		36%	20%	2030	2065	592	0.292		585	0.283	
		C	2,3	3.500		12.5				1880	1880	549	0.292		533	0.284	0.284
Shek Wu Wai		D	4	3.500						1965	1965	434	0.221		312	0.159	
Road (NB)		D	4	3.500		15		46%	44%	2015	2015	445	0.221		320	0.159	0.159
		D	4	3.500		12.5				1880	1880	416	0.221	0.221	298	0.159	
Shek Wu Wai		E	3	3.500						2105	2105	372	0.177		355	0.169	
Road (SB)		E	3	3.500						2105	2105	371	0.176		354	0.168	
		E	3	3.500						1965	1965	347	0.177		331	0.168	
Shek Wu Wai		F	4	3.500						1965	1965	334	0.170		223	0.113	
Road (NB)		F	4	3.500						2105	2105	358	0.170		238	0.113	
		F	4	3.500						2105	2105	358	0.170		239	0.114	

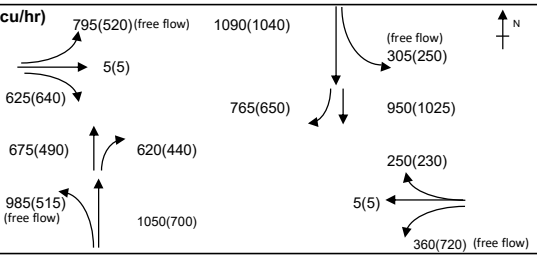
- In accordance with TPDM V4 - Road Traffic Signals

Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak	Group:	B,C,D	L	=	(6-1)+(8-1)+(5-1)	=	16
PM peak	Group:	B,C,D	L	=	(7-1)+(5-1)+(5-1)	=	16

Notes:

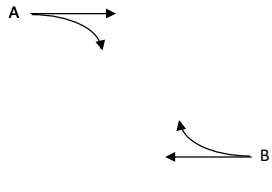
Flow: (pcu/hr)



Group	A,E,D	B,C,D	Group	A,E,D	B,C,D
y	0.573	0.583	y	0.506	0.507
L (sec)	14	16	L (sec)	14	16
C (sec)	90	90	C (sec)	90	90
y pract.	0.760	0.740	y pract.	0.760	0.740
R.C. (%)	33%	27%	R.C. (%)	50%	46%

Stage / Phase Diagrams

1.



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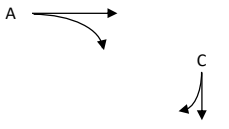

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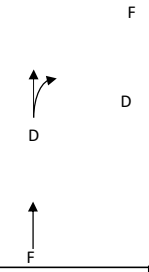
4.



5.

I/G= 5		I/G= 6		I/G=		I/G= 8	
I/G= 5		I/G= 6		I/G=		I/G= 8	

I/G=	
I/G=	

Date: AUG, 2025

Junction: (A) Shek Wu Wai Road / San Tin Highway Slip Road (A)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50800610 **MVA HONG KONG LIMITED**

Junction: Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B) Design Year: 2039

Description: Design Designed By: MYC Checked By: CFC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Road L11 EB		A	1	4.000	15					1830	1830	175	0.096		115	0.063	
		A	1	4.000	17.5	20		0% / 48%	0% / 26%	2080	2115	374	0.180	0.180	330	0.156	
		A	1	4.000		17.5				1985	1985	356	0.179		310	0.156	0.156
Road D2 NB		B	2	3.200	15					1760	1760	333	0.189	0.189	231	0.131	
		B	2	3.200	17.5			36%	78%	2015	1945	381	0.189		256	0.132	0.132
		B	2	3.200						2075	2075	392	0.189		273	0.132	
		B	2	3.200		12.5		65%	74%	1925	1905	364	0.189		250	0.131	
Road L11 WB		C	3	3.300	12.5					1735	1735	145	0.084		110	0.063	
		C	3	3.300	15			81%	43%	1930	2000	161	0.083		128	0.064	0.064
		C	3	3.300		20		3%	4%	2080	2080	174	0.084	0.084	132	0.063	
Road D3 SB		D	4	4.000	12.5			2%	1%	2010	2010	259	0.129		355	0.177	
		D	4	4.000						2155	2155	278	0.129		380	0.176	
		D	4	4.000		20		78%	100%	2035	2005	263	0.129	0.129	440	0.219	0.219

- In accordance with TPDM V4 - Road Traffic Signals

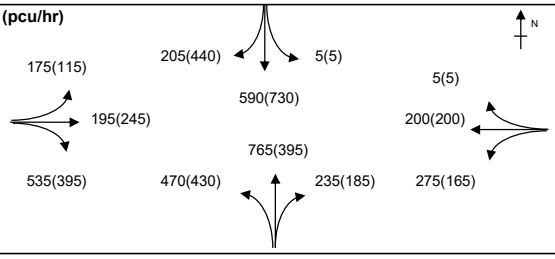
Formual of Total lost time per cycle L = ∑ (I - 1)

AM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

PM peak Group: A,B,C,D L = (6-1)+(6-1)+(7-1)+(7-1) = 22

Notes:

Flow: (pcu/hr)



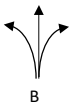
Group		A,B,C,D	Group		A,B,C,D
y		0.582	y		0.571
L (sec)		22	L (sec)		22
C (sec)		105	C (sec)		105
y pract.		0.711	y pract.		0.711
R.C. (%)		22%	R.C. (%)		25%

Stage / Phase Diagrams

1.



2.



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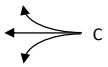


4.



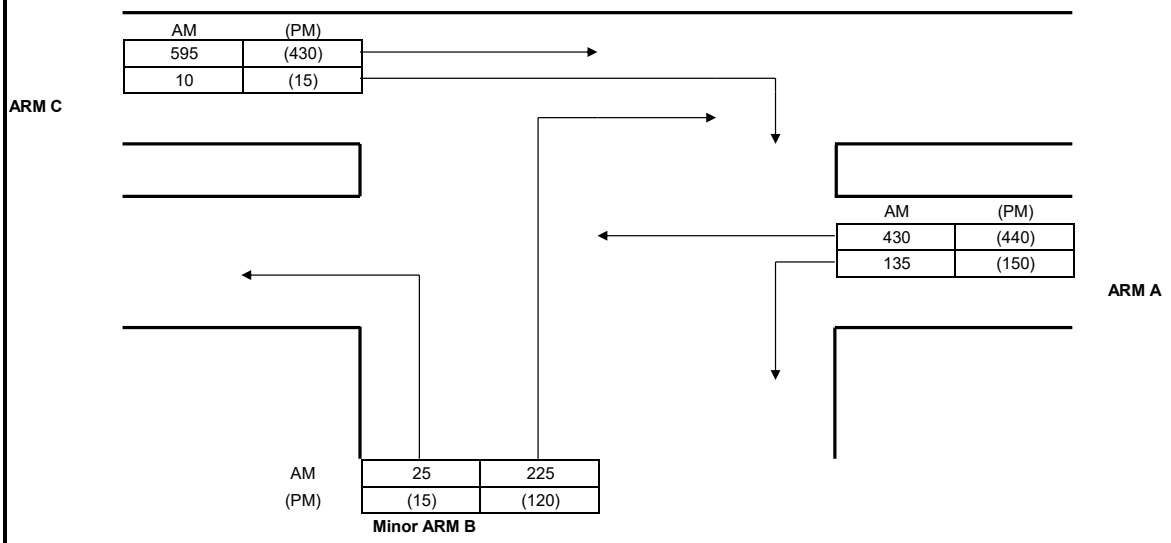
5.

I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	
I/G= 6		I/G= 6		I/G= 7		I/G= 7		I/G=	

Date: SEPT, 2025 **Junction:** (B) Shek Wu Wai Road / Road D3 / Road L11 / Road L12 (B)

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / San Tam Road (C)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	San Tam Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.40	Lane widths	w(b-a)	3.20
Central Reserve width	Wcr	0.00		w(b-c)	3.20
2 Lane Minor Arm (Y/N)		N		w(c-b)	4.10
Visibilities	Vr(b-a)	50	Calculated	D	0.85
	Vl(b-a)	70		E	0.90
	Vr(b-c)	50		F	0.98
	Vr(c-b)	50		Y	0.74

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		595	430
	q(c-b)		10	15
	q(a-b)		135	150
	q(a-c)		430	440
	q(b-a)		225	120
	q(b-c)		25	15
	f		0.10	0.11
		Factor		
CAPACITIES	Q(b-a)	1	334	352
	Q(b-c)	1	551	547
	Q(c-b)	1	578	571
	Q(b-ac)	1	348	367
RFC's	b-a		0.674	0.341
	b-c		0.045	0.027
	c-b		0.017	0.026
	b-ac		0.718	0.368
Worst RFC			**0.718**	**0.368**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

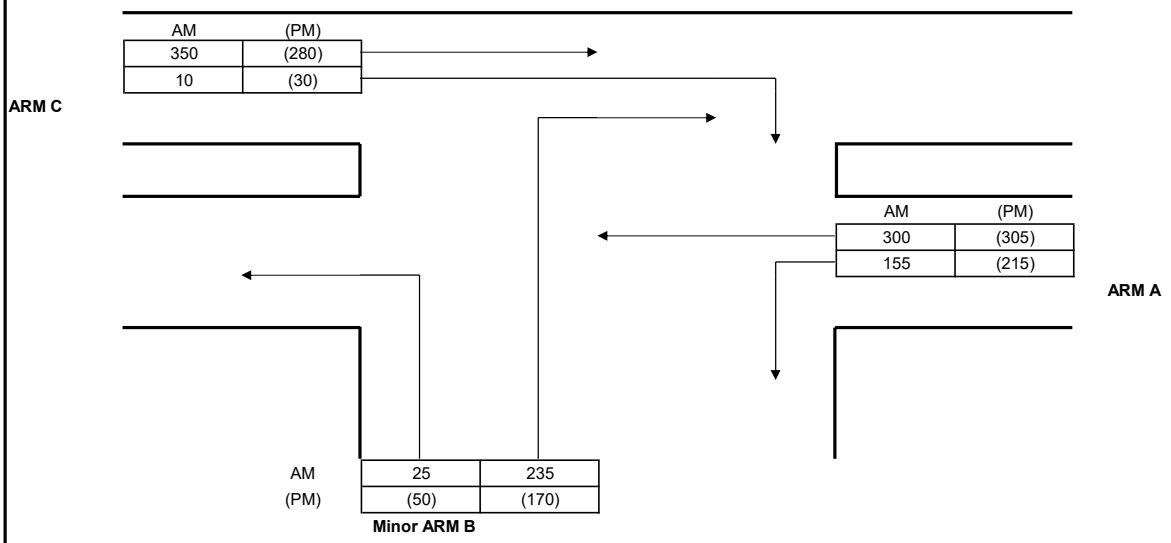
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Palm Springs Boulevard (D)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Palm Springs Boulevard				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	4.00
Central Reserve width	Wcr	0.00		w(b-c)	4.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	30	Calculated	D	0.88
	Vl(b-a)	30		E	0.95
	Vr(b-c)	30		F	0.86
	Vr(c-b)	30		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		350	280
	q(c-b)		10	30
	q(a-b)		155	215
	q(a-c)		300	305
	q(b-a)		235	170
	q(b-c)		25	50
	f		0.10	0.23
		Factor		
CAPACITIES	Q(b-a)	1	407	404
	Q(b-c)	1	612	605
	Q(c-b)	1	534	519
	Q(b-ac)	1	421	437
RFC's	b-a		0.577	0.421
	b-c		0.041	0.083
	c-b		0.019	0.058
	b-ac		0.618	0.503
Worst RFC			**0.618**	**0.503**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

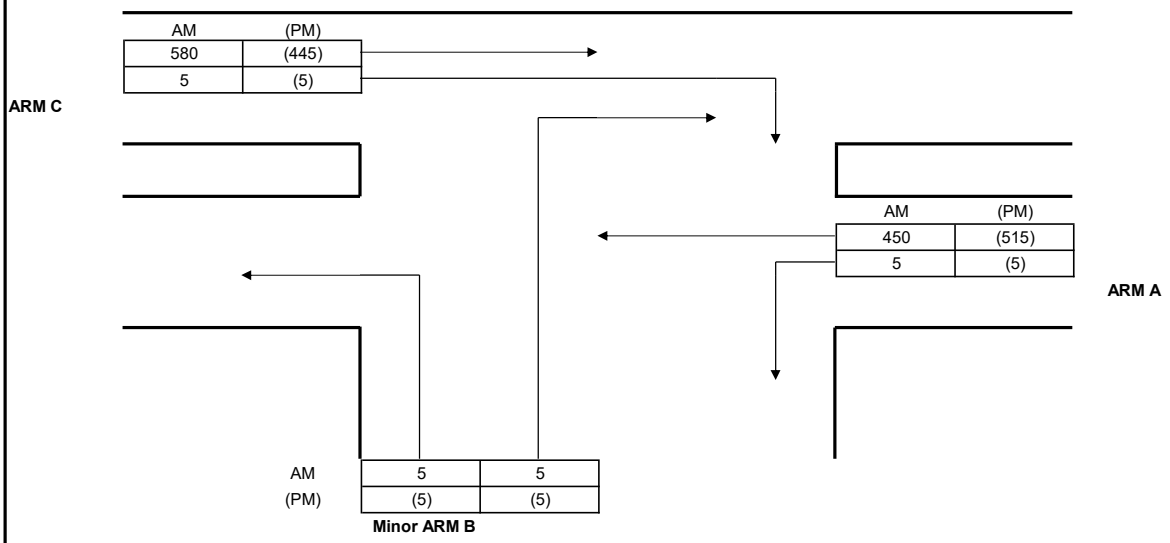
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Geranium Path (E)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Geranium Path				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	50	Calculated	D	0.82
	Vl(b-a)	30		E	0.88
	Vr(b-c)	50		F	0.93
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		580	445
	q(c-b)		5	5
	q(a-b)		5	5
	q(a-c)		450	515
	q(b-a)		5	5
	q(b-c)		5	5
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	326	331
	Q(b-c)	1	546	530
	Q(c-b)	1	578	561
	Q(b-ac)	1	408	407
RFC's	b-a		0.015	0.015
	b-c		0.009	0.009
	c-b		0.009	0.009
	b-ac		0.025	0.025
Worst RFC			**0.025**	**0.025**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

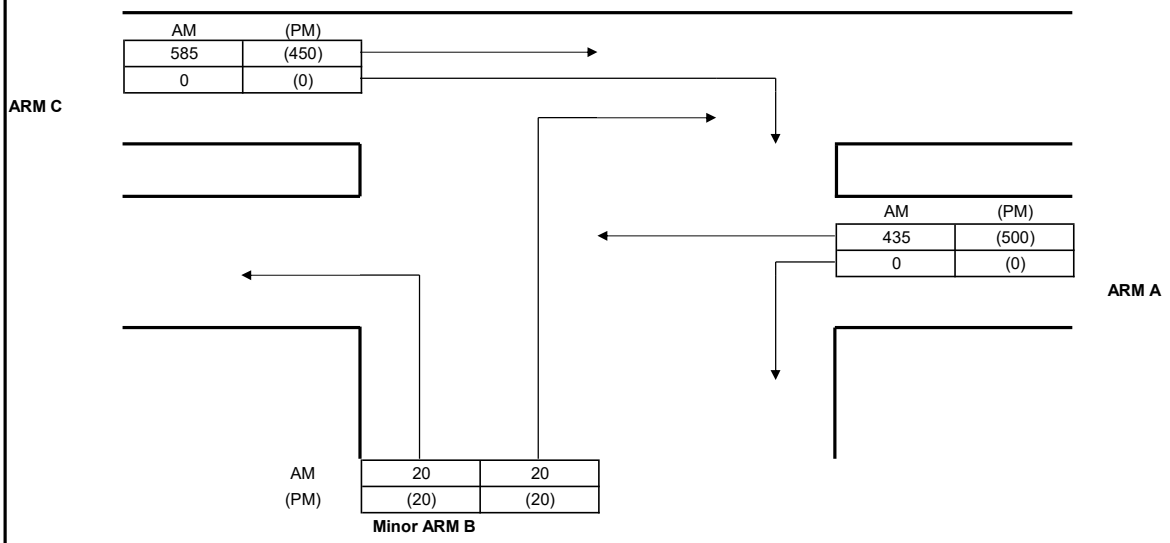
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Yau Pok Road (F)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Yau Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	1.88
Central Reserve width	Wcr	0.00		w(b-c)	1.88
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	16	Calculated	D	0.70
	Vl(b-a)	31		E	0.76
	Vr(b-c)	16		F	0.59
	Vr(c-b)	0		Y	0.78

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		585	450
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		435	500
	q(b-a)		20	20
	q(b-c)		20	20
	f		0.50	0.50
		Factor		
CAPACITIES	Q(b-a)	1	281	285
	Q(b-c)	1	470	456
	Q(c-b)	1	365	354
	Q(b-ac)	1	352	351
RFC's	b-a		0.071	0.070
	b-c		0.043	0.044
	c-b		0.000	0.000
	b-ac		0.114	0.114
Worst RFC			**0.114**	**0.114**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

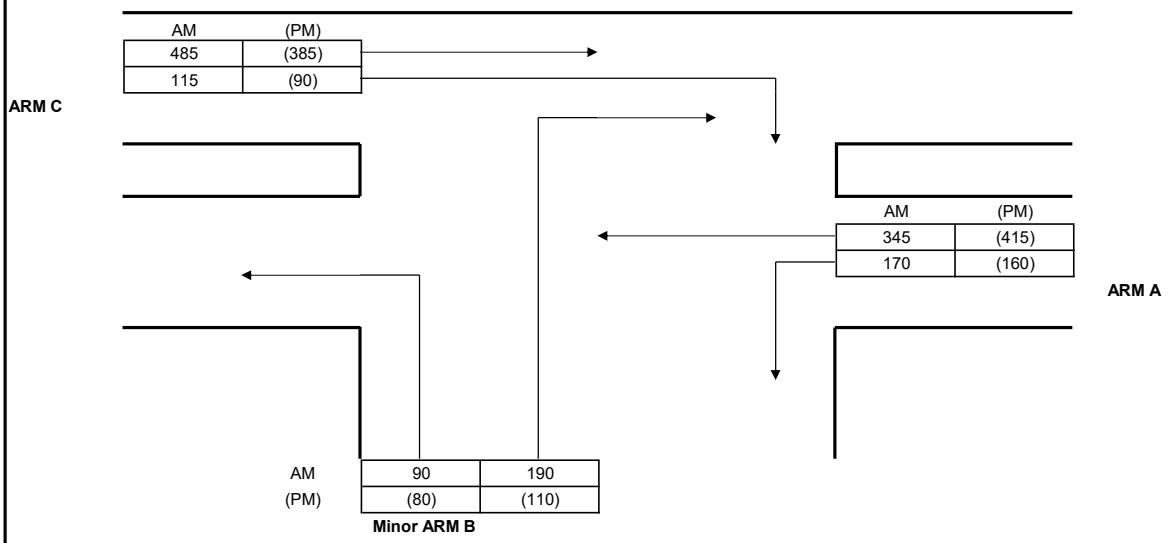
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Tam Mi / Kam Pok Road (G)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Tam Mi				
ARM B:	Kam Pok Road				
ARM C:	Castle Peak Road - Tam Mi				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.50
Visibilities	Vr(b-a)	50	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	50		Y	0.76

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		485	385
	q(c-b)		115	90
	q(a-b)		170	160
	q(a-c)		345	415
	q(b-a)		190	110
	q(b-c)		90	80
	f		0.32	0.42
		Factor		
CAPACITIES	Q(b-a)	1	330	338
	Q(b-c)	1	583	566
	Q(c-b)	1	557	542
	Q(b-ac)	1	384	407
RFC's	b-a		0.576	0.325
	b-c		0.154	0.141
	c-b		0.206	0.166
	b-ac		0.729	0.467
Worst RFC			**0.729**	**0.467**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

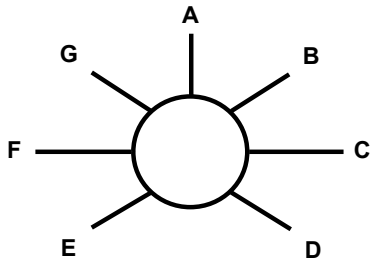
Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Roundabout Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Fairview Park Interchange (H)			Ref. No.:	2039D
Scheme:	Design (Under Improvement 2)			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-

	AM	PM
ARM A:	Fairview Park Boulevard	
ARM B:	Castle Peak Rd E	
ARM C:	NTCR E	
ARM D:	San Tam Rd E	
ARM E:	San Tam Rd W	
ARM F:	NTCR W	
ARM G:	Castle Peak Rd W	



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.00	11.80	20	25	140	35	0.38
B	7.30	12.00	36	30	140	25	0.21
C	7.30	13.00	13	45	140	30	0.70
D	7.30	11.00	23	25	140	35	0.26
E	7.30	12.00	27	25	140	45	0.28
F	6.00	12.50	20	25	140	40	0.52
G	6.50	11.20	22	25	140	35	0.34

AM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	20	205	40	225	470	30	2750	1000	655
B	10	10	145	10	245	375	30	3120	825	630
C	90	70	10	100	470	10	215	2715	965	1230
D	65	20	45	10	260	260	95	3225	755	455
E	40	35	455	65	10	520	20	2150	1145	1830
F	330	320	10	150	610	10	0	1335	1430	1960
G	110	155	360	80	10	315	0	2375	1030	390

PM FLOWS

from \ to	A	B	C	D	E	F	G	Circ	Entry	Exit
A	10	10	165	50	205	335	30	2325	805	980
B	35	10	90	10	165	185	30	2540	525	590
C	185	125	20	80	410	20	200	2255	1040	810
D	70	20	55	20	200	145	65	2870	575	425
E	95	30	275	70	10	285	20	1805	785	1640
F	495	300	10	145	640	20	0	1385	1610	1205
G	90	95	195	50	10	215	10	2640	665	355

CALCULATIONS

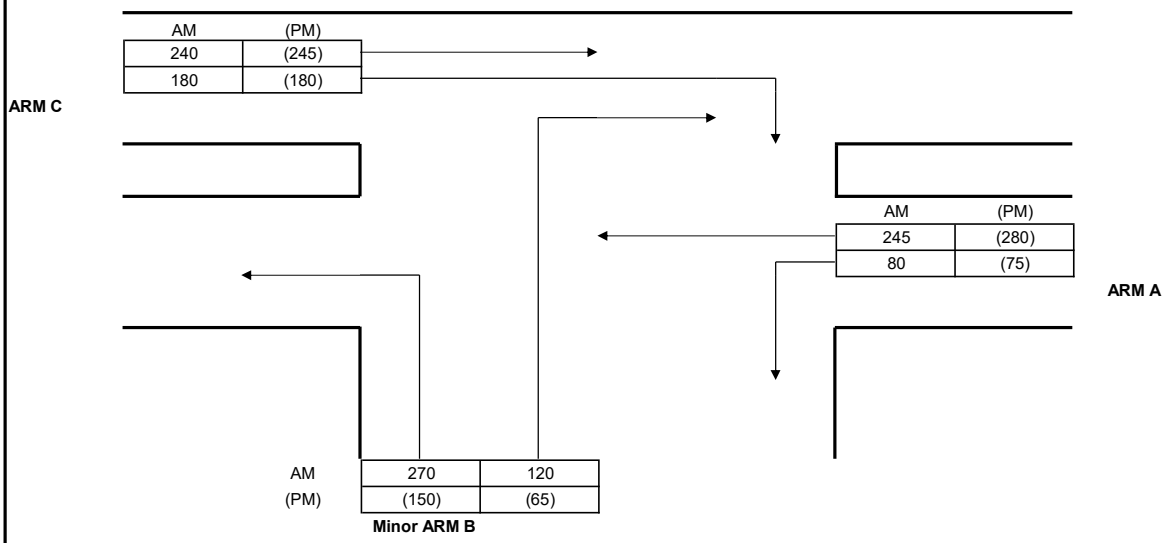
ARM	K	X_2	M	F	t_D	f_c	AM Q_E	PM Q_E	AM RFC	PM RFC
A	0.99	9.71	2980.96	2944	1.00	0.62	1234	1495	0.81	0.54
B	1.03	10.62	2980.96	3216	1.00	0.66	1209	1602	0.68	0.33
C	1.03	9.67	2980.96	2931	1.00	0.62	1291	1583	0.75	0.66
D	0.99	9.74	2980.96	2952	1.00	0.62	948	1166	0.80	0.49
E	0.96	10.32	2980.96	3127	1.00	0.64	1669	1882	0.69	0.42
F	0.98	9.19	2980.96	2783	1.00	0.60	1938	1909	0.74	0.84
G	0.99	9.29	2980.96	2815	1.00	0.60	1379	1221	0.75	0.54
								Crtical Arm:	**A**	**F**
								RFC:	**0.81**	**0.84**
									AM	**PM**

- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		240	245
	q(c-b)		180	180
	q(a-b)		80	75
	q(a-c)		245	280
	q(b-a)		120	65
	q(b-c)		270	150
	f		0.69	0.70
		Factor		
CAPACITIES	Q(b-a)	1	378	370
	Q(b-c)	1	623	615
	Q(c-b)	1	593	586
	Q(b-ac)	1	520	512
RFC's	b-a		0.317	0.176
	b-c		0.433	0.244
	c-b		0.304	0.307
	b-ac		0.750	0.420
Worst RFC			**0.750**	**0.420**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

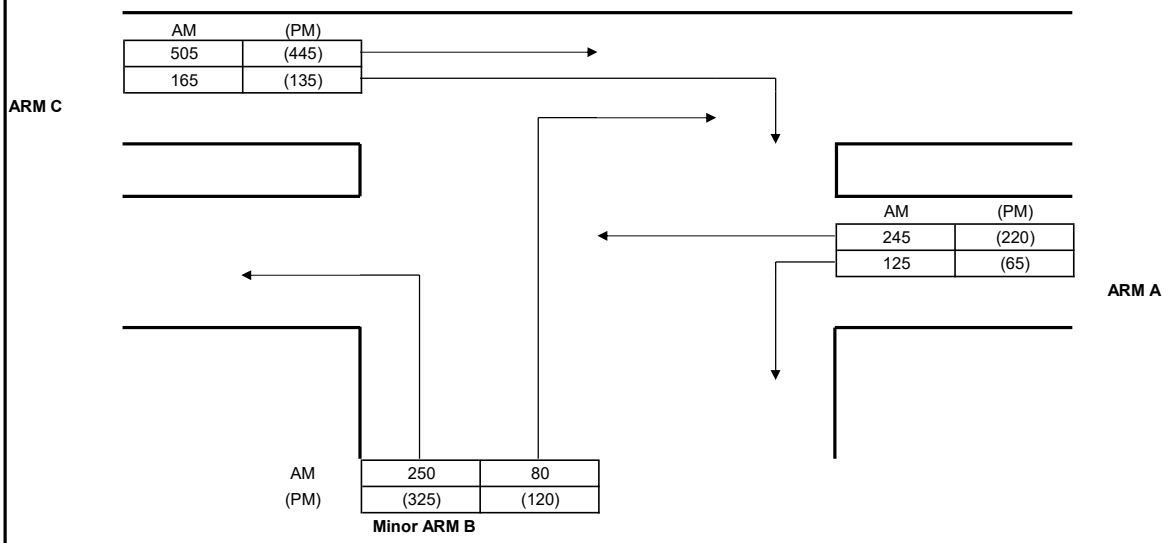
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Aug-25	Checked by:	CFC

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	Castle Peak Road San Tin / Kwu Tung Road (J)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - San Tin				
ARM B:	Kwu Tung Road				
ARM C:	Castle Peak Road - San Tin				



GEOMETRY					
Major road width	W	8.00	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	40	Calculated	D	0.86
	Vl(b-a)	40		E	0.92
	Vr(b-c)	35		F	0.89
	Vr(c-b)	35		Y	0.72

ANALYSIS				
			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		505	445
	q(c-b)		165	135
	q(a-b)		125	65
	q(a-c)		245	220
	q(b-a)		80	120
	q(b-c)		250	325
	f		0.76	0.73
		Factor		
CAPACITIES	Q(b-a)	1	348	378
	Q(b-c)	1	613	625
	Q(c-b)	1	578	598
	Q(b-ac)	1	518	532
RFC's	b-a		0.230	0.317
	b-c		0.408	0.520
	c-b		0.285	0.226
	b-ac		0.637	0.836
Worst RFC			**0.637**	**0.836**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

Roundabout Capacity Calculation

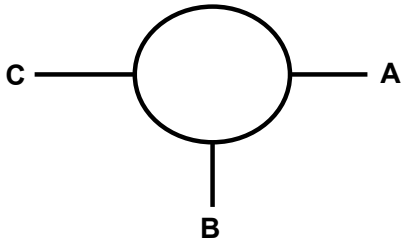
Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD103				
Junction:	San Tin Interchange (K)			Ref. No.:	2039D
Scheme:	Design			Ref. No.:	
Year:	2039	Job No.:	CHK50800610	Rev.:	-

AM PM

ARM A: San Tin Highway Slip Road

ARM B: San Sham Road

ARM C: Fanling Highway Slip Road



GEOMETRY

ARM	v	e	L	r	D	Phi	S
A	7.70	14.40	75	30	103	40	0.14
B	8.80	11.70	75	30	103	40	0.06
C	8.80	12.00	40	100	103	30	0.13

AM FLOWS

from \ to	A	B	C	Circ	Entry
A	1060	655	1315	365	3030
B	585	0	0	2645	585
C	645	95	270	1645	1010

PM FLOWS

from \ to	A	B	C	Circ	Entry
A	770	570	870	395	2210
B	790	0	0	1910	790
C	580	125	270	1560	975

CALCULATIONS

ARM	K	X_2	M	F	t_D	f_c	Q_E AM	Q_E PM	RFC AM	RFC PM
A	0.98	12.91	73.70	3912	1.01	0.76	3569	3546	0.85	0.62
B	0.98	11.38	73.70	3448	1.01	0.69	1587	2086	0.37	0.38
C	1.04	11.35	73.70	3438	1.01	0.69	2391	2452	0.42	0.40

Crtical Arm:	**A**	**A**
RFC:	**0.85**	**0.62**
	AM	**PM**

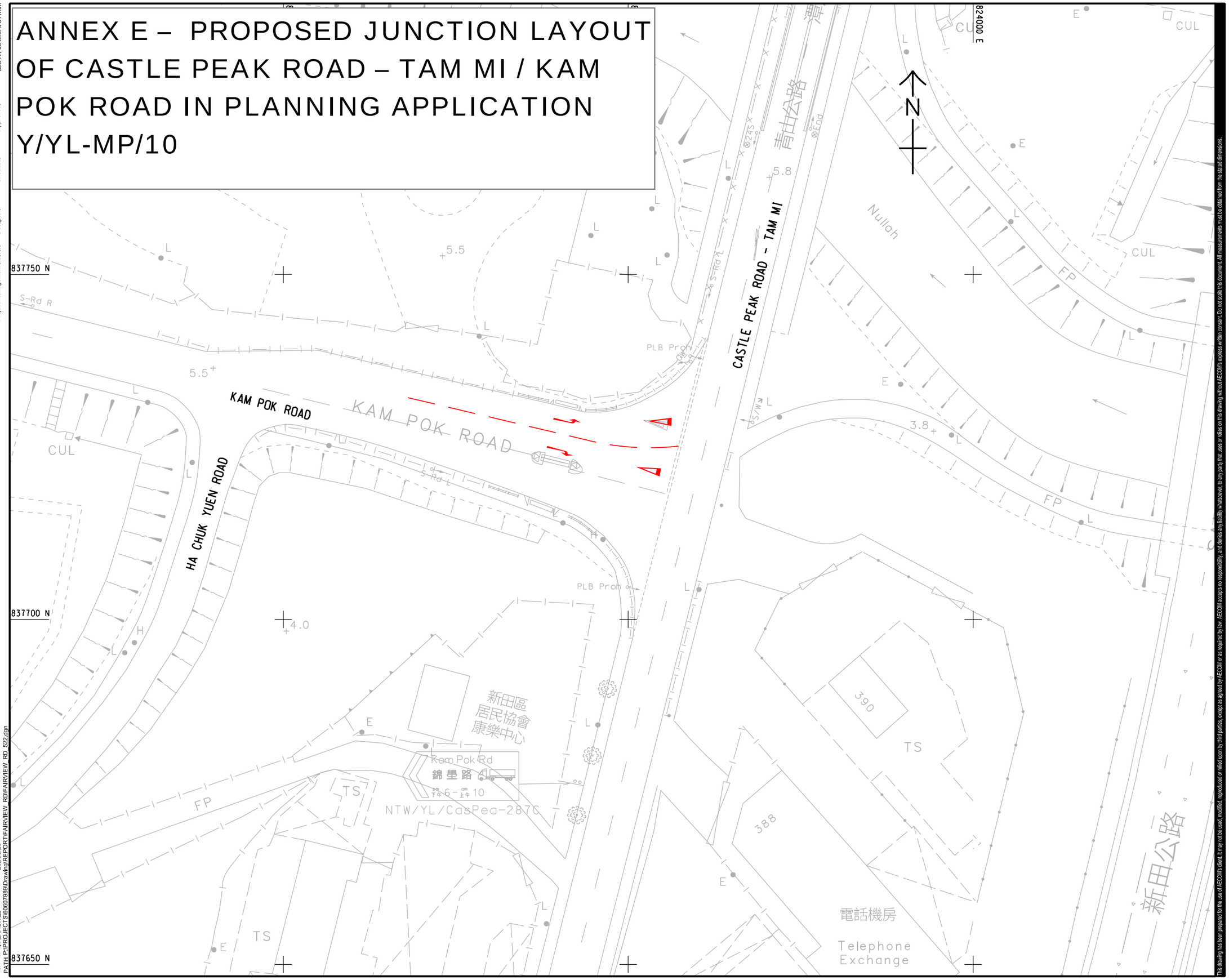
- In accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

ANNEX E –

PROPOSED JUNCTION LAYOUT OF CASTLE PEAK ROAD – TAM MI / KAM POK ROAD IN PLANNING APPLICATION Y/YL-MP/10

ANNEX E – PROPOSED JUNCTION LAYOUT OF CASTLE PEAK ROAD – TAM MI / KAM POK ROAD IN PLANNING APPLICATION Y/YL-MP/10



AECOM

PROJECT
項目

S.12A PLANNING APPLICATION FOR REZONING VARIOUS LOTS & ADJACENT G.L. IN DD 104, "R(D)" SITE, KAM TIN, YUEN LONG

CLIENT
業主

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 校核

STATUS
階段

SCALE 比例: A3 1 : 500

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60607989

CONTRACT NO. 合約編號

SHEET TITLE
圖紙名稱

PROPOSED IMPROVEMENT LAYOUT FOR CASTLE PEAK ROAD - TAM MI/ KAM POK ROAD (J2)
- UNDER SENSITIVITY TEST (I)

SHEET NUMBER
圖紙編號

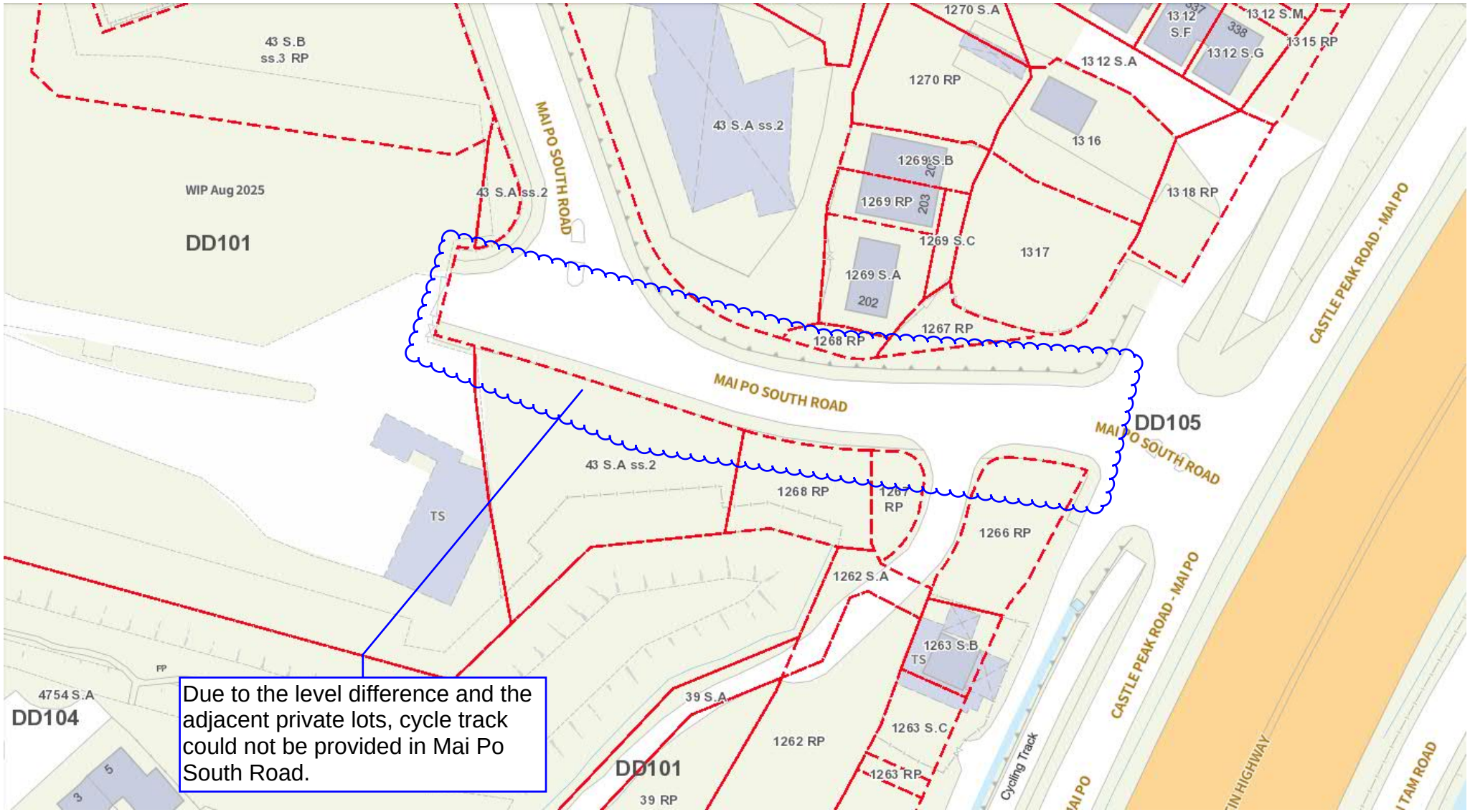
FIGURE 4.8

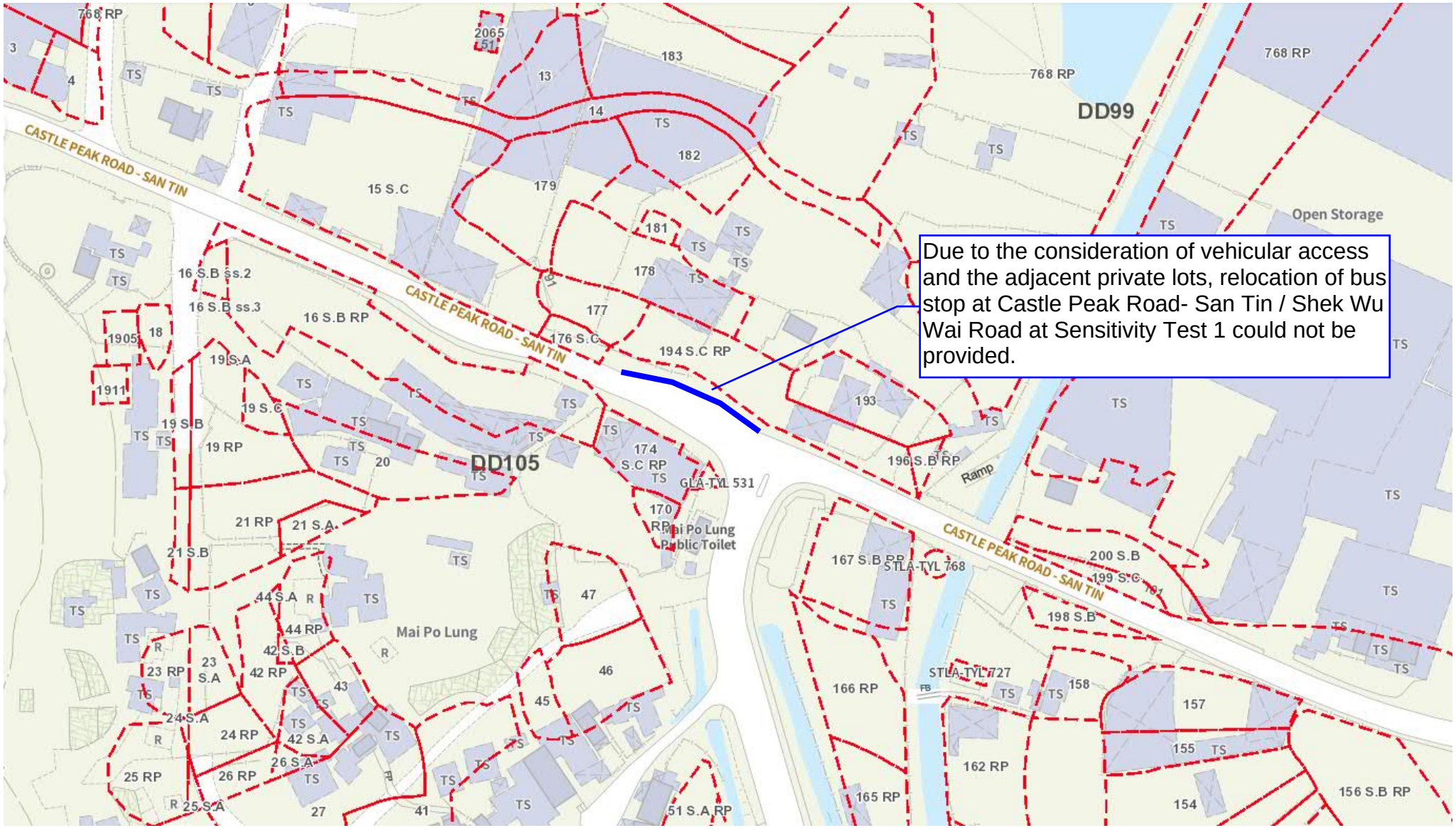
This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:

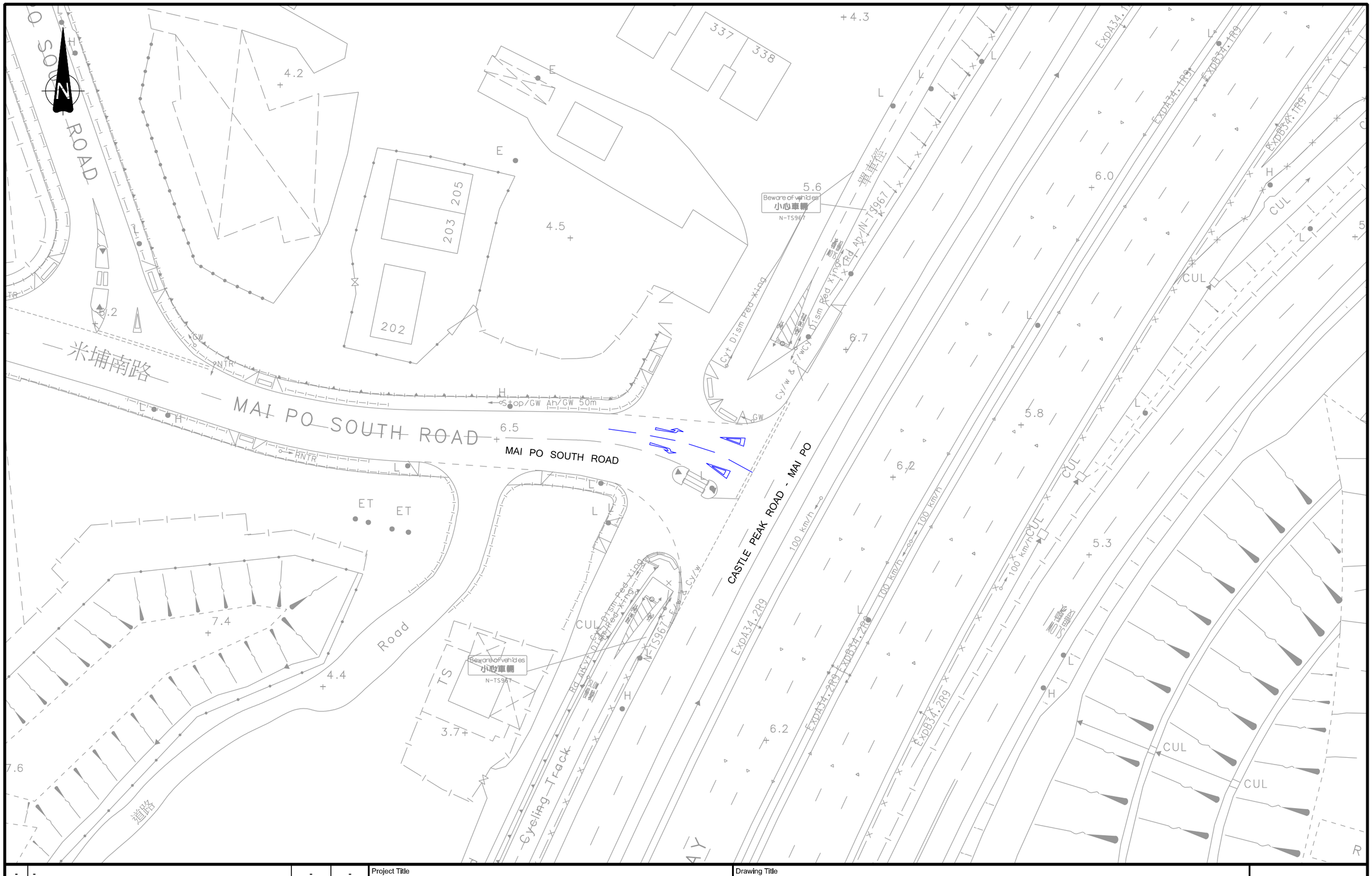
V:\BAK\US95-BAK\CSWP\plotdrv\Create Plt file\new\CSWP-75(color).plt
Plot File by: ZHAOHQ2 2024/9/20
PATH P:\PROJECTS\60607989\Drawing\REPORT\FAIRVIEW_RD\FAIRVIEW_RD_522.dgn

ANNEX F –
SCREEN CAPTURE FROM GEOINFO MAP


43 S.B
ss.3 RP
WIP Aug 2025
DD101
43 S.A ss.2
MAI PO SOUTH ROAD
43 S.A ss.2
1270 S.A
1270 RP
1312 S.A
1312 S.F
1312 S.M
1312 S.G
1315 RP
1316
1269 S.B
1269 RP
203
1318 RP
1269 S.C
1317
1269 S.A
202
1268 RP
1267 RP
MAI PO SOUTH ROAD
DD105
CASTLE PEAK ROAD - MAI PO
43 S.A ss.2
1268 RP
1267 RP
TS
1266 RP
1262 S.A
1263 S.B
TS
4754 S.A
DD104
39 S.A
1262 RP
DD101
1263 S.C
1263 RP
39 RP
Cycling Track
CASTLE PEAK ROAD - MAI PO
Due to the level difference and the adjacent private lots, cycle track could not be provided in Mai Po South Road.


Due to the consideration of vehicular access and the adjacent private lots, relocation of bus stop at Castle Peak Road- San Tin / Shek Wu Wai Road at Sensitivity Test 1 could not be provided.
CASTLE PEAK ROAD - SAN TIN
DD99
DD105
Open Storage
Mai Po Lung
Mai Po Lung Public Toilet
Ramp
768 RP
183
182
179
181
178
177
176 S.C
194 S.C RP
193
196 S.B RP
174 S.C RP
170 RP
GLA-TYL 531
STLA-TYL 768
STLA-TYL 727
167 S.B RP
200 S.B
199 S.C
198 S.B
166 RP
162 RP
165 RP
158
157
155
154
156 S.B RP
51 S.A RP
15 S.C
16 S.B ss.2
16 S.B ss.3
16 S.B RP
19 S.A
19 S.C
19 S.B
19 RP
21 RP
21 S.A
21 S.B
44 S.A
44 RP
42 S.B
42 RP
23 RP
23 S.A
24 S.A
24 RP
42 S.A
26 S.A
26 RP
25 RP
25 S.A
27
41
43
45
46
47
20
18
1905
1911
2065
51
13
14

ANNEX G – INDICATIVE JUNCTION IMPROVEMENT LAYOUT OF JUNCTION I



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMPREHENSIVE DEVELOPMENT AT
WO SHANG WAI, YUEN LONG, LOTS 77 AND 50 S.A IN DD101

Drawing Title

INDICATIVE JUNCTION IMPROVEMENT OF CASTLE PEAK ROAD - MAI PO / MAI PO SOUTH ROAD (I)

Designed	Checked	Scale	Date	Drawing No.	Rev.
MYC	CFC	1:500(A3)	JUN 2024	1	-

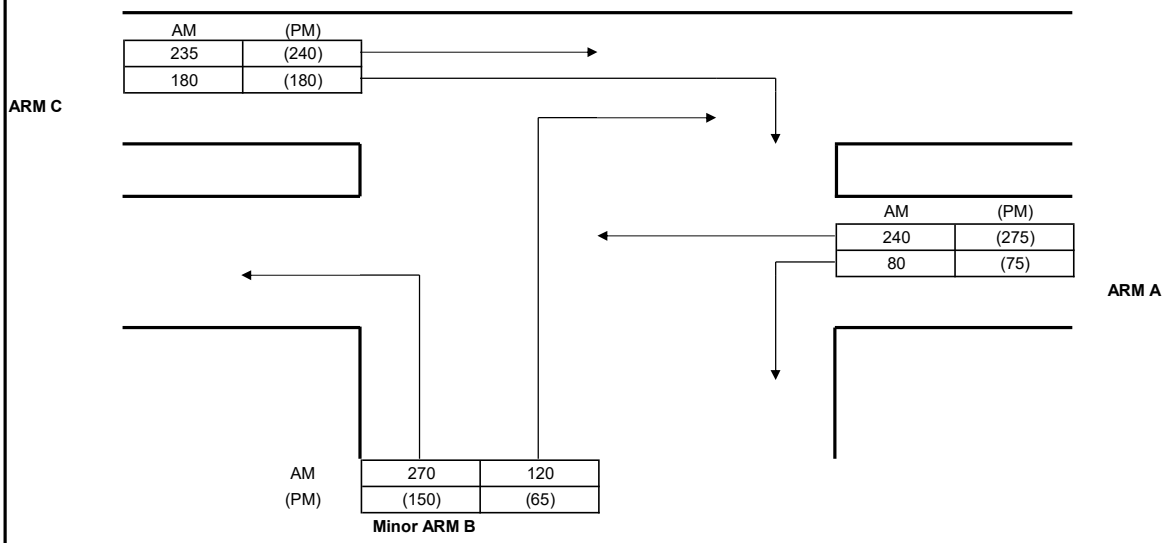
SYSTRA MVA

CHK50800610/TIA/F312.DGN/LHO/03JAN25

Original Size : A3

Priority Junction Capacity Calculation

Job Title:	Proposed Residential Development at Wo Shang Wai, Mai Po, Yuen Long, Lots 77 and 50 S.A in DD101				
Junction:	Castle Peak Road Mai Po / Mai Po South Road (I)			Ref. No.:	2034D
Scheme:	Design			Ref. No.:	
Year:	2034	Job No.:	CHK50800610	Rev.:	-
ARM A:	Castle Peak Road - Mai Po				
ARM B:	Mai Po South Road				
ARM C:	Castle Peak Road - Mai Po				



GEOMETRY					
Major road width	W	6.90	Lane widths	w(b-a)	3.60
Central Reserve width	Wcr	0.00		w(b-c)	3.60
2 Lane Minor Arm (Y/N)		Y		w(c-b)	3.30
Visibilities	Vr(b-a)	50	Calculated	D	0.87
	Vl(b-a)	30		E	0.93
	Vr(b-c)	50		F	0.91
	Vr(c-b)	50		Y	0.76

ANALYSIS			AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		235	240
	q(c-b)		180	180
	q(a-b)		80	75
	q(a-c)		240	275
	q(b-a)		120	65
	q(b-c)		270	150
	f		0.69	0.70
		Factor		
CAPACITIES	Q(b-a)	1	380	372
	Q(b-c)	1	625	616
	Q(c-b)	1	595	587
	Q(b-ac)	1	521	514
RFC's	b-a		0.316	0.175
	b-c		0.432	0.244
	c-b		0.303	0.307
	b-ac		0.000	0.000
Worst RFC			**0.432**	**0.307**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	MYC	Date:	Sept-25	Checked by:	CFC

☐Urgent ☐Return receipt ☐Expand Group ☐Restricted ☐Prevent Copy ☐Confidential

From:	Michelle Li [redacted]
Sent:	2025-09-18 星期四 16:03:40
To:	tpbpd/PLAND <tpbpd@pland.gov.hk>
Cc:	Karen Kei Yee CHAN/PLAND <kkychan2@pland.gov.hk>; Benson Poon [redacted]; Ian BROWNLEE [redacted]; Pak Him CHIU/PLAND <phchiu@pland.gov.hk>; Yen PY LEUNG/PLAND <pyleung@pland.gov.hk>; Timothy Yuet Sang CHAN/PLAND <tyschan@pland.gov.hk>
Subject:	Re: S12A Planning Application No. Y/YL-MP/9 - 2nd Further Information submission

Dear Secretariat of the Town Planning Board,

Following our discussion with the DPO, we would like to submit replacement pages for our 2nd Further Information submission.

Please find softcopy of the replacement pages in the following link: [redacted]

Thank you.

Kind regards,
Michelle Li

Masterplan Limited
Rm 3516B, 35/F, China Merchants Tower,
Shun Tak Centre,
200 Connaught Road Central,
Hong Kong

Direct Line: [redacted]

-------- Original Message --------
From: Michelle Li
To: Tpbpd
Cc: kkychan2@pland.gov.hk , Benson Poon , Ian BROWNLEE , Pak Him CHIU/PLAND , Yen PY LEUNG/PLAND , Timothy Yuet Sang CHAN/PLAND , Karen Kei Yee CHAN/PLAND
Sent: Thu, 18 Sep 2025 10:56:06 +0800
Subject: S12A Planning Application No. Y/YL-MP/9 - 2nd Further Information submission

Dear Secretariat of the Town Planning Board,

On behalf of the Applicant, Profit Point Enterprises Limited, we would like to make our 2nd Further Information submission which includes responses to departmental comments.

Enclosed, please find our cover letter. The softcopy of our FI submission can be found in the following link: [redacted]

The hardcopies will be delivered to your office shortly. Thank you.

Kind regards,
Michelle Li

☐Urgent ☐Return receipt ☐Expand Group ☐Restricted ☐Prevent Copy ☐Confidential

Masterplan Limited
Rm 3516B, 35/F, China Merchants Tower,
Shun Tak Centre,
200 Connaught Road Central,
Hong Kong

Direct Line: [redacted]

Previous s.16 Applications covering the Application Site

Approved Applications

No.	Application No.	Use(s)/Development(s)	Date of Consideration (RNTPC)
1.	A/YL-MP/166	Proposed Comprehensive Development to include Wetland Restoration Area	19.9.2008 [lapsed in 2012]
2.	A/YL-MP/185	Proposed Comprehensive Development to include Wetland Restoration Area (Houses and Wetland Habitat) (Proposed Amendments to an Approved Scheme)	21.10.2011 [lapsed in 2015]
3.	A/YL-MP/229	Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land	27.2.2015 [commenced in 2016]
4.	A/YL-MP/291	Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme)	10.7.2020 [lapsed in 2024]
5.	A/YL-MP/344	Proposed Comprehensive House and Wetland Habitat Development with Filling and Excavation of Land (Amendments to an Approved Scheme)	16.2.2024

Government Departments' Detailed Comments

1. Traffic

Comments of the Chief Engineer/1-1, Railway Development Office, Highways Department:

- the application site (the Site) is within or close to the railway protection boundary of the High Speed Rail which has been fully commissioned. With reference to the Development Bureau Technical Circular (Works) No. 1/2019 and/or Practice Notes for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-24, MTR Corporation Limited should be consulted with respect to the operation, maintenance, safety and any future works required for the existing railways.

2. Landscape

Comments of the Chief Town Planner/Urban Design and Landscape, Planning Department:

- the applicant is advised that approval of the application does not imply the application for tree works approval, if any, such as pruning, transplanting and felling. The applicant is reminded to seek comments and approval for any proposed tree works from the relevant department; and

- for the compliance of site coverage of greenery requirements under PNAP APP-152, submission should be made separately to Building Department (BD) for comments and approval.

3. Drainage

Comments of the Chief Engineer/Mainland North, Drainage Services Department (DSD):

- the applicant shall ascertain that all existing flow paths would be properly intercepted and maintained without increasing the flooding risk of the adjacent areas;

- the applicant is reminded that the proposed drainage proposal/works as well as the site boundary should not cause encroachment upon areas outside DSD's jurisdiction;

- no public sewerage maintained by DSD is currently available for connection. No sewerage collected from the Site should be discharged to the drainage system. For sewage disposal and treatment, agreement from Director of Environmental Protection shall be obtained;

- the applicant should consult District Lands Officer/Yuen Long regarding all the proposed drainage works outside the lot boundary in order to ensure the unobstructed discharge from the Site in future; and

- all the proposed drainage facilities should be constructed and maintained by the applicant at his own cost. The applicant should ensure and keep all drainage works on site under proper maintenance at all times.

4. <u>Building Matters</u>

Comments of the Chief Building Surveyor/New Territories West, BD:

- before any new building works are to be carried out on the Site, prior approval and consent of the Building Authority (BA) should be obtained unless they are exempted building works, designated exempted works or minor works commenced under the simplified requirements under the Buildings Ordinance (BO). Otherwise they are Unauthorised Building Works (UBWs). An Authorised Person should be appointed as the co-ordinator for the proposed building works in accordance with the BO;

- for UBW erected on the leased land, enforcement action may be taken by the BA to effect their removal in accordance with BD's enforcement policy against UBWs as and when necessary. The granting of any planning approval should not be construed as an acceptance of any existing building works or UBWs on the Site under the BO.

- the Site shall be provided with means of obtaining access thereto from a street and emergency vehicular access under regulation 5 and 41D of Building (Planning) Regulations (B(P)R) respectively;

- presumably the Site will abut on specified street(s) of not less than 4.5m wide, the development intensity shall not exceed the permissible under the First Schedule of B(P)R. Otherwise, if the Site does not abut on a specified street of not less than 4.5m wide, its permitted development intensity shall be determined under regulation 19(3) of B(P)R;

- in view of the size of the Site, area of any internal streets/roads required under section 16(1)(p) of the BO should be deducted from the site area for the purpose of plot ratio and site coverage calculations under the BO;

- each phase of the development should be self-sustainable under the BO;

- if the proposed plot ratio (PR) is based on the assumption that gross floor area (GFA) exemption will be granted for green/amenity features and non-mandatory/non-essential plant room, etc., the pre-requisites under PNAP APP-151 and APP-152 should be complied with;

- recreation facilities may be exempted from GFA calculation under BO if they comply with the requirements under PNAP APP-42 and APP-104;

- the proposed residential care home for the elderly (RCHE) may be subject to the issuance of a licence. Please be reminded that any proposed building works on the Site intended to be used for such purpose is required to comply with the building safety and other relevant requirements as may be imposed by the licensing authority;

- the RCHE which is for habitation is domestic use under the BO. The modification of Regulations 19, 20, 21, 22 and 25 of the B(P)R for treating RCHE as a non-domestic building for the purpose of site coverage, PR calculation and provision of open space may be granted subject to the compliance with the requirements under PNAP APP-172;

- disregarding car parking spaces, loading and unloading lay-by from GFA calculation under BO will be considered on the basis of the criteria set out in PNAP APP-2 and APP-111 during building plans submission stage;

- comment is reserved on the high headroom of about 4.5m for the upper floors in houses in the planning application stage and detailed comment under the BO on the high headroom issue will be carried out at building plan submission stage; and

- detailed checking under the BO will be carried out at building plan submission stage.

5. <u>Food and Environmental Hygiene</u>

Comments of the Director of Food and Environmental Hygiene:

- no Food and Environmental Hygiene Department (FEHD)'s facilities will be affected;

- proper licence/permit issued by this FEHD is required if there is any food business/catering service/activities regulated by the Director of Food and Environmental Hygiene under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public. Pursuant to section 4 of the Food Business Regulation (Cap. 132X), the expression of "food business" does not include any club;

- proper licence issued by FEHD is required if related place of entertainment is involved. Any person who desires to keep or use any place of public entertainment for example a theatre and cinema or a place, building, erection or structure, whether temporary or permanent, on one occasion or more, capable of accommodating the public presenting or carrying on public entertainment within Places of Public entertainment (PPE) Ordinance (Cap. 172) and its subsidiary legislation, such as a concert, opera, ballet, stage performance or other musical, dramatic or theatrical entertainment, cinematograph or laser projection display or an amusement ride and mechanical device which is designed for amusement, a Place of Public Entertainment Licence (or Temporary Place of Public Entertainment Licence) should be obtained from FEHD whatever the general public is admitted with or without payment;

- swimming pool licence must be obtained from FEHD for any artificially constructed pool used for swimming or bathing and to which the public have access (whether on payment or otherwise) or which is operated by any club, institution, association or other organization. A swimming pool licence is not required for any swimming pool which serves not more than 20 residential units and to which the public have no access;

- there should be no encroachment on the public place and no environmental nuisance should be generated to the surroundings. Its state should not be a nuisance or injurious or dangerous to health and surrounding environment. Also, for any waste generated from such activities/operation, the applicant should arrange disposal properly at their own expenses;

- if provision of cleansing service for new public roads, streets, cycle tracks, footpaths, paved areas etc., is required, FEHD should be separately consulted. Prior consent from FEHD must be obtained and sufficient amount of recurrent cost may have to be provided to FEHD; and

- if domestic waste collection service of FEHD is required in future, prior comments from FEHD on the waste collection plan, including the accessibility and maneuverability of refuse collection vehicle to refuse collection point, should be sought.

6. <u>Geotechnical</u>

Comments of the Head of the Geotechnical Engineering Office, Civil Engineering and Development Department:

- the applicant is reminded to submit the proposed building works to BD for approval as required under the provisions of BO.