

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.info.gov.hk/tpb/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.info.gov.hk/tpb/tc/plan_application/apply.html

2021年 10月 22日

此文件在 _____ 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 22 OCT 2021
The Town Planning Board will formally acknowledge
the date of receipt of the application only upon receipt
of all the required information and documents.

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

For Official Use Only 請勿填寫此欄	Application No. 申請編號	Y / YL-PS/4
	Date Received 收到日期	22 OCT 2021

- 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。
- 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.info.gov.hk/tpb/>. 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.info.gov.hk/tpb/>), 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 樓及新界沙田上禾輦路 1 號沙田政府合署 14 樓)索取。
- 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。

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)

On Billion International Limited 安兆國際有限公司

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)

Aikon Development Consultancy Limited 毅勤發展顧問有限公司

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 <input checked="" type="checkbox"/> No 否 <input type="checkbox"/> (Please proceed to Part 6 請繼續填寫第 6 部分)
(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)	Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories
(c) Site Area 申請地點面積	14,080sq.m 平方米 <input checked="" type="checkbox"/> About 約

(d) Area of Government land included (if any) 所包括的政府土地面積 (倘有)	1,925 sq.m 平方米	<input checked="" type="checkbox"/> About 約
(e) Current use(s) 現時用途	Warehouse for storage, open car park (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. "Current Land Owner" of Application Site 申請地點的「現行土地擁有人」

The applicant 申請人 -

- ☐ is the sole "current land owner" (please proceed to Part 6 and attach documentary proof of ownership).
是唯一的「現行土地擁有人」 (請繼續填寫第 6 部分，並夾附業權證明文件)。
- ☒ is one of the "current land owners" (please attach documentary proof of ownership).
是其中一名「現行土地擁有人」 (請夾附業權證明文件)。
- ☐ is not a "current land owner".
並不是「現行土地擁有人」。

- ☐ The application site is entirely on Government land (please proceed to Part 6).
申請地點完全位於政府土地上 (請繼續填寫第 6 部分)。

5. Statement on Owner's Consent/Notification

就土地擁有人的同意/通知土地擁有人的陳述

- (a) According to the record(s) of the Land Registry as at 04/10/2021 (DD/MM/YYYY), this application involves a total of 3 "current land owner(s)".
根據土地註冊處截至 2021 年 10 月 04 日的記錄，這宗申請共牽涉 3 名「現行土地擁有人」。

(b) The applicant 申請人 -

- ☒ has obtained consent(s) of 2 "current land owner(s)".
已取得 2 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)
2	Lot 1341 S.B. RP & 1341 S.B. ss.1 S.J. RP in D.D. 121	07/09/2021

(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 owner(s):
已採取合理步驟以取得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 Owner(s) 取得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 Owner(s) 向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，或有關係的鄉事委員會[&]

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	Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19
(b) Land use zone(s) involved (if applicable) 涉及的土地用途地帶(如適用)	"Village Type Development" and "Comprehensive Development 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)	
<input type="checkbox"/> Comprehensive Development Area [] 綜合發展區 [] <input checked="" type="checkbox"/> Residential (Group <input type="checkbox"/> A/ <input checked="" type="checkbox"/> B/ <input type="checkbox"/> C/ <input type="checkbox"/> D/ <input type="checkbox"/> E) [2] 住宅 (<input type="checkbox"/> 甲類 / <input type="checkbox"/> 乙類 / <input type="checkbox"/> 丙類 / <input type="checkbox"/> 丁類 / <input type="checkbox"/> 戊類) [] <input type="checkbox"/> Agriculture [] 農業 [] <input type="checkbox"/> Industrial (Group D) [] 工業 (丁類) [] <input type="checkbox"/> Government, Institution or Community [] 政府、機構或社區 [] <input type="checkbox"/> Recreation [] 康樂 [] <input type="checkbox"/> Country Park [] 郊野公園 [] <input type="checkbox"/> Conservation Area [] 自然保育區 [] <input type="checkbox"/> Other Specified Uses (<input type="checkbox"/> Business/ <input type="checkbox"/> Industrial Estate/ <input type="checkbox"/> Mixed Use/ <input type="checkbox"/> Rural Use/ <input type="checkbox"/> Petrol Filling Station/ <input type="checkbox"/> Others (please specify _____)) [] 其他指定用途 (<input type="checkbox"/> 商貿 / <input type="checkbox"/> 工業邨 / <input type="checkbox"/> 混合用途 / <input type="checkbox"/> 鄉郊用途 / <input type="checkbox"/> 加油站 / <input type="checkbox"/> 其他 (請註明: _____)) [] <input type="checkbox"/> Road 道路	<input type="checkbox"/> Commercial [] 商業 [] <input type="checkbox"/> Village Type Development [] 鄉村式發展 [] <input type="checkbox"/> Industrial [] 工業 [] <input type="checkbox"/> Open Storage [] 露天貯物 [] <input type="checkbox"/> Open Space [] 休憩用地 [] <input type="checkbox"/> Green Belt [] 綠化地帶 [] <input type="checkbox"/> Coastal Protection Area [] 海岸保護區 [] <input type="checkbox"/> Site of Special Scientific Interest [] 具特殊科學價值地點 [] <input type="checkbox"/> Others (please specify _____) 其他 (請註明: _____)
Please insert subzone in [] as appropriate. 請於[]內註明支區，如適用。	
<input checked="" type="checkbox"/> Proposed Notes of Schedule of Uses of the zone attached 已夾附對土地用途地帶的《註釋》的擬議修訂	

(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)

Please refer to the attached Planning Statement.

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 attached Planning Statement.

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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 an application to the Board 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

Grace

Grace CHEUNG

Name in Block Letters
姓名（請以正楷填寫）

☐ Applicant 申請人 / ☒ Authorised Agent 獲授權代理人

Assistant Town Planner

Position (if applicable)
職位（如適用）

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

- ☐ 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 註冊專業規劃師

Others 其他

on behalf of
代表

Aikon Development Consultancy Limited



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

Date 日期

09/09/2021

(DD/MM/YYYY 日/月/年)

Remark 備註

The materials submitted in an application to the Board 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

<input checked="" type="checkbox"/> Proposed Gross floor area (GFA) 擬議總樓面面積	47,780	sq.m. 平方米	<input checked="" type="checkbox"/> About 約
<input checked="" type="checkbox"/> Proposed plot ratio 擬議地積比率	3.39		<input checked="" type="checkbox"/> About 約
<input checked="" type="checkbox"/> Proposed site coverage 擬議上蓋面積	31.66	%	<input checked="" type="checkbox"/> About 約
<input checked="" type="checkbox"/> Proposed number of blocks 擬議座數	5 (excluding 1 one-storey clubhouse block)		
<input checked="" type="checkbox"/> Proposed number of storeys of each block 每座建築物的擬議層數	6-19	storeys 層	
	<input type="checkbox"/> include 包括	storeys of basements 層地庫	
	<input checked="" type="checkbox"/> exclude 不包括	1 storeys of basements 層地庫	
<input checked="" type="checkbox"/> Proposed building height of each block 每座建築物的擬議高度	Not more than 65.85	m 米	<input type="checkbox"/> About 約
	(Domestic) +54.25 to +79.45 mPD 米(主水平基準上)		<input checked="" type="checkbox"/> About 約
	(Non-domestic) +39.35		
<input checked="" type="checkbox"/> Domestic part 住用部分			
GFA 總樓面面積	42,240	sq.m. 平方米	<input checked="" type="checkbox"/> About 約
number of units 單位數目	840		
average unit size 單位平均面積	50.3	sq.m. 平方米	<input checked="" type="checkbox"/> About 約
estimated number of residents 估計住客數目	2,520		
<input checked="" type="checkbox"/> Non-domestic part 非住用部分			
<input type="checkbox"/> hotel 酒店		sq.m.平方米	<input type="checkbox"/> About 約
		sq.m.平方米	<input type="checkbox"/> About 約
	(please specify the number of rooms 請註明房間數目:		
<input type="checkbox"/> office 辦公室		sq.m.平方米	<input type="checkbox"/> About 約
<input checked="" type="checkbox"/> shop and services/eating place 商店及服務行業/食肆	140	sq.m.平方米	<input checked="" type="checkbox"/> About 約
<input checked="" type="checkbox"/> 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) Social Welfare Facility (Residential Care for Home Elderly) Concerned land area: about 2,392 sq.m. GFA: about 5,400 sq.m.		
<input type="checkbox"/> 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)		
<input checked="" type="checkbox"/> Open space 休憩用地	(please specify land area(s)) (請註明面積)		
<input checked="" type="checkbox"/> private open space 私人休憩用地	2,834.9	sq.m.平方米	<input checked="" type="checkbox"/> Not less than 不少於
<input type="checkbox"/> public open space 公共休憩用地		sq.m.平方米	<input type="checkbox"/> 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

202

Motorcycle Parking Spaces 電單車車位

11

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)

Bicycle Parking Spaces: 56

☒ 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

Coach Spaces 旅遊巴車位

Light Goods Vehicle Spaces 輕型貨車車位

Medium Goods Vehicle Spaces 中型貨車車位

Heavy Goods Vehicle Spaces 重型貨車車位

Others (Please Specify) 其他 (請列明)

5

☒ 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)

Taxi/Private Car Lay-by: 1

Ambulance Lay-by: 1

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

[Block number]

[Floor(s)]

[Proposed use(s)]

[座數]

[層數]

[擬議用途]

Please refer to the attached Planning Statement.

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

Please refer to the attached Planning Statement.

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))

Castle Peak Road (Ping Shan) and Ping Ha Road

☐ 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，請另頁表示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 No 否	<input type="checkbox"/> Please provide details 請提供詳情																		
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 No 否	<input checked="" type="checkbox"/> (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) <input type="checkbox"/> Diversion of stream 河道改道 <input type="checkbox"/> Filling of pond 填塘 Area of filling 填塘面積 sq.m 平方米 <input type="checkbox"/> About 約 Depth of filling 填塘深度 m 米 <input type="checkbox"/> About 約 <input type="checkbox"/> Filling of land 填土 Area of filling 填土面積 sq.m 平方米 <input type="checkbox"/> About 約 Depth of filling 填土厚度 m 米 <input type="checkbox"/> About 約 <input checked="" type="checkbox"/> Excavation of land 挖土 Area of excavation 挖土面積 8,660 sq.m 平方米 <input checked="" type="checkbox"/> About 約 Depth of excavation 挖土深度 3.85 m 米 <input checked="" type="checkbox"/> About 約 <input type="checkbox"/>																		
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 On traffic 對交通 On water supply 對供水 On drainage 對排水 On slopes 對斜坡 Affected by slopes 受斜坡影響 Landscape Impact 構成景觀影響 Tree Felling 砍伐樹木 Visual Impact 構成視覺影響 Others (Please Specify) 其他 (請列明)	<table border="0"> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> <tr> <td>Yes 會 <input type="checkbox"/></td> <td>No 不會 <input checked="" type="checkbox"/></td> </tr> </table>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>	Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>
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Yes 會 <input type="checkbox"/>	No 不會 <input checked="" type="checkbox"/>																			
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 attached 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 deposited 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存放於規劃署規劃資料查詢處以供一般參閱。)

Application No. 申請編號	(For Official Use Only) (請勿填寫此欄)
Location/address 位置/地址	Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories 新界元朗屏山丈量約份第121約地段第1341號B分段餘段、第1341號B分段第1小分段J分段餘段、第1341號B分段第1小分段D分段餘段、丈量約份第122約地段第525號B分段餘段及毗連政府土地
Site area 地盤面積	14,080 sq. m 平方米 <input checked="" type="checkbox"/> About 約 (includes Government land of 包括政府土地 1,925 sq. m 平方米 <input checked="" type="checkbox"/> About 約)
Plan 圖則	Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 屏山分區計劃大綱草圖編號 S/YL-PS/19
Zoning 地帶	"Village Type Development" and "Comprehensive Development Area" 「鄉村式發展」及「綜合發展區」
Proposed Amendment(s) 擬議修訂	<input type="checkbox"/> Amend the Covering Notes of the Plan 修訂圖則《註釋》的說明頁 <input checked="" type="checkbox"/> 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》 <input checked="" type="checkbox"/> Rezone the application site from "V" and "CDA" to "R(B)2" 把申請地點由「鄉村式發展」及「綜合發展區」地帶改劃為「住宅(乙類)2」

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

(i) Gross floor area and/or plot ratio 總樓面面積及/或地積比率		sq.m 平方米	Plot Ratio 地積比率
	Domestic 住用	42,240 <input checked="" type="checkbox"/> About 約 <input type="checkbox"/> Not more than 不多於	3 <input checked="" type="checkbox"/> About 約 <input type="checkbox"/> Not more than 不多於
	Non-domestic 非住用	5,540 <input checked="" type="checkbox"/> About 約 <input type="checkbox"/> Not more than 不多於	0.39 <input checked="" type="checkbox"/> About 約 <input type="checkbox"/> Not more than 不多於
(ii) No. of block 幢數	Domestic 住用	3 (excluding 1 one-storey clubhouse block)	
	Non-domestic 非住用	2	
	Composite 綜合用途		

(iii) Building height/No. of storeys 建築物高度／層數	Domestic 住用	65.85	m 米 <input checked="" type="checkbox"/> (Not more than 不多於)
		+54.25 to +79.45	mPD 米(主水平基準上) <input type="checkbox"/> (Not more than 不多於)
		11-19 1	Storeys(s) 層 <input type="checkbox"/> (Not more than 不多於) (<input type="checkbox"/> Include 包括 <input checked="" type="checkbox"/> Exclude 不包括 <input type="checkbox"/> Carport 停車間 <input checked="" type="checkbox"/> Basement 地庫 <input type="checkbox"/> Refuge Floor 防火層 <input type="checkbox"/> Podium 平台)
	Non-domestic 非住用	26.75	m 米 <input checked="" type="checkbox"/> (Not more than 不多於)
		+39.35	mPD 米(主水平基準上) <input checked="" type="checkbox"/> (Not more than 不多於)
		6	Storeys(s) 層 <input checked="" type="checkbox"/> (Not more than 不多於) (<input type="checkbox"/> Include 包括 <input type="checkbox"/> Exclude 不包括 <input type="checkbox"/> Carport 停車間 <input type="checkbox"/> Basement 地庫 <input type="checkbox"/> Refuge Floor 防火層 <input type="checkbox"/> Podium 平台)
	Composite 綜合用途		m 米 <input type="checkbox"/> (Not more than 不多於)
			mPD 米(主水平基準上) <input type="checkbox"/> (Not more than 不多於)
			Storeys(s) 層 <input type="checkbox"/> (Not more than 不多於) (<input type="checkbox"/> Include 包括 <input type="checkbox"/> Exclude 不包括 <input type="checkbox"/> Carport 停車間 <input type="checkbox"/> Basement 地庫 <input type="checkbox"/> Refuge Floor 防火層 <input type="checkbox"/> Podium 平台)
(iv) Site coverage 上蓋面積	31.66 % <input checked="" type="checkbox"/> About 約		
(v) No. of units 單位數目	Domestic : 840 units Non-domestic: 294 beds		
(vi) Open space 休憩用地	Private 私人	2,834.9 sq.m 平方米	<input checked="" type="checkbox"/> Not less than 不少於
	Public 公眾	sq.m 平方米	<input type="checkbox"/> Not less than 不少於

(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	269
	Private Car Parking Spaces 私家車車位	202
	Motorcycle Parking Spaces 電單車車位	11
	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)	
	Bicycle Parking Spaces 單車泊車位	56
	Total no. of vehicle loading/unloading bays/lay-bys 上落客貨車位／停車處總數	7
	Taxi Spaces 的士車位	1
	Coach Spaces 旅遊巴車位	
	Light Goods Vehicle Spaces 輕型貨車車位	
	Medium Goods Vehicle Spaces 中型貨車位	
	Heavy Goods Vehicle Spaces 重型貨車車位	5
	Others (Please Specify) 其他 (請列明)	
	Ambulance Lay-by 救護車停車處	1

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Block plan(s) 樓宇位置圖	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floor plan(s) 樓宇平面圖	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sectional plan(s) 截視圖	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Elevation(s) 立視圖	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Photomontage(s) showing the proposed development 顯示擬議發展的合成照片	<input type="checkbox"/>	<input type="checkbox"/>
Master landscape plan(s)/Landscape plan(s) 園境設計總圖／園境設計圖	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Others (please specify) 其他 (請註明)	<input type="checkbox"/>	<input type="checkbox"/>
Reports 報告書		
Planning Statement/Justifications 規劃綱領/理據	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental assessment (noise, air and/or water pollutions) 環境評估 (噪音、空氣及／或水的污染)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic impact assessment (on vehicles) 就車輛的交通影響評估	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic impact assessment (on pedestrians) 就行人的交通影響評估	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Visual impact assessment 視覺影響評估	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Landscape impact assessment 景觀影響評估	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tree Survey 樹木調查	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Geotechnical impact assessment 土力影響評估	<input type="checkbox"/>	<input type="checkbox"/>
Drainage impact assessment 排水影響評估	<input type="checkbox"/>	<input type="checkbox"/>
Sewerage impact assessment 排污影響評估	<input type="checkbox"/>	<input type="checkbox"/>
Risk Assessment 風險評估	<input type="checkbox"/>	<input type="checkbox"/>
Others (please specify) 其他 (請註明)	<input type="checkbox"/>	<input type="checkbox"/>
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。



毅勤發展顧問有限公司
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Fax 傳真 : (852) 3180 7611
Email 電郵 : info@aikon.hk
Web 網址 : www.aikon.hk

Date : 6th October, 2021
Our Ref. : ADCL/PLG-10224/L004

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

By Hand & Email

Dear Sir/Madam,

Section 12A Planning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

We refer to our submission dated 09.09.2021 (Ref.: ADCL/PLG-10224/L001), we would like to provide supplementary information for your onward processing. Please find enclosed the following items:-

- i. Replacement pages of the Planning Statement (P.10, 11 and 12) and Figures 1-3;
- ii. Replacement pages of the Appendix II Master Layout Plan and Architectural Drawings; and
- iii. Copy of letter given to the Applicant from Ping Shan Heung Rural Committee dated 30.09.2021.

Thank you for your kind attention and should you have any queries, please do not hesitate to contact our Miss Grace CHEUNG or Mr. Thomas LUK at 3180 7811.

Yours faithfully,
For and on behalf of
Aikon Development Consultancy Limited

Encl.
c.c. Client

5. THE DEVELOPMENT PROPOSAL

5.1 Proposed Site Layout, Major Development Parameters and Operation

- 5.1.1 The proposed development is configured as a low-to-medium density development, which comprises of residential development (Site A) and social welfare facility (RCHE) (Site B) to the south and north of the application site respectively. The proposed development would include the provision of parking spaces, loading/unloading spaces, communal open space, landscaped area and access road within the Application Site. The proposed development would involve the excavation of land for basement carpark. The area and depth of excavation would be about 8,660m² and 3.85m respectively.
- 5.1.2 The total gross floor area (GFA) of the proposed development is about 47,780m². At the Site A, there are three residential blocks with a domestic GFA of about 42,240m² and ranging from 11 to 19 storeys excluding a basement carpark, comprising 840 flats with a floor area ranging from 27.8m² to 112.4m² per unit. Besides, there would be a retail shop of about 140m² within Site A. At the Site B, there is one 6-storey RCHE block with elderly-care related facilities, with a non-domestic GFA of about 5,400 m² and comprising 294 beds. The Master Layout Plan and perspective drawings illustrating the development scheme, floor plans and section drawings of the proposed development are shown in **Appendix II**.
- 5.1.3 There will be approximately 2,834.9m² of communal open spaces provided for the proposed development. In addition, there will be an extensive plantation of trees and other vegetations along the boundary of the application site as well as along the internal access road and common landscaped areas providing screening effect and improving the overall landscape value of the application site. Details of landscape proposal and communal open spaces are discussed in **Section 5.2** and **Appendix III**.
- 5.1.4 To avoid planning blight caused by setting out the boundary of rezoning area, part of the Ping Ha Road (Lot No. 525 S.B RP in D.D.122) is included in the application site boundary (**Figures 1 to 3** refer) while the relevant lot would be a non-building area. In view of that, the site area countable for GFA/plot ratio calculations has excluded the relevant lot (refer to **Appendix II**).
- 5.1.5 The proposed development parameters and schedule of accommodations are summarized in the **Tables 1 to 3** below:

Table 1: Major Development Parameters of the Proposed Development

Development Parameters	
Site Area	About 14,080 m ² (including Government land of about 1,925 m ²)
Site A	About 11,688 m ²
Site B	About 2,392 m ²
Site Coverage	31.66%
Domestic	24.53%
Non-domestic	7.13%

Plot Ratio Domestic Non-domestic	3.39 3 0.39
GFA Domestic Non-domestic	About 47,780 m ² About 42,240 m ² About 5,540 m ²
Number of Blocks Domestic Non-domestic	Total 6 4 2
Building Height Domestic Non-domestic	+54.25mPD to +79.45mPD +39.35mPD
Number of Storeys Domestic Non-domestic	11-19 storeys (excluding 1 storey of basement) 6 storeys
Domestic Units Unit Size	840 units 1-2 bedroom (50.3 m ² average size per unit)
Non-domestic Units	294 beds (8 beds per room; 6.5 m ² per bed)
Retail Facility GFA	140 m ² (Site A)
Clubhouse GFA⁽¹⁾	1,794 m ² (Site A)
Design Population	2,814 (2,520 residents for Site A and 294 residents for Site B)
Communal Open Space	2,834.9 m ²
Vehicular Access	Flat (Site A) access - Castle Peak Road (Ping Shan) RCHE (Site B) access - Ping Ha Road
Private Car Parking Space Domestic Non-domestic	196 (including 15 for visitors, 3 for disabled) 6 (including 1 for disabled)
Private Motorcycle Parking Space Domestic Non-domestic	10 1
Bicycle Parking Space Domestic Non-domestic	56 0
Heavy Goods Vehicles L/UL Space Domestic Non-domestic	4 1
Taxi/Private Car Lay-by Domestic Non-domestic	0 1
Ambulance Lay-by Domestic Non-domestic	0 1

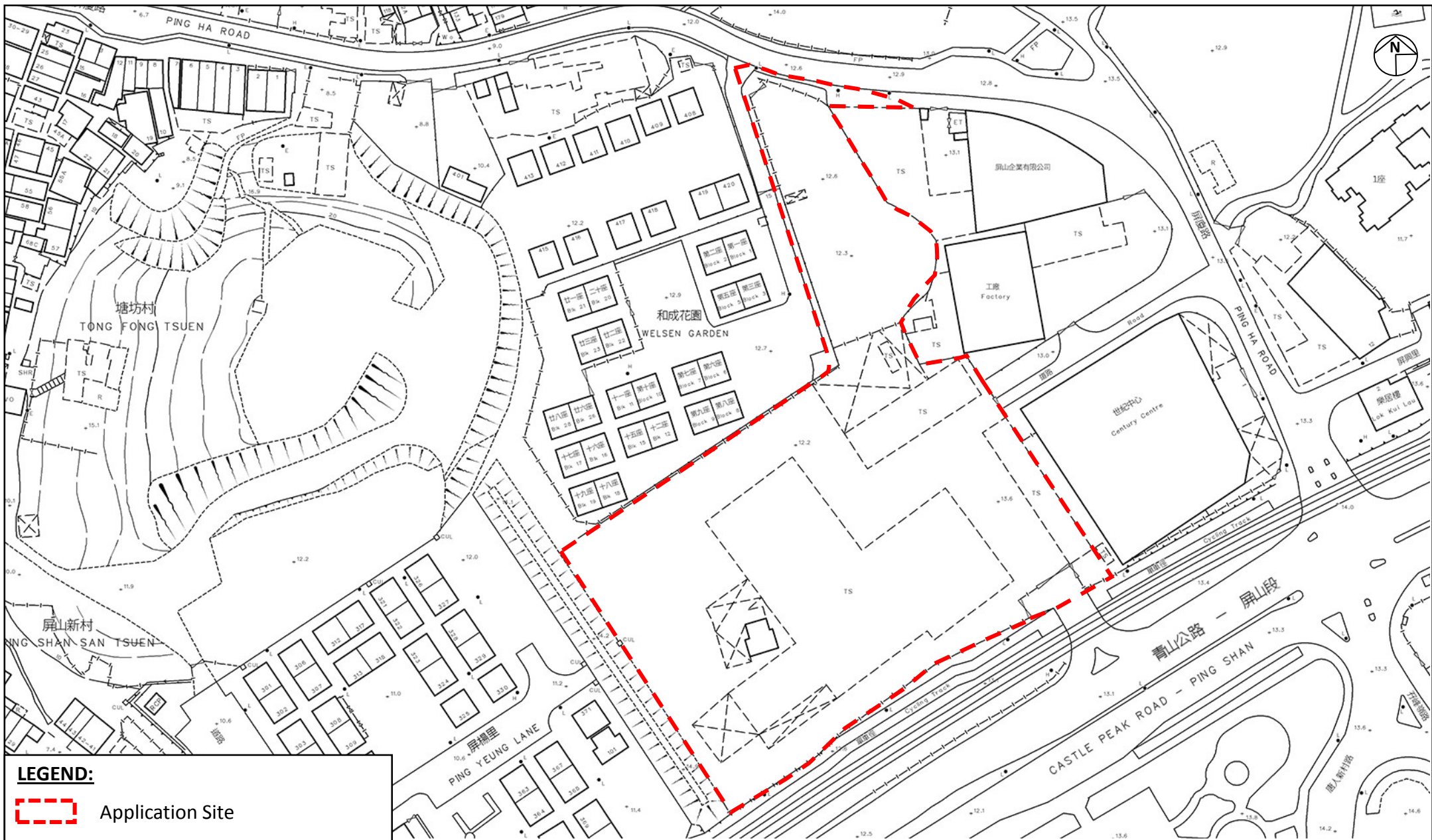
⁽¹⁾ The GFA of clubhouse is exempted from PR calculation.

Table 2: Schedule of Proposed Flat (Site A)

Tower 1		
Floor	GFA	Number of Units
G/F	625 m ²	10
1/F – 5/F, 15/F	7,044 m ²	144
6/F – 14/F	9,918 m ²	198
16/F	1,068 m ²	22
17/F – 18/F	1,282 m ²	22
U.P./Bal.	522 m ²	/
P.D./ E/M / RSMSR	598 m ² (Deduct)	/
Total	19,861 m² (19 storeys)	396

Tower 2		
Floor	GFA	Number of Units
G/F	488 m ²	7
1/F – 4/F	4,192 m ²	88
5/F – 11/F	6,755 m ²	140
12/F	860 m ²	18
13/F – 14/F	1,102 m ²	22
U.P./Bal.	364 m ²	/
P.D./ E/M / RSMSR	229 m ² (Deduct)	/
Total	13,532 m² (15 storeys)	275

Tower 3		
Floor	GFA	Number of Units
G/F	172 m ²	1
1/F – 5/F	5,155 m ²	100
6/F	1,079 m ²	22
7/F	972 m ²	20
8/F – 10/F	1,656 m ²	27
U.P./Bal.	234 m ²	/
P.D./ E/M / RSMSR	421 m ² (Deduct)	/
Total	8,847 m² (11 storeys)	169



Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Location Plan

Figure:

1

Scale:

Not to Scale

Date:

Oct 2021



AIKON DEVELOPMENT CONSULTANCY LTD.

Ref.: ADCL/PLG-10224-R001a/F001



LEGEND:

 Application Site

Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Extract of Lot Index Plan No. ags_S00000079219_0001

Figure:

2

Scale:

Not to Scale

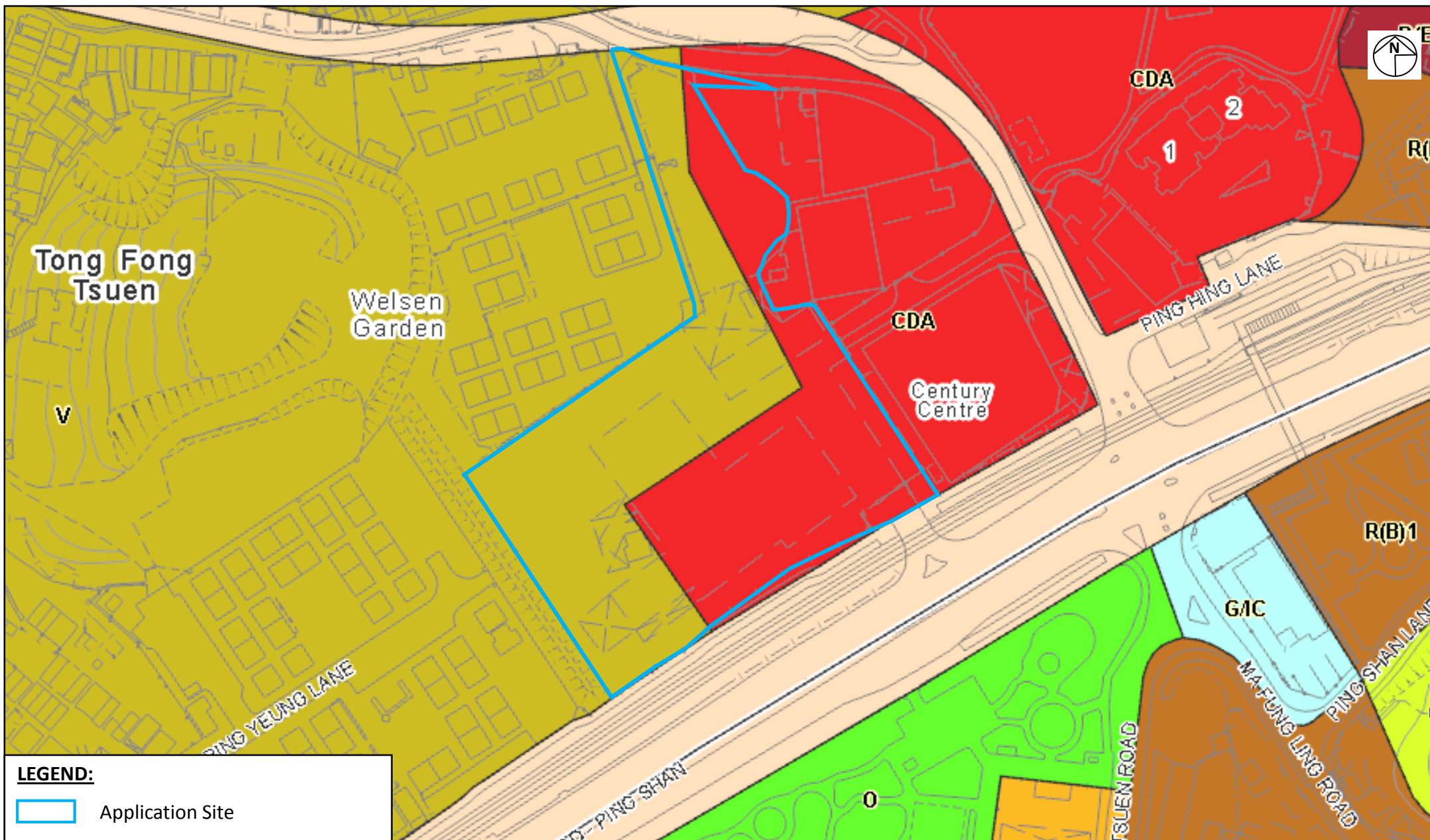
Date:

Oct 2021

Ref.: ADCL/PLG-10224-R001a/F002



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Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Extract of Approved Ping Shan Outline Zoning Plan No. S/YL-PS/18

Figure:

3

Scale:

Not to Scale

Date:

Oct 2021

Ref.: ADCL/PLG-10224-R001a/F003



AIKON DEVELOPMENT CONSULTANCY LTD.

AREA OF EXCAVATION: 8660 SQ.M. (APPROX.)

PARKING PROVIDED:

PRIVATE CAR: 180 (B/F)

PRIVATE CAR (VISITOR): 15 (B/F)

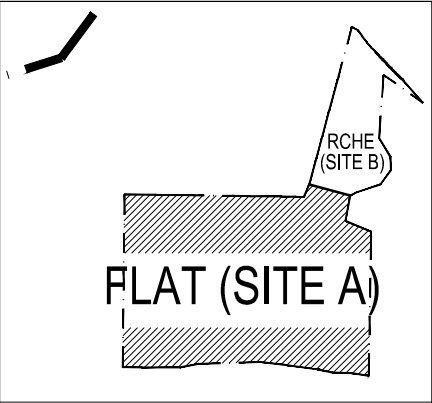
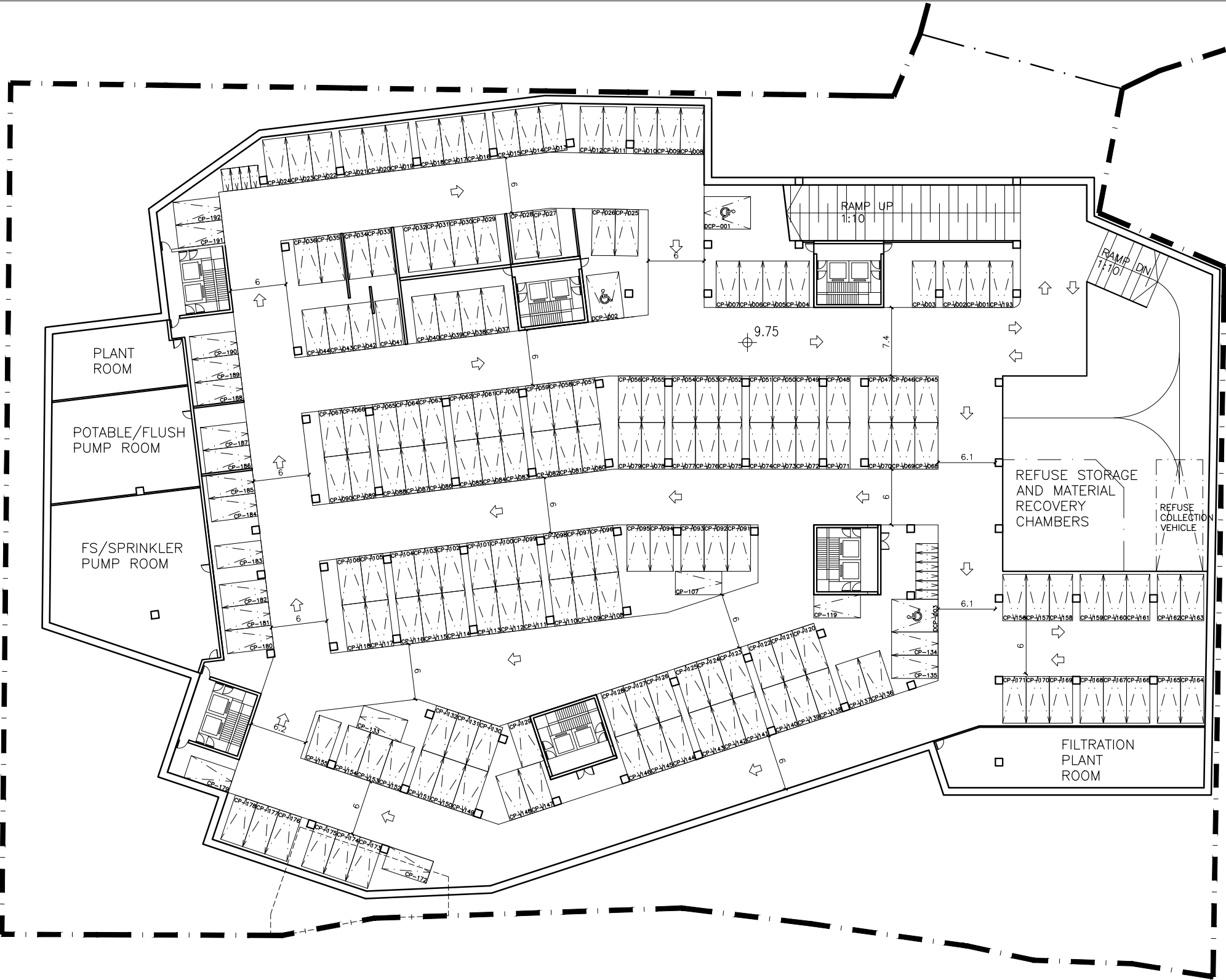
PRIVATE CAR (RETAIL): 1 (B/F)

PRIVATE MOTORCYCLE: 9 (B/F)

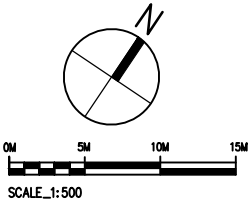
PRIVATE MOTORCYCLE(RETAIL): 1 (B/F)

BICYCLE: 56 (G/F)

GOODS VEHICLE: 4 (G/F)



BASEMENT



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	29/04/21
A	GENERAL REVISION	NC	DY	DY	20/04/21
B	GENERAL REVISION	BP	DY	DY	11/05/21
C	GENERAL REVISION	NC	DY	DY	18/05/21
D	GENERAL REVISION	NC	DY	DY	01/06/21
E	GENERAL REVISION	NC	DY	DY	29/07/21
F	GENERAL REVISION	NC	DY	DY	04/10/21

Rev	Description	Drawn	Checked	Approved	Date

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Architecture Planning Interior
建築師設計香港有限公司

Unit 507, 5/F, MegaCube, 8 Wang Kwong Road,
Kowloon Bay, Kowloon, H.K.
Telephone : (852) 22 345 647
Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

Drawing Title
**RESIDENTIAL DEVELOPMENT
LAYOUT PLAN
BASEMENT**

Project No. 20/HK/YL02	Issue Date. 29/04/2021
Cad File No. layout_plan.dwg	
SCALE. 1:500	(A3)
Drawing No. A-P-201	(F)

Authority's / Client's Approval

NOS. OF UNIT

TOWER 1: 24
TOWER 2: 22
TOWER 3: 20

GROSS FLOOR AREA

TOWER 1: 1174 SQ. M.
TOWER 2: 1048 SQ. M.
TOWER 3: 1031 SQ. M.

NOS. OF UNIT (TOWER 1)

G/F: 10 (1 STOREY)
1/F - 5/F: 144 (6 STOREYS)
6/F - 14/F: 198 (9 STOREYS)
16/F: 22 (1 STOREYS)
17/F - 18/F: 22 (2 STOREYS)

TOTAL: 396 (19 STOREYS)

NOS. OF UNIT (TOWER 2)

G/F: 7 (1 STOREY)
1/F - 4/F: 88 (4 STOREYS)
5/F - 11/F: 140 (7 STOREYS)
12/F: 18 (1 STOREYS)
13/F - 14/F: 22 (2 STOREYS)

TOTAL: 275 (15 STOREYS)

NOS. OF UNIT (TOWER 3)

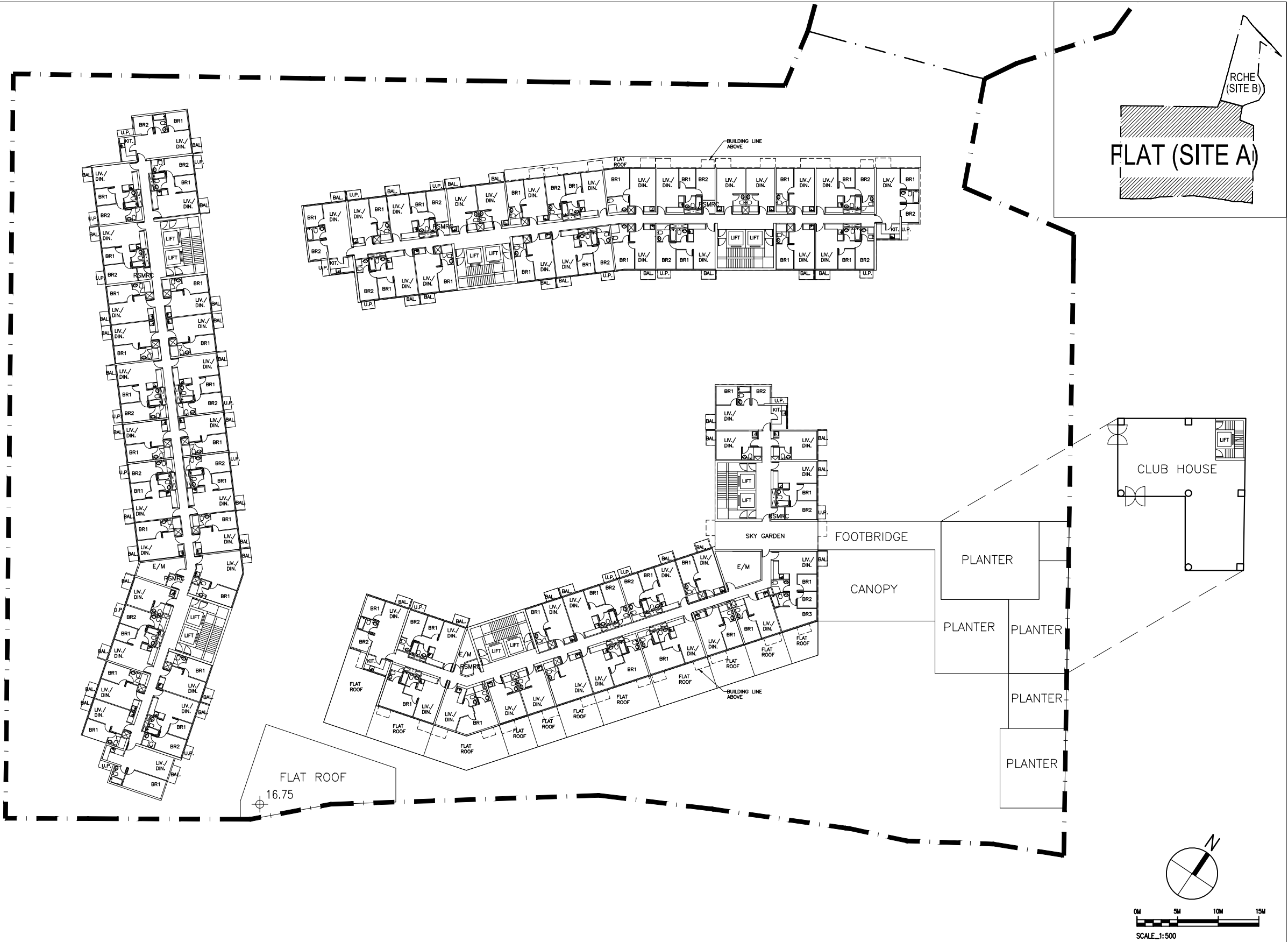
G/F: 0 (1 STOREY)
1/F - 5/F: 100 (5 STOREYS)
6/F: 22 (1 STOREY)
7/F: 20 (1 STOREY)
8/F - 10/F: 27 (3 STOREYS)

TOTAL: 169 (11 STOREYS)

TOTAL NOS. OF UNIT

T1 + T2 + T3 = 840

1/F



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21
A	GENERAL REVISION	NC	DY	DY	02/06/21
B	GENERAL REVISION	NC	DY	DY	29/07/21
C	GENERAL REVISION	NC	DY	DY	09/08/21
D	GENERAL REVISION	NC	DY	DY	10/08/21
E	GENERAL REVISION	NC	DY	DY	04/10/21

Rev	Description	Drawn	Checked	Approved	Date

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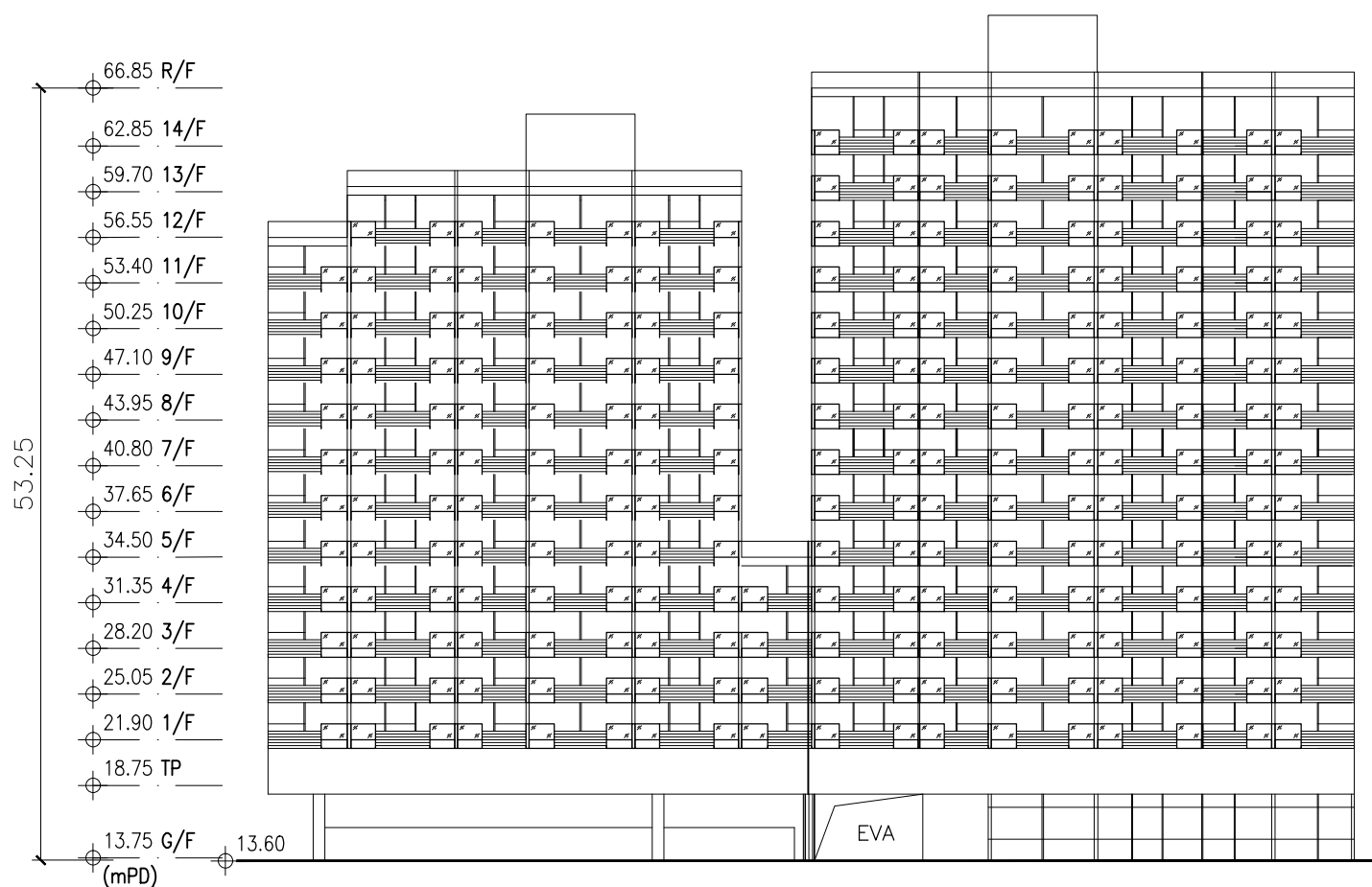
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Architecture Planning Interior
MG 建築師設計香港有限公司
Unit 507, 5/F, MegaCube, 8 Wang Kwong Road,
Kowloon Bay, Kowloon, H.K.
Telephone : (852) 22 345 647
Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title	Drawing Title	Project No.	Issue Date.	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RESIDENTIAL DEVELOPMENT LAYOUT PLAN 1/F	20/HK/YL02	18/05/2021	
		Cad File No.	layout_plan.dwg	
		SCALE.	1:500 (A3)	
		Drawing No.	A-P-202A (E)	

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A- TOWER 2 ELEVATION (SOUTH)



B- TOWER 2 ELEVATION (NORTH)

ELEVATIONS

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Website : www.mgdesignhk.com

Project Title	PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG		
Drawing Title	RESIDENTIAL DEVELOPMENT ELEVATIONS - TOWER 2		
Project No.	Issue Date		
20/HK/KY/LO2	18/05/2021		
Cod File No.	Section/dwg		
SCALE:	1 : 500	(A3)	
Drawing No.			
A-E-202	(B)		

<p>Authority's / Client's Approval</p>	<p>_____</p>
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Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21
A	GENERAL REVISION	NC	DY	DY	29/07/21
B	GENERAL REVISION	NC	DY	DY	10/08/21
C	GENERAL REVISION	NC	DY	DY	04/10/21

Rev	Description	Drawn	Checked	Approved	Date

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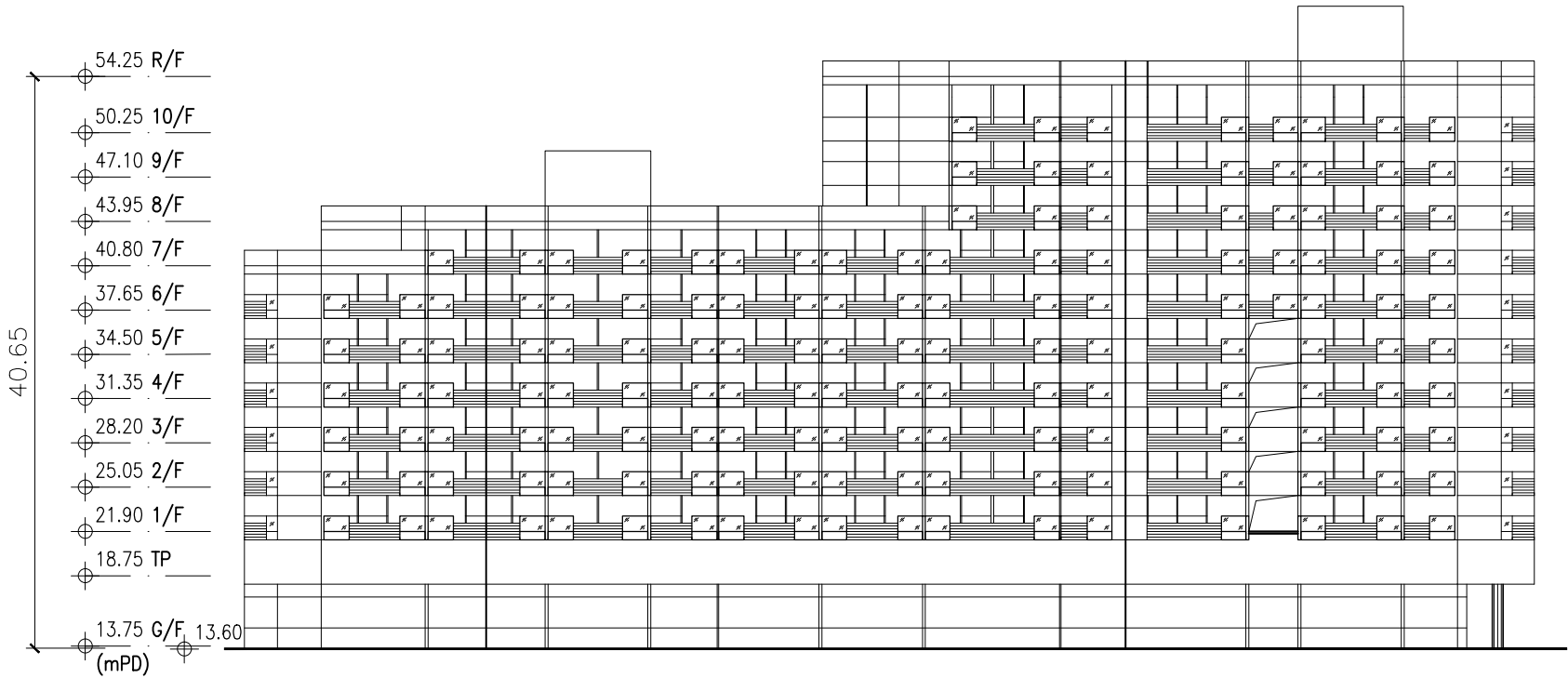
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Telephone : (852) 22 345 647
Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title
PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG

Drawing Title
RESIDENTIAL DEVELOPMENT
ELEVATIONS - TOWER 3

Project No. 20HKVY102	Issue Date 18/05/2021
Cad File No. Section.dwg	
SCALE 1 : 500	(A3)
Drawing No. A-E-203	(C)

Authority's / Client's Approval



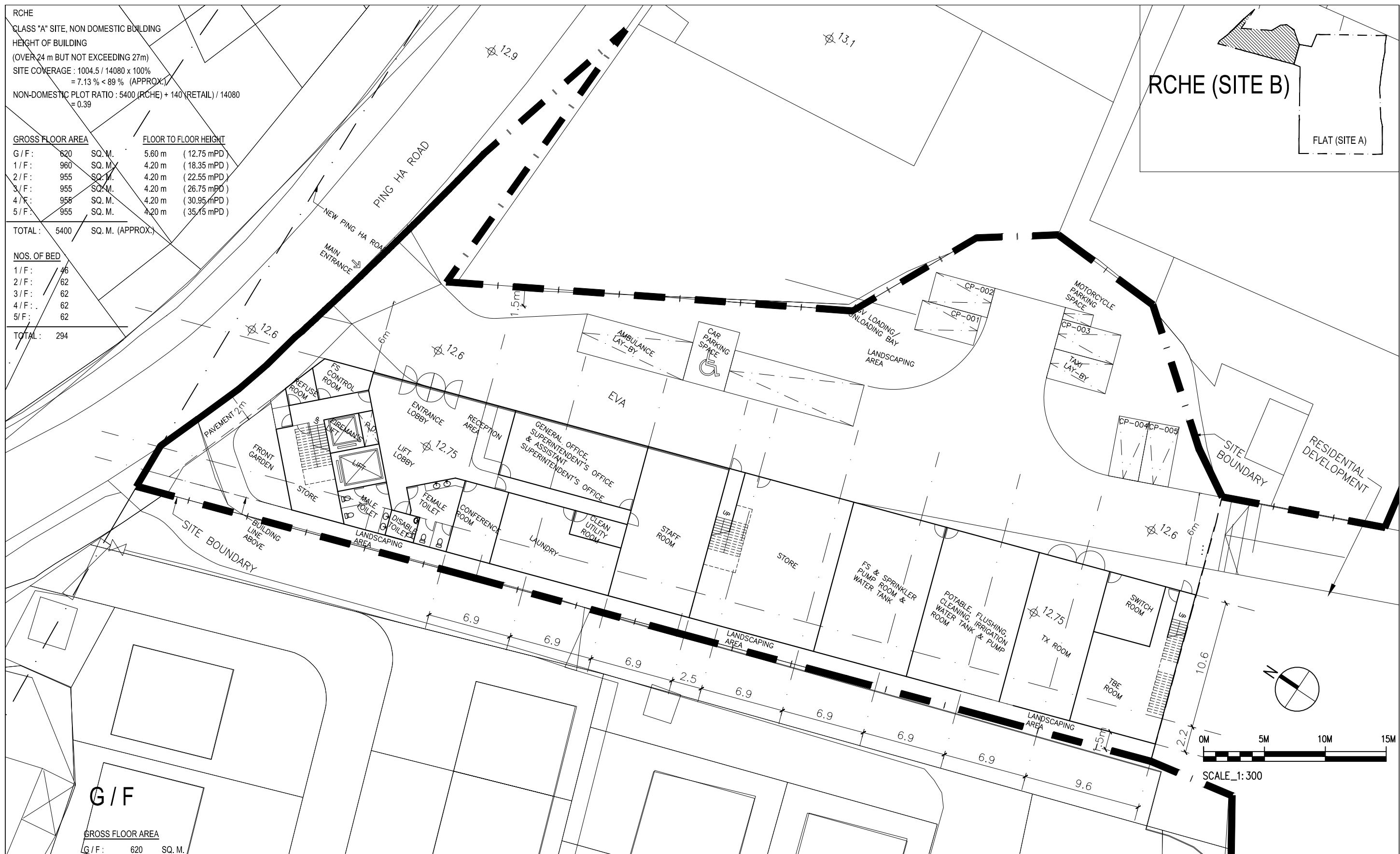
A— TOWER 3 ELEVATION (NORTH)



B— TOWER 3 ELEVATION (SOUTH)

ELEVATIONS

<u>NOS. OF BED</u>	
1 / F :	46
2 / F :	62
3 / F :	62
4 / F :	62
5 / F :	62
TOTAL :	294



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	06 / 11 / 20
A	GENERAL REVISION	NC	DY	DY	10 / 11 / 20
B	GENERAL REVISION	NC	DY	DY	20 / 04 / 21
C	GENERAL REVISION	BP	DY	DY	11 / 05 / 21
D	GENERAL REVISION	NC	DY	DY	18 / 05 / 21
E	GENERAL REVISION	NC	DY	DY	01 / 06 / 21
F	GENERAL REVISION	NC	DY	DY	01 / 06 / 21
G	GENERAL REVISION	NC	DY	DY	29 / 07 / 21
H	GENERAL REVISION	NC	DY	DY	04 / 10 / 21

[illegible]

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Project Title

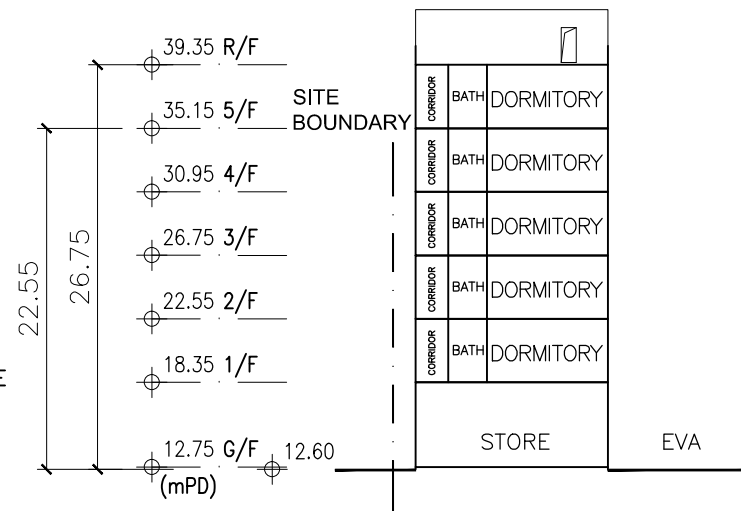
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

<p>Drawing Title</p> <p>LAYOUT PLAN (G/F)</p>

Project No. 20/HK/YL02	Issue Date. 06/11/2020
Cad File No. layout_plan.dwg	
SCALE. 1 : 300 (A3)	
Drawing No. A-P-101 (H)	

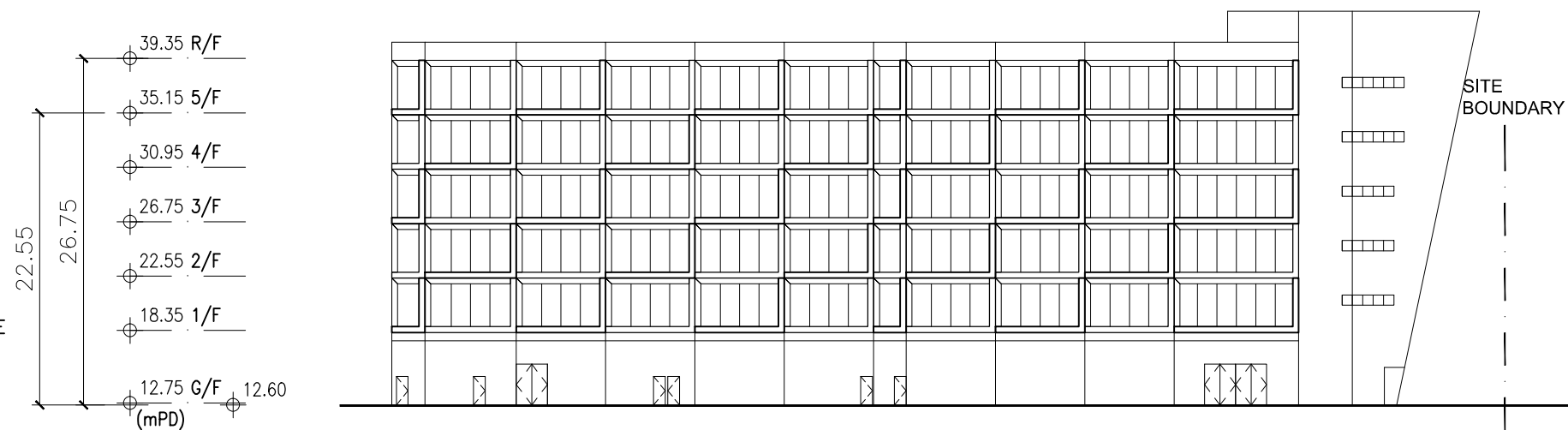
Authority's / Client's Approval

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



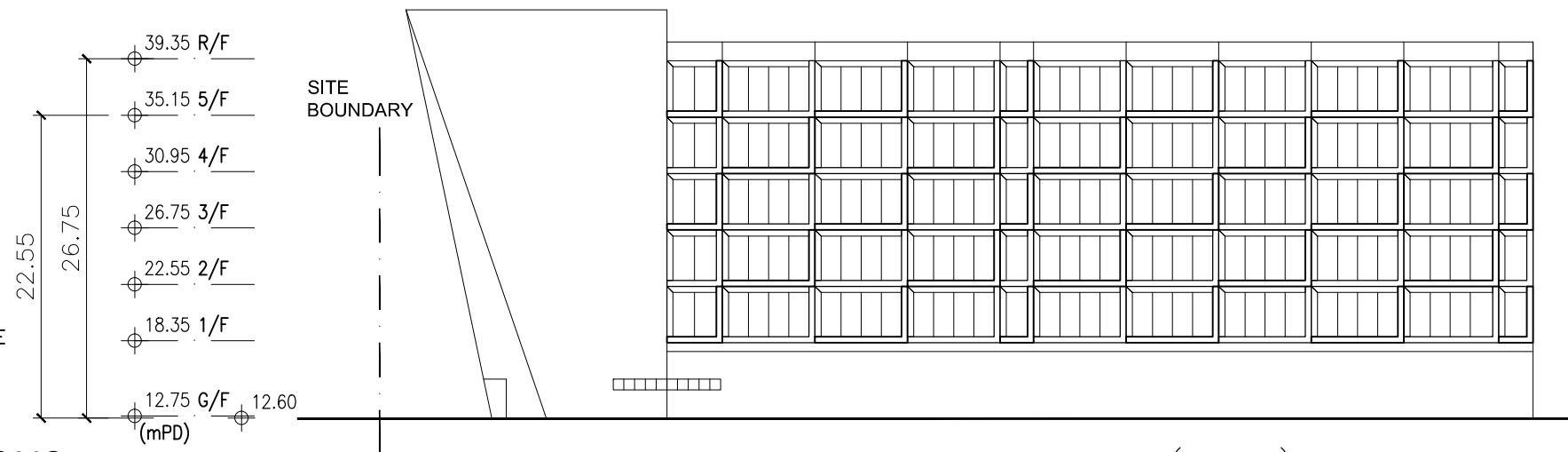
RCHE SECTION A

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



B - RCHE ELEVATION (WEST)

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



C - RCHE ELEVATION (EAST)

SECTION & ELEVATIONS

Rev	Description	Drawn	Checked	Approved	Date	Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21						
A	GERENAL REVISION	NC	DY	DY	29/07/21						
B	GERENAL REVISION	NC	DY	DY	04/10/21						

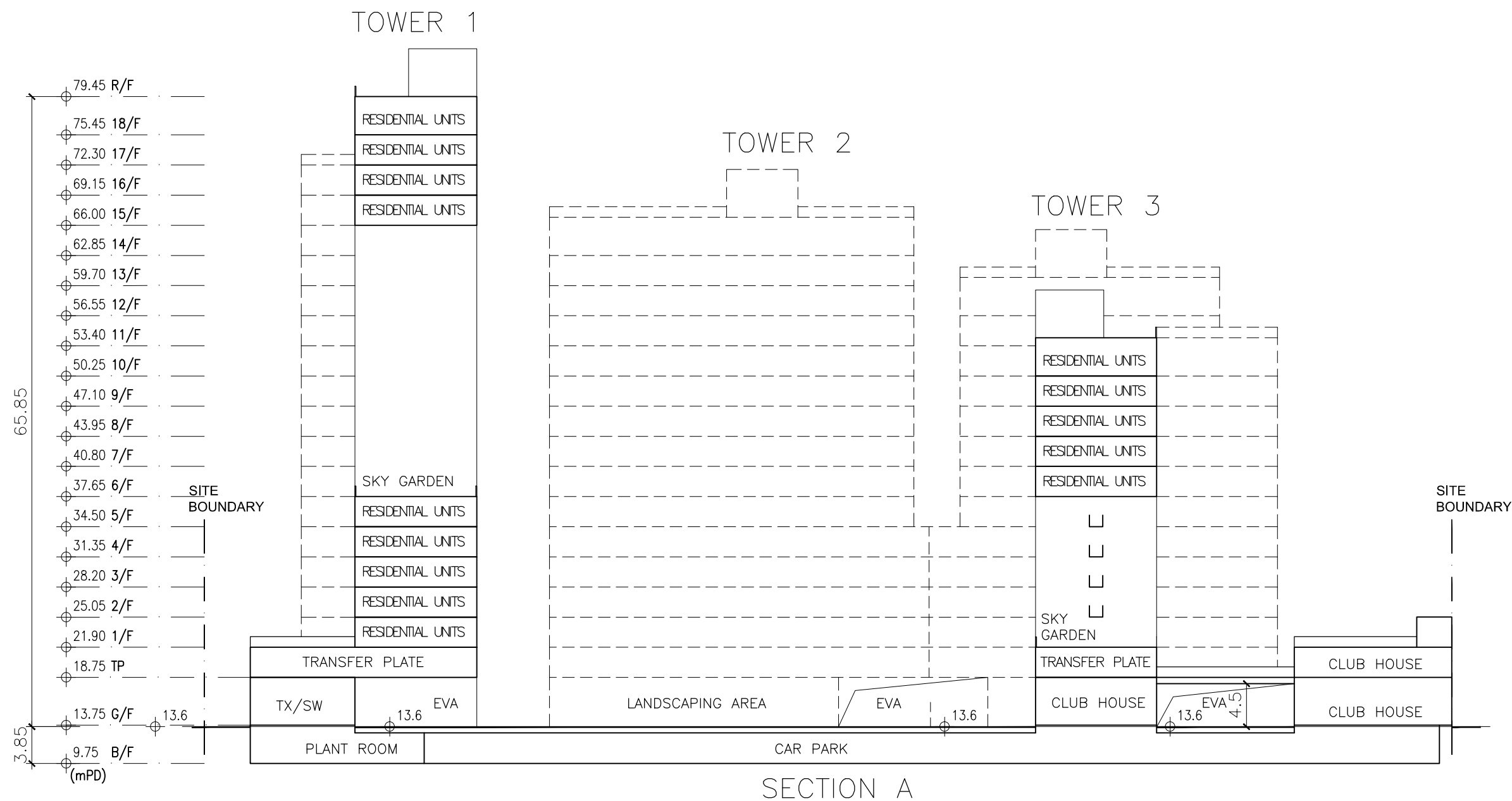
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Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title	Drawing Title	Project No. 20/HK/YL02	Issue Date. 18/05/2021	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RCHE SECTION & ELEVATIONS	Cad File No.	Section.dwg	
		SCALE.	1:500 (A3)	
		Drawing No.	A-S-101 (B)	



SECTION

Rev	Description	Drawn	Checked	Approved	Date	Rev	Description	Drawn	Checked	Approved	Date	<div>Check all measurements on site. Do not scale off drawings.</div> <div>This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.</div> <div>This drawing remains the copyright property of the Architect and is not to be reproduced in whole or in part without permission of the Architect.</div>
-	DESIGN	NC	DY	DY	18/05/21							
A	GENERAL REVISION	NC	DY	DY	01/06/21							
B	GENERAL REVISION	NC	DY	DY	29/07/21							
C	GENERAL REVISION	NC	DY	DY	04/10/21							



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Project Title

PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG

Drawing Title

RESIDENTIAL DEVELOPMENT
SECTION

Project No.
20/HK/YL02

Issue Date.
18/05/2021

Cad File No.
Section.dwg

SCALE.
1:500 (A3)

Drawing No.
A-S-201 (C)

Authority's / Client's Approval



屏山鄉鄉事委員會

Ping Shan Heung Rural Committee

新界元朗安寧路 139-147 號二樓

1/F, No. 139-147, On Ning Road, Yuen Long, N.T.H.K.

☎ 2477 3886

☎ 2476 2468

九龍長沙灣長裕街 10 號
億京廣場 2 期 25 樓 D 室
安兆國際有限公司:

先生/女士:

新界元朗屏山丈量約份第 121 約地段第 1341 號 B 分段餘段、第 1341 號 B 分段第 1 小分段 J 分段餘段、第 1341 號 B 分段第 1 小分段 D 分段餘段、丈量約份第 122 約地段第 525 號 B 分段餘段及毗連
政府土地之規劃申請

本會收到 貴公司於 2021 年 8 月 18 日發出的信函，就上述土地表示發展意向，亦計劃根據《城市規劃條例》第 12A 條向城市規劃委員會遞交修訂規劃地帶的規劃申請。經過詳細考慮後，本會支持有關修訂規劃地帶的規劃申請，並建議城市規劃委員會盡快批准該項規劃申請，理據如下：

- (一)擬議發展符合《香港 2030+: 跨越 2030 年的規劃遠景與策略》的願景，以建立一個包容的城市，透過規劃解決住房需求及為長者提供服務設施。擬議發展將有效透過增加房屋供應及選擇，回應青年以及長者對房屋的需求，提升生活質素；
- (二)擬議發展符合政府最新的政策方向以適時回應社會對房屋供應及安老院舍的需求。根據行政長官施政報告，房屋問題為現屆政府重點工作。然而，近年社會面對房屋供應短缺以及樓價高昂等挑戰。再者，人口老化下，社會對安老設施有殷切需求。擬議發展將能夠適時回應以上逼切社會關注，貫徹政府政策方向，符合公眾利益；
- (三)該地段多年作貨倉用途，有鑑於社會對長遠房屋供應及社會福利設施（安老院舍）的需求，本會同意釋放該地段的土地發展潛力。擬議申請將改劃舊有用途，促使更全面及設計更佳之房屋及社會福利設施發展，預期可長遠改善整體本地環境，而且有空間引入綠化及整體規劃，充分提升地段景觀及價值，符合資源效益；

(四)擬議發展的土地用途、性質和發展規模方面與周遭環境相互兼容，同時確保從環境而言，不會導致負面影響，各項專業研究報告證明是次申請並不會對附近交通、環境、園景及排污造成不良影響。

為符合現有政策推動房屋供應及社會福利設施(安老院舍)的發展，擬議修訂圖則旨在利用申請地點提供一個自給自足的理想住宅和安老院舍。考慮到擬議修訂圖則符合政府的政策，並且預計不會對環境、交通或基礎設施造成不利影響，亦能有效充分利用短缺的土地資源以適時回應政府對解決房屋供應及長者護理服務設施需求的最新政策方面。基於擬議發展符合以上所有的規劃考量因素，本會支持有關修訂規劃地帶的規劃申請，並建議城市規劃委員會能對有關申請給予正面考慮。

如有任何查詢，請致電 2477 3886 與本會聯絡。

屏山鄉鄉事委員會


主席 鄧志強

2021 年 9 月 30 日





毅勤發展顧問有限公司
Tel 電話 : (852) 3180 7811
Fax 傳真 : (852) 3180 7611
Email 電郵 : info@aikon.hk
Web 網址 : www.aikon.hk

Date : 20th October, 2021
Our Ref. : ADCL/PLG-10224/L005

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

By Email

Dear Sir/Madam,

Section 12A Planning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from “Village Type Development” Zone and “Comprehensive Development Area” Zone to “Residential (Group B) 2” Zone at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

We refer to our submission dated 09.09.2021 (Ref.: ADCL/PLG-10224/L002) and 06.10.2021 (Ref.: ADCL/PLG-10224/L004), we would like to provide supplementary information for your onward processing. Please find enclosed the following item:-

- i. Replacement page of the Planning Statement (P.11)

Thank you for your kind attention and should you have any queries, please do not hesitate to contact our Miss Grace CHEUNG or Mr. Thomas LUK at 3180 7811.

Yours faithfully,
For and on behalf of
Aikon Development Consultancy Limited

Encl.
c.c. Client

Plot Ratio Domestic Non-domestic	3.39 3 0.39
GFA Domestic Non-domestic	About 47,780 m ² About 42,240 m ² About 5,540 m ²
Number of Blocks Domestic Non-domestic	Total 5 3 (excluding 1 one-storey clubhouse block) 2
Building Height Domestic Non-domestic	+54.25mPD to +79.45mPD +39.35mPD
Number of Storeys Domestic Non-domestic	11-19 storeys (excluding 1 storey of basement) 6 storeys
Domestic Units Unit Size	840 units 1-2 bedroom (50.3 m ² average size per unit)
Non-domestic Units	294 beds (8 beds per room; 6.5 m ² per bed)
Retail Facility GFA	140 m ² (Site A)
Clubhouse GFA⁽¹⁾	1,794 m ² (Site A)
Design Population	2,814 (2,520 residents for Site A and 294 residents for Site B)
Communal Open Space	2,834.9 m ²
Vehicular Access	Flat (Site A) access - Castle Peak Road (Ping Shan) RCHE (Site B) access - Ping Ha Road
Private Car Parking Space Domestic Non-domestic	196 (including 15 for visitors, 3 for disabled) 6 (including 1 for disabled)
Private Motorcycle Parking Space Domestic Non-domestic	10 1
Bicycle Parking Space Domestic Non-domestic	56 0
Heavy Goods Vehicles L/UL Space Domestic Non-domestic	4 1
Taxi/Private Car Lay-by Domestic Non-domestic	0 1
Ambulance Lay-by Domestic Non-domestic	0 1

⁽¹⁾ The GFA of clubhouse is exempted from PR calculation.



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Date : 26th October, 2021
Your Ref : Y/YL-PS/4
Our Ref. : ADCL/PLG-10224/L006

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

By Email

Dear Sir/Madam,


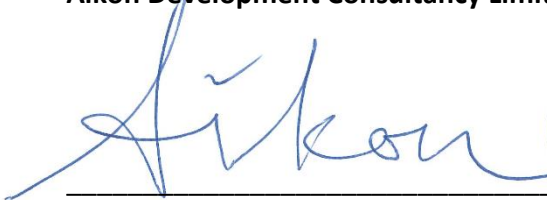
Section 12A Planning Application No. Y/YL-PS/4 - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

We refer to our submission dated 09.09.2021 (Ref.: ADCL/PLG-10224/L002), 06.10.2021 (Ref.: ADCL/PLG-10224/L004) and 20.10.2021 (Ref.: ADCL/PLG-10224/L005), we would like to provide supplementary information for your onward processing. Please find enclosed the following item:-

- i. Replacement page of the Planning Statement (P.9); and
- ii. Replacement page of the Appendix I.

Thank you for your kind attention and should you have any queries, please do not hesitate to contact our Miss Grace CHEUNG or Mr. Thomas LUK at 3180 7811.

Yours faithfully,
For and on behalf of
Aikon Development Consultancy Limited



Encl.
c.c. Client

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223 Hing Fong Road, Kwai Chung, New Territories, Hong Kong

4. PROPOSED AMENDMENT TO THE CURRENT OZP

4.1 Proposed Amendment to the Current OZP

- 4.1.1 This application proposes to rezone the application site from "V" zone and "CDA" zone to "R(B)2" zone on the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 for Proposed Flat and Social Welfare Facility (Residential Care Home for the Elderly).
- 4.1.2 The proposed plan amendment involves the following items to the Draft Ping Shan OZP No. S/YL-PS/19:-
- To rezone Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and adjoining Government land from "V" zone and "CDA" zone to "R(B)2" zone with 'Social Welfare Facility (on land designated "R(B)2" only)' and 'Shop and Services (on land designated "R(2)" only)' listed under Column 1.
 - To impose the development restrictions of a maximum domestic plot ratio of 3, a maximum non-domestic plot ratio of 0.39, a maximum site coverage of 31.66% and a maximum building height of 20 storeys (65.85m) including car park for the "R(B)2" zone in the Remarks.
- 4.1.3 The proposed Schedule of Uses and development restrictions for the "R(B)2" zone have been enclosed in **Appendix I**. The proposed plan amendment will allow the relevant Government departments to properly control the land use, development intensity and layout of the proposed development by imposing developments restrictions.

RESIDENTIAL (GROUP B)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat	Ambulance Depot
Government Use (Police Reporting Centre, Post Office only)	Eating Place
House	Educational Institution
Library	Government Refuse Collection Point
Residential Institution	Government Use (not elsewhere specified)
School (in free-standing purpose-designed building only) #	Hospital
<u>Shop and Services</u> <u>(on land designated "R(B)2" only)</u>	Hotel
<u>Social Welfare Facility</u> <u>(on land designated "R(B)2" only)</u>	Institutional Use (not elsewhere specified)
Utility Installation for Private Project	Off-course Betting Centre
	Office
	Petrol Filling Station
	Place of Entertainment
	Place of Recreation, Sports or Culture
	Private Club
	Public Clinic
	Public Convenience
	Public Transport Terminus or Station
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Recyclable Collection Centre
	Religious Institution
	Rural Committee/Village Office
	School (not elsewhere specified)
	Shop and Services
	Social Welfare Facility
	Training Centre

Planning Intention

This zone is intended primarily for sub-urban medium-density residential developments in rural areas where commercial uses serving the residential neighborhood may be permitted on application to the Town Planning Board.

(Please see next page)

Remarks

- (a) On land designated "Residential (Group B) 1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 1, a maximum site coverage of 40% and a maximum building height of 5 storeys (15m) including 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 draft development permission area plan, whichever is the greater.
- (b) *On land designated "Residential (Group B) 2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum domestic plot ratio of 3, a maximum non-domestic plot ratio of 0.39, a maximum site coverage of 31.66% and a maximum building height of 20 storeys (65.85m) including 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 draft development permission area plan, whichever is the greater.*
- (c) In determining the maximum plot ratio and site coverage for the purposes of paragraphs (a) and (b) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and 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.
- (d) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions stated in paragraphs (a) and (b) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.



Date : 11th April, 2022
Your Ref : TPB/Y/YL-PS/4
Our Ref. : ADCL/PLG-10224/L015

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

By Hand and Email

Dear Sir/Madam,



Section 12A Planning Application No. Y/YL-PS/4 - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

We refer to our previously submitted Further Information (FI) dated 3.1.2022, 25.1.2022, 8.2.2022, 24.2.2022, 14.3.2022, 16.3.2022, 22.3.2022 and 24.3.2022 to address the comments from various Government departments.

In order to facilitate the processing of the captioned application by the Town Planning Board (the Board), we herewith submit 8 hard copies and 1 soft copy of a consolidated Planning Statement including the finalised versions of Master Layout Plans and Architectural Drawings, Tree Preservation and Landscape Proposal, Traffic Impact Assessment, Environmental Assessment, Sewerage Impact Assessment, Visual Impact Assessment, Quantitative Risk Assessment and Water Supply Impact Assessment for the consideration by the Board and the relevant Government departments.

Thank you for your kind attention and should you have any queries, please do not hesitate to contact our Miss Grace CHEUNG or Mr. Thomas LUK at 3180 7811.

Yours faithfully,
Aikon Development Consultancy Limited



Encl.

c.c. DPO/TM&YLW, PlanD (Attn. Mr. Alexander MAK and Mr. Kent LEE)
Client

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Section 12A Planning Application

Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from “Village Type Development” Zone and “Comprehensive Development Area” Zone to “Residential (Group B) 2” Zone

Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Planning Statement

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Prepared by
Aikon Development Consultancy Ltd.

In Association with
CKM Asia Ltd.
LanDes Ltd.
MG Design H.K. Ltd.
SMEC Asia Ltd.

April 2022

EXECUTIVE SUMMARY

(In case of discrepancy between English and Chinese versions, English shall prevail)

This *Planning Statement* is submitted to the Town Planning Board ("the Board") under Section 12A of the Town Planning Ordinance to rezone the site at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories (hereinafter referred to as "the application site") from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B) 2" ("R(B)2") zone (hereinafter referred to as "the proposed plan amendment") on the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 (hereinafter referred to as "the current OZP") for **Proposed Flat and Social Welfare Facility (Residential Care Home for the Elderly)** (hereinafter referred to as "the proposed development"). This *Planning Statement* serves to provide background information and planning justifications in support of the proposed development in order to facilitate the consideration by the Board.

The application site has a total area of approximately 14,080m² (including Government land of about 1,925m²). The proposed development involves the development of three residential blocks (Site A) ranging from 11 to 19 storeys comprising 840 flats, and a 6-storey RCHE (Site B) comprising 294 beds. The rezoning application is for facilitating a proposed flat and social welfare facility (residential care home for the elderly) to utilize the application site to provide a self-contained and desirable residential and social hub particularly targeting elderly and their families in need of independent living space and a social lifestyle. Considering that it is in line with the Government's policy, and that no adverse environmental, traffic or infrastructural impacts are anticipated, the proposed development is expected to contribute to community gains and enhance locality by optimising the potential of the application site.

As detailed in this *Planning Statement*, the proposed plan amendment for proposed development is well justified on the grounds that: -

- (a) The proposed development is in line with the Visions of "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" to create an inclusive and supportive city, including planning for a supportive environment to address housing needs and to provide elderly care services facilities;
- (b) The proposed development is in line with the Government's latest policy direction in addressing the demand for housing and the shortfall for residential care home for the elderly in the community;
- (c) The existing land uses character and the scale of the proposed development at the current application site is compatible with the surrounding environment;
- (d) The proposed development can facilitate the phasing out of non-conforming uses to develop a more comprehensive and well-designed development, which is expected to improve the overall local environment;
- (e) The proposed development will not pose any adverse impacts in terms of traffic, environmental, sewerage and visual aspects on the surrounding area as proven by the technical assessments; and
- (f) The approval of the current rezoning application will not set an undesirable precedent as

the application should be assessed on its individual merits and specific considerations, which the proposed development initiates to materialise Government's planning goal and optimise land resources by a technically feasible scheme without time-consuming assembling procedure.

In view of the above and the list of detailed planning justifications in this Planning Statement, the Board is respectfully requested to give favorable consideration to the proposed plan amendment.

行政摘要

(如內文與其英文版本有差異，則以英文版本為準)

申請人根據《城市規劃條例》第 12A 條向城市規劃委員會(「城規會」)遞交是次修訂規劃地帶的規劃申請。是次規劃申請地點位於新界元朗屏山丈量約份第 121 約地段第 1341 號 B 分段餘段、第 1341 號 B 分段第 1 小分段 J 分段餘段、第 1341 號 B 分段第 1 小分段 D 分段餘段、丈量約份第 122 約地段第 525 號 B 分段餘段及毗連政府土地(以下簡稱「申請地點」)，建議將申請地點由《屏山分區計劃大綱草圖編號 S/YL-PS/19》已劃作「鄉村式發展」地帶及「綜合發展區」地帶修訂為「住宅(乙類)2」地帶(以下簡稱「擬議修訂圖則」)，作擬議分層住宅及社會福利設施(安老院舍)(以下簡稱「擬議發展」)。此規劃報告書將提供是次申請的背景資料及規劃理據予城規會考慮。

申請地點的面積約為 14,080 平方米(包括約 1,925 平方米的政府土地)。擬議發展包括於申請地點內興建三座樓高 11 至 19 層的分層住宅樓宇(地點 A)，共提供 840 住宅單位，及一座樓高 6 層的社會福利設施(安老院舍)，提供 294 張床位。擬議修訂圖則旨在促進房屋供應及社會福利設施(安老院舍)的發展，利用申請地點提供一個自給自足的理想住宅和安老院舍。考慮到擬議修訂圖則符合政府的政策，並且預計不會對環境、交通或基礎設施造成不利影響，擬議發展將有效充分利用短缺的土地資源以適時回應政府對解決房屋供應及長者護理服務設施需求的最新政策方向。

此規劃報告書提供規劃理據，詳列如下：

- (一) 擬議發展符合《香港 2030+: 跨越 2030 年的規劃遠景與策略》的願景，以建立一個包容的城市，透過規劃解決住房需求及為長者提供服務設施。擬議發展將有效透過增加房屋供應及選擇，回應青年以及長者對房屋的需求，提升生活質素；
- (二) 擬議發展符合政府最新的政策方向以適時回應社會對房屋供應及安老院舍的需求。根據行政長官施政報告，房屋問題為現屆政府重點工作。然而，近年社會面對房屋供應短缺以及樓價高昂等挑戰。再者，人口老化下，社會對安老設施有殷切需求。擬議發展將能夠適時回應以上逼切社會關注，貫徹政府政策方向，符合公眾利益；
- (三) 擬議發展在現有土地用途、性質和發展規模方面與周遭環境相互兼容；
- (四) 擬議發展可釋放此地段的土地發展潛力。擬議申請將改劃舊有用途，促使更全面及設計更佳的房屋及社會福利設施發展，預期可長遠改善整體本地環境，而且有空間引入綠化及整體規劃，充分提升地段景觀及價值，符合資源效益；
- (五) 各項專業研究報告證明是次申請並不會對附近交通、環境、排污及視覺方面造成不良影響；及
- (六) 批准此擬議修訂圖不會為區內同類申請立下不良先例，因為委員會應按每宗申請的個別情況及其他獨特考慮因素已決定，而擬議發展通過技術上可行的方案實現政府的規劃願景和優化土地資源，無需耗時的土地規劃程序。

基於擬議發展附合所有的規劃考量因素，申請人懇請城規會委員給予考慮並批准是次規劃申請。

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Aikon Development Consultancy Ltd.
毅 勤 發 展 顧 問 有 限 公 司

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1. INTRODUCTION

1.1 Purpose

- 1.1.1. This *Planning Statement* is submitted to the Town Planning Board ("the Board") under Section 12A of the Town Planning Ordinance to rezone the site at Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories (hereinafter referred to as "the application site") from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B) 2" ("R(B)2") zone (hereinafter referred to as "the proposed plan amendment") on the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 (hereinafter referred to as "the current OZP") for **Proposed Flat and Social Welfare Facility (Residential Care Home for the Elderly (RCHE))** (hereinafter referred to as "the proposed development").
- 1.1.2. The application site has a total area of approximately 14,080m² (including Government land of about 1,925m²). The location of the application site is shown on **Figure 1** whilst **Figure 2** indicates relevant private lots and Government land that the application site involves. **The application site involved G.L. of about 1,925m², including about 1,883 m² in Site A and about 42m² in Site B.** The proposed development involves the development of three residential blocks (Site A) ranging from 11 to 19 storeys comprising 840 flats and a 6-storey RCHE (Site B) comprising 294 beds. The application site currently falls within an area at "V" zone (about 55.4%) and "CDA" zone (about 44.6%) on the Current OZP gazetted on 7.5.2021 (please refer to **Figure 3**).
- 1.1.3. Aikon Development Consultancy Limited has been commissioned by *On Billion International Limited* (hereinafter referred to as "the Applicant") to prepare and submit the current application and his behalf.

1.2 Objectives

- 1.2.1 The overriding goal of the current application is to enable the Applicant to be given an opportunity regarding the proposed development in the application site, as to achieve multiple policy goals promulgated by the Government in planning for the housing needs and the elderly services. In summary, the proposed development strives to achieve the following objectives:-
- To materialise the policy direction as stipulated on the Chief Executive's 2018, 2019 and 2020 Policy Addresses, "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" and the Elderly Services Programme Plan in addressing the foreseeable planning challenges posed by limited land supply, ageing population and increasing demand of housing and RCHEs;
 - To contribute to providing housing supply particularly to alleviate the urgent needs for affordable and suitable housing by young generation;
 - To make an optimal use of scarce land resources in response to the Government's policy initiatives of increasing the provision of RCHEs;
 - To create a pleasant, safe and convenient living environment, enhance liveability through promoting inter-generational care and support, and create a comfortable

- elderly-friendly living environment in the application site; and
- To provide a sustainable and beneficial land use alternative in the application site that could also stimulate environmental and infrastructural improvement to the locality.

1.3 Structure of the Planning Statement

- 1.3.1 This Planning Statement is divided into 6 chapters. **Chapter 1** is the above introduction outlining the purpose and background of the current application. **Chapter 2** gives background details of the site in terms of the current land use characteristics, neighboring developments and land ownership. **Chapter 3** offers the planning context of the proposed development. **Chapter 4** introduces the development proposal of the proposed development. A full list of planning justifications is given in **Chapter 5** whilst **Chapter 6** provides a concluding remark for the proposed development under the planning application.

2. SITE PROFILE

2.1 Location and Current Condition of the Application Site

- 2.1.1 The application site is located to the south-east of Tong Fong Tsuen and at the junction of Castle Peak Road (Ping Shan) and Ping Ha Road. As shown on **Figures 1 and 2**, the application site can be accessed via Castle Peak Road (Ping Shan), which is a dual-two lane carriageway, and Ping Ha Road. The Light Rail Transit is running along its southern boundary. The ingress/egress points are at the southern boundary and northern boundary of the application site.
- 2.1.2 As shown on **Figure 1** and **Illustration 1**, the application site involves two sites, i.e. Site A at the southern portion and Site B at the northern portion. Site A is currently occupied by a warehouse being used for storage of animal feeds, while Site B is used for an open carpark.

2.2 Surrounding Land Uses in the Vicinity

- 2.2.1 The subject locality of the application site is considered as urban fringe landscape character, predominantly surrounded by residential developments, factories, village houses, warehouses, open storages and scattered tree groups (refer to **Figure 1** and **Illustration 2**).
- 2.2.2 In terms of the wider surrounding context, to the immediate western side of the application site are dominated by a number of the village houses, i.e. Weslen Garden, Tong Fong Tsuen and Ping Shan San Tsuen. Further to the west of the villages and the application site are the low-rise residential developments, i.e. Imperial Villas, La Mansion.
- 2.2.3 To the north of the application site is a green knoll where the well-known Ping Shan Tang Clan Gallery Cum Heritage Trail Visitors Centre is situated. To the immediate eastern and northern side of the application site along Ping Ha Road are some vacant factory buildings currently under demolition along Ping Ha Road. To the further east of the application site across Ping Ha Road are the low-rise residential developments, namely Yan Wing Mansion, Green Orchid Towers and Ka On Garden.
- 2.2.4 To the immediate southern side of the application is the Castle Peak Road (Ping Shan) and a Light Rail Transit. To the further southern side of the application site across Castle Peak Road is an open space – Tong Yan San Tsuen Playground. To the southwestern side of the application site across Castle Peak Road are occupied by some industrial developments including Sat Win Automobile Plaza, Chi Shing Centre and Sagawa Logistic Centre. In general, the surrounding land uses in the vicinity of the application site are covered by residential developments and inactive industrial uses.

2.3 Land Status

2.3.1 The application site comprises 4 private lots, Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and the adjoining Government land. The total area of application site is about 14,080m² of which about 1,925m² of the Government land is included. The Lot Nos. 1341 S.B. ss.1 S.D. in D.D. 121 and 525 S.B RP in D.D. 122 are owned by the Applicant, while owners of other two Lots have authorised the Applicant to apply for the current proposed plan amendment **which the Owners' Consent has been submitted to the Town Planning Board.** All private lots are Old Schedule Agricultural Lots held under the Block Government Lease which contain no restriction of farming under the lease conditions, and no specification that leaving the lots idle is not allowed.

2.3.2 Considering that the adjoining Lot No. 1341 S.B ss.1 S.H in D.D. 121 to the northwest and the west of the application site are serving both pedestrian and vehicular access to the adjoining development, Weslen Garden, from Ping Ha Road, the relevant lot is not included in the boundary of the application site. The proposed development would not affect the current use of the adjoining lot serving as pedestrian and vehicular access to Weslen Garden.

2.3.3 The Lot No. 1341 S.B ss.1 S.D in D.D.121 is exclusively possessed by the applicant. The western side of Lot No. 1341 S.B ss.1 S.D in D.D.121 would still continuously serve as the pavement and EVA for the adjoining estate type development, yet the applicant would be responsible for landscaping and maintenance works. The proposed development would be implemented without affecting the pavement and EVA serving the adjoining estate type development. The relevant Lots are indicated in below site photos:





- 2.3.4 Upon the approval of this s.12A rezoning application under the Town Planning Ordinance and the OZP amendment process is completed, the Applicant will submit to the District Land Office an application for a land exchange before the implementation. In parallel, all the building works and site formation works will be submitted to the Building Department for approval. For the future implementation, the proposed development would be conducted in partnership scheme in order to ensure the proper and effective implementation.

3. PLANNING CONTEXT

3.1 The Current OZP

- 3.1.1 The application site falls within an area at "V" zone (about 55.4%) and "CDA" zone (about 44.6%) on the Current OZP gazetted on 7.5.2021. The Notes of the Current OZP stipulates that "V" zone is intended primarily for *"reflecting existing recognized and other villages, and to provide land considered suitable for village expansion and reprovisioning of village houses affected by Government projects. Land within this zone is primarily intended for development of Small Houses by indigenous villagers. It is also intended to concentrate village type development within this zone for a more orderly development pattern, efficient use of land and provision of infrastructures and services."* Although the application site involves a piece of land zoned "V" on the Current OZP, it should be noted that the application site is not covered by 'Village Environs' of any recognised village, and the application site is therefore not subject to any Small House developments.
- 3.1.2 For the "CDA" zone, the Notes of the Current OZP states that *"this zone is intended for comprehensive development/redevelopment of the area for residential use with commercial, open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints."* It is understood that the main purpose of designating a "CDA" is to conduct comprehensive planning and implement systematic development for the area concerned by taking account of environmental, traffic and infrastructure constraints, and the proponent of a "CDA" must submit an application to the Board in the form of a master layout plan.
- 3.1.3 In order to facilitate optimising the development potential and achieving a more efficient layout, the Applicant had attempted to liaise with the relevant landowners within the same "CDA" zone and to assemble the land over ten years. However, the site amalgamation was failed due to the fragmented land ownerships. Hence, the Applicant submits this s.12A rezoning application to utilise the available land resources and to fasten the land development for providing housing supply.

3.2 "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030"

- 3.2.1 According to the "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" ("Hong Kong 2030+"), a comprehensive strategic study to update the territorial development strategy, three important visions were identified. One is to create 'a liveable high-density city'. It is proposed to create a compact urban model with the railway transportation as the backbone and complemented by other modes of public transport network, as well as to create an inclusive and supportive city by offering a supportive environment to nurture the youth and addressing housing needs of all ages by providing wider and appropriate housing choices. A third vision is to create development capacity in Hong Kong. It is also proposed to review the sites at the fringe of built-up area that are deserted or have low conservation and public enjoyment values.

Subsequent planning justifications will elaborate how the proposed plan amendment would be in line with these visions.

3.3 Policy Address on Elderly Cares and Services

- 3.3.1 An irreversibly ageing trend is evident in Hong Kong. Population aged 65 or above is predicted to rise from 15% in 2014 to 32% in 2041 as according to the Census and Statistics Department. In this connection, the future perceived needs for elderly care services are amplified. The proposed development, which involves provision of a residential development comprising 840 flats and a social welfare facility (RCHE) comprising 294 beds, is in line with the latest Government's policy direction. As reflected in numerous policy and planning documents including the Policy Addresses 2018, 2019 and 2020, the provision of housing, elderly-care services and RCHEs are considered as important policy directions for the future. The current proposal, offering beds in the proposed social welfare facility (RCHE) for the elderly, is able to contribute towards satisfying the demand for RCHEs and reducing shortage in the community. Hence, the proposed development could contribute to the overarching policy directions and long-term planning intentions of the current and future government, which is to offer excellent elderly services in hardware terms.

3.4 Town Planning Board Guidelines No.17 (TPB PG-No.17)

- 3.4.1 According to TPB's Guidelines No. 17 "Designation of "CDA" Zones and Monitoring the Progress of "CDA" Developments", TPB will conduct the first review of each "CDA" site at the end of the third year after its designation, and subsequently conduct a review on a biennial basis. The latest "CDA" sites review result was conducted on 28.5.2021. There are a total of 59 "CDA" sites in the New Territories by the end of March 2021. Part of the application site is identified as site no. NTW 43 which is subject to review on the zoning, site boundary and/or development density.

3.5 Previous Planning Application

- 3.5.1 The application site is not subject to any previous planning application.

4. PROPOSED AMENDMENT TO THE CURRENT OZP

4.1 Proposed Amendment to the Current OZP

- 4.1.1 This application proposes to rezone the application site from "V" zone and "CDA" zone to "R(B)2" zone on the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 for Proposed Flat and Social Welfare Facility (Residential Care Home for the Elderly).
- 4.1.2 The proposed plan amendment involves the following items to the Draft Ping Shan OZP No. S/YL-PS/19:-
- To rezone Lot Nos. 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, 525 S.B RP in D.D. 122 and adjoining Government land from "V" zone and "CDA" zone to "R(B)2" zone with 'Social Welfare Facility (on land designated "R(B)2" only)' and 'Shop and Services (on land designated "R(2)" only)' listed under Column 1.
 - To impose the development restrictions of a maximum domestic plot ratio of 3, a maximum non-domestic plot ratio of 0.39, a maximum site coverage of 31.66% and a maximum building height of 20 storeys (65.85m) including car park for the "R(B)2" zone in the Remarks.
- 4.1.3 The proposed Schedule of Uses and development restrictions for the "R(B)2" zone have been enclosed in **Appendix I**. The proposed plan amendment will allow the relevant Government departments to properly control the land use, development intensity and layout of the proposed development by imposing developments restrictions.

5. THE DEVELOPMENT PROPOSAL

5.1 Proposed Site Layout, Major Development Parameters and Operation

- 5.1.1 The proposed development is configured as a low-to-medium density development, which comprises of residential development (Site A) and social welfare facility (RCHE) (Site B) to the south and north of the application site respectively. The proposed development would include the provision of parking spaces, loading/unloading spaces, communal open space, landscaped area and access road within the Application Site. The proposed development would involve the excavation of land for basement carpark. The area and depth of excavation would be about 8,660m² and 3.85m respectively.
- 5.1.2 The total gross floor area (GFA) of the proposed development is about 47,780m². At the Site A, there are three residential blocks with a domestic GFA of about 42,240m² and ranging from 11 to 19 storeys excluding a basement carpark, comprising 840 flats with a floor area ranging from 27.8m² to 112.4m² per unit. Besides, there would be a retail shop of about 140m² within Site A. At the Site B, there is one 6-storey RCHE block with elderly-care related facilities, with a non-domestic GFA of about 5,400 m² and comprising 294 beds. The Master Layout Plan and perspective drawings illustrating the development scheme, floor plans and section drawings of the proposed development are shown in **Appendix II**.
- 5.1.3 There will be approximately 2,834.9m² of communal open spaces provided for the proposed development. In addition, there will be an extensive plantation of trees and other vegetations along the boundary of the application site as well as along the internal access road and common landscaped areas providing screening effect and improving the overall landscape value of the application site. Details of landscape proposal and communal open spaces are discussed in **Section 5.2** and **Appendix III**.
- 5.1.4 To avoid planning blight caused by setting out the boundary of rezoning area, part of the Ping Ha Road (Lot No. 525 S.B RP in D.D.122) is included in the application site boundary (**Figures 1 to 3** refer) while the relevant lot would be a non-building area. In view of that, the site area countable for GFA/plot ratio calculations has excluded the relevant lot (refer to **Appendix II**).
- 5.1.5 The proposed development parameters and schedule of accommodations are summarized in the **Tables 1 to 3** below:

Table 1: Major Development Parameters of the Proposed Development

Development Parameters	
Site Area	About 14,080 m ² (including Government land of about 1,925 m ²)
Site A	About 11,688 m ²
Site B	About 2,392 m ²
Site Coverage	31.66%
Domestic	24.53%
Non-domestic	7.13%

Plot Ratio Domestic Non-domestic	3.39 3 0.39
GFA Domestic Non-domestic	About 47,780 m ² About 42,240 m ² About 5,540 m ²
Number of Blocks Domestic Non-domestic	Total 5 3 (excluding 1 one-storey clubhouse block) 2
Building Height Domestic Non-domestic	+54.25mPD to +79.45mPD +39.35mPD
Number of Storeys Domestic Non-domestic	11-19 storeys (excluding 1 storey of basement) 6 storeys
Domestic Units Unit Size	840 units 1-2 bedroom (50.3 m ² average size per unit)
Non-domestic Units	294 beds (8 beds per room; 6.5 m ² per bed)
Retail Facility GFA	140 m ² (Site A)
Clubhouse GFA⁽¹⁾	1,794 m ² (Site A)
Design Population	2,814 (2,520 residents for Site A and 294 residents for Site B)
Communal Open Space	2,834.9 m ²
Vehicular Access	Flat (Site A) access - Castle Peak Road (Ping Shan) RCHE (Site B) access - Ping Ha Road
Private Car Parking Space Domestic Non-domestic	196 (including 15 for visitors, 3 for disabled) 6 (including 1 for disabled)
Private Motorcycle Parking Space Domestic Non-domestic	10 1
Bicycle Parking Space Domestic Non-domestic	112 0
Heavy Goods Vehicles L/UL Space Domestic Non-domestic	4 1
Taxi/Private Car Lay-by Domestic Non-domestic	0 1
Ambulance Lay-by Domestic Non-domestic	0 1

⁽¹⁾ The GFA of clubhouse is exempted from PR calculation.

Table 2: Schedule of Proposed Flat (Site A)

Tower 1		
Floor	GFA	Number of Units
G/F	625 m ²	10
1/F – 5/F, 15/F	7,044 m ²	144
6/F – 14/F	9,918 m ²	198
16/F	1,068 m ²	22
17/F – 18/F	1,282 m ²	22
U.P./Bal.	522 m ²	/
P.D./ E/M / RSMSR	598 m ² (Deduct)	/
Total	19,861 m² (19 storeys)	396

Tower 2		
Floor	GFA	Number of Units
G/F	488 m ²	7
1/F – 4/F	4,192 m ²	88
5/F – 11/F	6,755 m ²	140
12/F	860 m ²	18
13/F – 14/F	1,102 m ²	22
U.P./Bal.	364 m ²	/
P.D./ E/M / RSMSR	229 m ² (Deduct)	/
Total	13,532 m² (15 storeys)	275

Tower 3		
Floor	GFA	Number of Units
G/F	172 m ²	1
1/F – 5/F	5,155 m ²	100
6/F	1,079 m ²	22
7/F	972 m ²	20
8/F – 10/F	1,656 m ²	27
U.P./Bal.	234 m ²	/
P.D./ E/M / RSMSR	421 m ² (Deduct)	/
Total	8,847 m² (11 storeys)	169

Table 3: Schedule of Proposed RCHE (Site B)

Floor	GFA	Number of Beds
G/F	620 m ²	/
1/F	960 m ²	46
2/F	955 m ²	62
3/F	955 m ²	62
4/F	955 m ²	62
5/F	555 m ²	62
Total	5400 m²	294

5.2 Tree Preservation and Landscape Proposal

- 5.2.1 Tree survey has been conducted for the current application (**Appendix III** refers). In order to investigate the landscape impact on existing vegetation within the Site and adjoining areas, trees located within 5m from the application site boundary are included in the tree survey. A total of 25 trees were recorded (i.e. 7 within and 18 outside the application site boundary). There are no Old and Valuable Trees (OVT), or protected species identified within the application site. However, there are 2 nos. of potential OVT identified outside the application site boundary. Since the proposed development will require vegetation clearance during construction stage, 9 out of total 25 surveyed existing trees, including 7 within and 2 outside the Site will be in conflict with the proposed works and will be proposed to be felled while none of them area proposed to be transplanted. To compensate the loss of 9 existing trees, 143 nos. of new trees with average 88mm DBH are proposed to be planted within the application site.
- 5.2.2 With reference to the Landscape Proposal (**Appendix III** refers), the Landscape Master Plan constitutes a total greenery area of about 3,897.05m² and a greenery ratio of 27.68%, which is more than the required 20% greenery requirement (equalling to 2,816m²) set out in PNAP APP-152 – Sustainable Building Design Guidelines. In order to further integrate the proposed development with the surrounding landscape, both hard and soft landscape elements are proposed in the application site. Several landscaped gardens are proposed at vacant spaces to provide visual amenity and for the enjoyment of the users and visitors on the application site. There are also tree and shrub planting along the internal access road and common landscaped areas. In addition, heavy standard trees are proposed along the front of the residential block (flats) to form a green boulevard along the internal road.
- 5.2.3 Moreover, edge planting strips with minimum 1.5m wide are proposed along the boundary to form a soft planted edges along the periphery of the Site. This will help to provide smooth transition between the development and the adjacent road corridors and adjoining neighbours. Planting verges will accommodate adequate growing medium for provision of ornamental trees, shrubs and groundcover and planting will be primary evergreen in nature.

5.3 Provision of Transports Facilities and Traffic Impacts

Internal Transports Facilities and Traffic Access Arrangement

- 5.3.1 The Traffic Impact Assessment ("TIA") (**Appendix IV** refers) has been conducted to assess the existing traffic issues, to design and provide internal transports facilities and to examine the traffic impacts of the proposed development to the local road network. The application site is bounded by Castle Peak Road – Ping Shan, which is a dual carriage 2-to-3-lane truck road, and Ping Ha Road, which is a single carriage 2-lane rural road. The application is accessible to road-based and rail-based public transport services. The Light Rail Ping Shan Station is located within 300m, or equivalent to around 5 minutes' walk from the application site to the east.
- 5.3.2 As shown in **Appendix II** and **Appendix IV**, the existing site access road leading from Castle Peak Road – Ping Shan will be maintained as the run-in/out for Site A. To facilitate the operation of the proposed RCHE in Site B, the run-in/out is proposed at Ping Ha Road.
- 5.3.3 In terms of internal transport facilities, for the residential development (Site A), a total of 196 private car parking spaces (including 15 visitors private car parking spaces), 10 motorcycle parking spaces, 56 bicycle parking spaces and 4 heavy goods vehicles loading/unloading bays will be provided. For the RCHE (Site B), 6 private car parking spaces (including 1 for disabled), 1 motorcycle parking space, 1 heavy goods vehicle loading/unloading bay, 1 taxi/private car lay-by and 1 mini-coach/ambulance lay-by will be provided. Details of the provision of parking spaces and loading/unloading bays are indicated in **Table 1** above and **Appendix IV**. Sufficient internal transport facilities will be provided for the Proposed Development. The internal transport facilities provided for the Private Housing comply with the maximum recommendations of *Hong Kong Planning Standards and Guidelines (HKPSG)* while the internal transport facilities for the proposed RCHE are provided to meet the operational needs.
- 5.3.4 Appropriate traffic arrangement measures would be established to enhance the safety of pedestrians and drivers at the application site. The measures include separating the proposed pedestrian path from the driveway by railings, erecting traffic sign labelled "Beware of Vehicles" on site, installing amber revolving lanterns with audible alarm on both sides of the site access, as well as providing proper road markings on site to minimise conflicts between pedestrians and vehicles, enhance safety within the application site, and also to guide the drivers. Details of the traffic management measures are indicated in **Appendix IV**.

Traffic Impacts

- 5.3.5 The traffic impacts of the proposed development had been analysed in the TIA report (**Appendix IV** refers). The proposed development is expected to be completed in 2027, thus the design year adopted for the capacity analysis is 2030, i.e. 3 years after the planning completion of the development. The results are presented that all critical links and junctions will have sufficient capacity to accommodate the expected traffic growth to Year 2030, including the traffic generated from the proposed development and in consideration of the NTW1 BDTM updated with planned developments and road

network located in the vicinity. The proposed development will hence not generate any adverse traffic impact to the surrounding road networks, and is acceptable from traffic engineering point of view.

5.4 Environmental Aspects

- 5.4.1 Environmental Assessment (**Appendix V** refers) has been conducted for the proposed development to evaluate that no adverse air quality, noise, water quality or waste impacts are anticipated to be generated by the proposed development, as well as to recommend mitigation measures to alleviate any identified environmental impacts.

Air Quality

- 5.4.2 As referred to **Section 2** of **Appendix V**, adverse air quality impact during the construction phase is not anticipated with the implementation of the recommended mitigation measures and good site practice. Moreover, the minimum buffer distance of 5m between air sensitive uses and local roads will be adopted for the application site. In order to avoid adverse air quality impacts arising from traffic emissions, a buffer zone is recommended for the proposed development with requirements of no fresh air intake/openable window of air sensitive uses shall be located within the buffer zone and any air sensitive uses within buffer zone shall rely on fresh air intake/openable window located out of the buffer zone for ventilation.

Noise Impact

- 5.4.3 As referred to **Section 3** of **Appendix V**, no adverse noise impact is anticipated during the construction phase of the proposed development with the implementation of the recommended noise mitigation measures. Buildings of the surrounding environment would provide effective acoustic linings and shields for the proposed development. No adverse fixed source noise impact on the proposed development is anticipated.
- 5.4.4 Moreover, adverse fixed noise impact from the operation of the proposed development is not anticipated with the provision of good practices. With the recommended migration measures, the traffic noise impact on the proposed development will comply with the standards as recommended in Chapter 9 Environment of the Hong Kong Planning Standards and Guidelines. For railway noise impacts, the predicted noise impacts from LRT to the proposed development shall comply with the requirements as listed in IND-TM and HKPSG after the implementation of proposed mitigation measures. Therefore, no adverse noise impact is anticipated during the construction and operation phases of the proposed development.

Water Quality

- 5.4.5 As referred to **Section 4** of **Appendix V**, the potential water quality impacts have been evaluated in construction and operation phases. With the implementation of the recommended measures including the provision of wastewater treatment facilities, provision of portable toilets for construction workers on-site, good practice and control measures, no adverse water quality impact site is anticipated from the construction and

operation phases of the proposed development. All the wastewater or sewage arising from the proposed development will be discharged to the municipal sewerage system. As such, no adverse water quality impact is anticipated during the construction and operation stages of the proposed development.

Waste Management and Land Contamination

- 5.4.6 As referred to **Section 5 of Appendix V**, with the development of waste management plan and implementation of the recommended good site practices, the waste generation during construction phase could be minimized. Provided that the recommended good site practices are followed, no adverse impact related to the management, handling and transportation of waste during the construction phase is anticipated. During the operation phase, the major type of waste generated will be domestic waste. Since domestic waste will be collected on a regular basis by private waste collectors and will be disposed at a landfill managed by the Environmental Protection Department, no adverse waste impacts from handling, transportation or disposal are anticipated during operation of the proposed development.
- 5.4.7 In consideration of the previous land uses on site, no potential of land contamination was identified from the Environmental Assessment. The application site is currently entirely paved with concrete and it is an existing logistic plant that is solely adopted as a storage of goods. No stains were observed and there was no sign of vegetation stress, which can be indicative of contaminated soils. In addition, no equipment and vehicles repairing activities were observed onsite, and no underground fuel storage tank was found during the site walk. In addition, no leakage of chemical was observed. Therefore, no land contamination impact is anticipated owing to the existing use as a logistic plant. As such, it is concluded that the land of the application site is unlikely contaminated. No potential land contamination sources and issues were identified, further land contamination investigation is considered not necessary.

5.5 Provision of Sewerage Facilities

- 5.5.1 According to the Sewerage Impact Assessment conducted (**Appendix VI** refers), sewage generated from the proposed development will be collected and conveyed to the public sewerage system underneath Castle Peak Rad – Ping Shan. There would be no unacceptable impact on the existing municipal sewerage system resulting from the proposed development. Moreover, there will be no unacceptable impact on the existing downstream sewerage system under the worst-case scenario of existing flows and the peak sewage discharge from the proposed development. As such, there is no need to have sewerage works or upgrading works for the proposed development.

5.6 Visual Context and Visual Impacts

- 5.6.1 The Visual Impact Assessment ("VIA") (**Appendix VII** refers) was carried out in accordance with the TPB's Guidelines No. 41, which aims to evaluate the anticipated visual impacts of the proposed development and to conclude the various mitigation measures.

- 5.6.2 The 6 Viewing Points ("VPs") are identified for the VIA as key strategic and popular local vantage points, and they are also public locations with high pedestrian and/or vehicular traffic flow. The VPs cater Visual Sensitive Receivers ("VSRs") with different sensitivity and nature, at different elevation and location that are publicly accessible. The analysis on the appraisal of visual impacts is based on the visual composition, visual obstruction, effect on public viewers and effect on visual resources on the selected VPs.
- 5.6.3 The current locality of the application site constitutes an urban fringe landscape character, with key visual elements comprising low-rise building blocks (village houses, low-rise residential development and factory buildings). Within the application site, majority of the area is covered by concrete and few trees. The existing visual quality of the application site could be regarded as medium on average. Despite the application site is located against a large green backdrop, the unattractive and monotonous outlook of the physical building blocks in the surrounding degrade the visual quality of the area.
- 5.6.4 The proposed development, as illustrated in **Section 5.1**, consists of three residential towers with building height at +40.80mPD to +76.30mPD in Site A, and one 6-storey RCHE block (with building height at +39.35mPD) in Site B. The buildings are designed with due consideration to the neighbourhood environment, including stepping height arrangement to be more related to the low rise neighbourhood, and there are two to three tiers of different treatment on the elevations to break down the bulkiness of the proposed development. Sensitive design measures are adopted, mainly include the strategic positioning of building blocks to achieve a distinct stepped building height profile, maintain considerable building separation and reduce visual changes. Edge planting strips and mature trees growing along the boundary of the application site will screen the buildings and alleviate the visual instruction of the proposed development. The mitigation measures would help to improve the visual permeability and visual openness, as well as to enhance the visual experience of the VSRs.
- 5.6.5 As concluded in the VIA, the overall visual impact of the proposed development at the application site would be negligible to moderate. The proposed development will bring some negative visual effects to most of the identified key VPs, yet it is considered acceptable and will not be incompatible to the surrounding visual context.

5.7 Sensitivity Test for the Future Development of the Adjoining Land

- 5.7.1 In accordance with the RNTPC Paper No. 5/21 about the latest review of sites designated "CDA" on statutory plans in the New Territories for the years 2019/21 dated 28.5.2021, part of the application site falls within the Ref. Site No. NTW 43 which is subject to review on the zoning, site boundary and/or development density. The "CDA" Site No. NTW 43 would be reviewed to facilitate early implementation and ensure that the local traffic problems along Ping Ha Road and I/R interface issue could be properly addressed.
- 5.7.2 Taking into account the future development of the adjoining land zoned "CDA" (i.e. Lot No. 1694 RP & Exts Thereto and 1702 RP in D.D. 122), the sensitivity test is conducted in the TIA (**Appendix IV** refers) and SIA (**Appendix VI** refers) to assume the relevant lots will be redeveloped as a similar residential development with plot ratio 3 and similar average flat size as the proposed development. The current use of Lot 1694 RP & Exts Thereto is

an abandoned feed mill under demolition, while Lot 1702 RP is an industrial factory named Century Centre.

- 5.7.3 To ascertain the traffic impact associated with the development of the adjoining land, a sensitivity test is conducted for the whole "CDA site. The indicative development parameters and traffic generation for the remaining portions are presented in **Section 4 of Appendix IV**. The sensitivity test indicates that the analysed junctions are expected to operate with capacities during the peak hours in 2030. It is concluded that the redevelopment of whole CDA site will result in no adverse traffic impact to the surrounding road network.

6. PLANNING JUSTIFICATIONS

6.1 In line with the Visions of "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030"

6.1.1 According to territorial planning strategy "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" ("HK2030+"), one of the visions is to create 'a liveable high-density city'. It is proposed to create an inclusive and supportive city, including planning for a supportive environment to nurture the youth and addressing housing needs of all ages by providing wider and appropriate housing choices. Our proposed plan can offer a desirable and unique environment to encourage independent and active lifestyle for the youth.

6.1.2 Our proposed plan can also coordinate with the vision of creating development capacity in Hong Kong. In the HK2030+, it is proposed to review the sites at the fringe of built-up that are deserted or have low conservation and public enjoyment values. Located at the fringe of the current OZP, the proposed development can unleash the development potential of the proposed site and optimise the use of land by upzoning it and turning it into low-to-medium rise residential buildings and RCHE facilities. It also increases the development intensity by taking into account infrastructure capacity and urban design aspects.

6.2 In Line with Latest Government's Policy Direction in Alleviating the Increasing Demand for Residence and RCHEs with a Dense Ageing Population

6.2.1 As reflected in numerous policy and planning documents including the Policy Addresses 2018, 2019 and 2020, housing problem as one of the most challenging issues, the current-term Government is most expected to resolve with innovative solutions. It is acknowledged that the current housing supply shortage and surging property prices should be rectified with great effort. At the same time, the Policy Agenda also points out that the Government would encourage the use of public transport services. An efficient multi-modal public transport network would be maintained with railway as the backbone, complemented by other services such as buses, public light buses and taxis. The current application offers a chance to increase housing supply with appropriate unit sizes as well as affordable price. It also helps to promote use of public transport with its convenient location to bus stop, provision of taxi and bicycle parking spaces, and short distance to the LRT station.

6.2.2 An irreversibly ageing trend is evident in Hong Kong. Population aged 65 or above is predicted to rise from 15% in 2014 to 32% in 2041 as according to the Census and Statistics Department. In this connection, the future perceived needs for elderly care services are amplified. According to the Elderly Services Programme Plan, a report published by the Elderly Commission in 2017, the aging population trend will bring about a surging demand for Long-Term Care (LTC) services for elderly, provided in two forms, namely Community Care Services (CCS) and Residential Care Services (RCS). The service demand in 2016 was over 48,500 persons for RCS and over 16,300 persons for CCS. The expected service demand in 2046 will be over 68,000 persons for RCS, and 62,100 persons for CCS. This can be translated into an increase in demand of 40% for RCS and 280% for CCS, from 2016 to 2046. In the shorter term, by 2026, it is estimated that the city will face a shortfall of

subsidized RCS beds by 14,000 and CCS places by 18,000. The service demand for CCS is expected to be greater.

6.2.3 The proposed development, offering 294 beds in the proposed social welfare facility (RCHE) for the elderly, is able to contribute towards satisfying the demand for elderly care facilities and reducing shortfall in the community. According to the Population Profile in Yuen Long District, the elderly population is projected to rise from 16% in 2020 to 24% in 2029, the extent of shortage of unit beds would be expected to increase. Hence, the proposed development, as a planning merit to cater to the expected demand of such elderly facilities, could contribute to the overarching policy directions and long-term planning goal, and to offer excellent elderly services in hardware terms. Besides, the design and operation of the proposed RCHE would be strictly followed the standards and requirements promulgated in the "Best Practice in Design and Operation of Residential Care Home for the Elderly" released by the Social Welfare Department.

6.2.4 In addition, the application site is situated within a residential area with a number of residential developments, named Weslen Garden and Imperial Villa, as well as the village developments, i.e. Tong Fong Tsuen and Ping Shan San Tsuen. In view of the growing aging population in Yuen Long District, there is a high demand for residential care services for the elderly in the community. The need for residential care services for the elderly in Yuen Long District area has always been keen and there is currently a deficit of RCHE subsidized beds in the Yuen Long area. The proposed social welfare facility (RCHE) could help address the shortfall for elderly facilities and meet the demand of the aged population in the community.

6.3 In Line with Review of Sites Designated "CDA" on Statutory Plans in the New Territories

6.3.1 According to the RNTPC Paper No. 5/21 about the latest "Review of Sites Designated "CDA" on Statutory Plans in the New Territories for the Years 2019/21", the members of RNTPC have considered the rezoning of suitable "CDA" sites to other appropriate zonings and monitored the progress of "CDA" developments on a biennial basis. The application site partially falls within one of the sites subject to review (Site No. NTW 43). As mentioned in the review results, the subject "CDA" site is subject to severe traffic congestion and industrial/residential (I/R) interface issues. Taking into account the above, the "CDA" site would be reviewed to facilitate early implementation and ensure that the local traffic problem and I/R interface issue could be properly addressed. As mentioned in **Section 5.7**, the future development of the adjoining land has also been considered in the sensitivity test.

6.3.2 Given that the proposed development is intended for residential development and RCHE, the current application is subsequently providing a desirable scheme to expedite the materialization of Government's development goal, as well as to upgrade the local transports facilities provision. It is not only in line with the recommendation of the "CDA" site review, but it also provides an optimal and feasible density scheme that integrates with the surroundings.

6.4 Stimulating Local Environmental and infrastructural Improvement

- 6.4.1 The application site is situated within a residential area with a number of residential developments, named Weslen Garden and Imperial Villa, as well as the village developments, i.e. Tong Fong Tsuen and Ping Shan San Tsuen. Through approval of the current rezoning application, a well-planned residential development comprising of a social welfare facility (RCHE) would be established in addressing the social and community needs for housing supply and social welfare services.
- 6.4.2 Moreover, the current uses in the application are comparatively unproductive and unpleasant. The proposed development can facilitate the phasing out of such non-conforming uses to develop a more comprehensive and well-designed residential development, which is expected to improve the overall local visual amenity. Various landscape measures including extensive plantation of trees and other vegetations along the boundary of the application site as well as along the access road and the common landscaped areas, and the establishment of landscape garden are proposed for the proposed development to improve the overall landscape value of the application site. The proposed development could make efficient use of land, and effectively improve the suburban environment, micro-climate of the neighbourhood and the overall landscape value of the area (**Appendix III** refers).
- 6.4.3 The proposed development is also expected to stimulate improvement of the local infrastructure provision in terms of sewerage, traffic and landscape aspects. The upgrade of utility and transport provision will be beneficial to the local villages and residential developments.

6.5 No Adverse Traffic, Environmental, Sewerage and Visual Impacts

- 6.5.1 Various public transport facilities are available in proximity to the application site. A variety of transport options, including LRT, bus and minibuses, are available in the vicinity of the application site to support the daily commuting of residents, as well as visitors to the social welfare facility (RCHE). As such, smooth passenger and vehicle flow can be maintained along Castle Peak Road – Ping Shan. The proposed development would not lead to overloading or deficit of the existing transport system in the district.
- 6.5.2 Traffic Impact Assessment (**Appendix IV** refers) has been conducted and concludes that with the construction of the new access road and the implementation of appropriate traffic measures to facilitate the operation, the application site would be able to cope with the traffic generated from the proposed development. The proposed development would not cause any adverse traffic impacts.
- 6.5.3 From the environmental perspective, no adverse air quality, noise, water quality or waste impacts are anticipated from the proposed development with the recommended mitigation measures to alleviate any identified environmental impacts, with reference to **Appendix V**.

6.5.4 In terms of sewerage from the proposed development, Sewerage Impact Assessment (**Appendix VI** refers) has been conducted and concluded that the existing sewerage system would have sufficient capacity to receive the wastewater generated from the proposed development and no sewerage upgrading works will be required.

6.5.5 As concluded in the VIA (**Appendix VII** refers), the overall visual impact of the proposed development at the application site would be negligible to moderate. The proposed development will bring some negative visual effects to most of the identified key VPs, yet it is considered acceptable and will not be incompatible to the surrounding visual context.

6.6 Not Setting an Undesirable Precedent yet Materialising Government's Planning Goal and Optimising Land Resources

6.6.1 In view of the justifications in the above sections, approval of the current rezoning application would not set an undesirable precedent for other similar rezoning applications in the current OZP as the current application to the Board should be assessed on its individual merits and other specific considerations. In determining the legitimacy of the current application, the above sections have well addressed the development initiative to materialise Government's planning goal and optimise land resources by a technically feasible scheme without time-consuming assembling procedure.

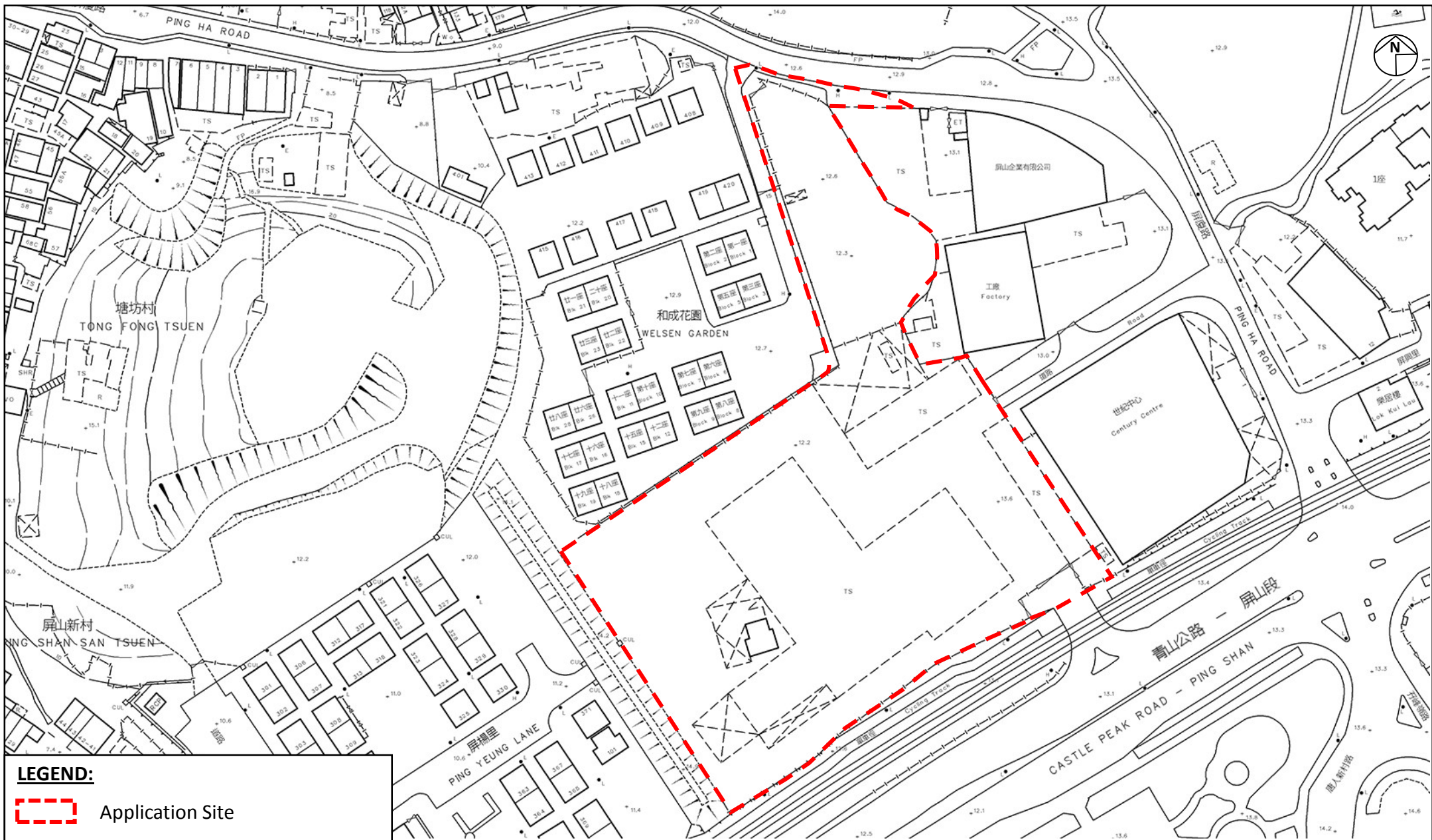
7 CONCLUSION

- 7.1.1 This Planning Statement is submitted to the Board under Section 12A of the Town Planning Ordinance to rezone the site at the application site from "V" zone and "CDA" zone to "R(B)2" zone on the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 for **Proposed Flat and Social Welfare Facility (Residential Care Home for the Elderly)**. The Planning Statement serves to provide background information and planning justifications in support of the proposed development in order to facilitate the consideration by the Board.
- 7.1.2 The application site has a total area of approximately 14,080m² (including Government land of about 1,925m²). The proposed development involves the development of three residential blocks (Site A) ranging from 11 to 19 storeys comprising 840 flats, and a 6-storey RCHE (Site B) comprising 294 beds. The rezoning application is for facilitating a proposed flat and social welfare facility (residential care home for the elderly) to utilize the application site to provide a self-contained and desirable residential and social hub particularly targeting elderly and their families in need of independent living space and a social lifestyle. Considering that it is in line with the Government's policy, and that no adverse environmental, traffic or infrastructural impacts are anticipated, the proposed development is expected to contribute to community gains and enhance locality by optimising the potential of the application site.
- 7.1.3 As detailed in this Planning Statement, the proposed plan amendment for proposed development is well justified on the grounds that: -
- (a) The proposed development is in line with the Visions of "Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030" to create an inclusive and supportive city, including planning for a supportive environment to address housing needs and to provide elderly care services facilities;
 - (b) The proposed development is in line with the Government's latest policy direction in addressing the demand for housing and the shortfall for residential care home for the elderly in the community;
 - (c) The existing land uses character and the scale of the proposed development at the current application site is compatible with the surrounding environment;
 - (d) The proposed development can facilitate the phasing out of non-conforming uses to develop a more comprehensive and well-designed development, which is expected to improve the overall local environment.
 - (e) The proposed development will not pose any adverse impacts in terms of traffic, environmental, sewerage and visual aspects on the surrounding area as proven by the technical assessments; and
 - (f) The approval of the current rezoning application will not set an undesirable precedent as the application should be assessed on its individual merits and specific considerations, which the proposed development initiates to materialise Government's planning goal and optimise land resources by a technically feasible scheme without time-consuming assembling procedure.

- 7.1.4 In view of the above and the list of detailed planning justifications in this Planning Statement, the Board is respectfully requested to give favorable consideration to the proposed plan amendment.

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Figure 1	The Location Plan
Figure 2	Extract of Lot Index Plan (No. ags_S00000079219_0001)
Figure 3	Extract of Draft Ping Shan Outline Zoning Plan (No. S/YL-PS/19)



Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Location Plan

Figure:

1

Scale:

Not to Scale

Date:

Oct 2021



AIKON DEVELOPMENT CONSULTANCY LTD.

Ref.: ADCL/PLG-10224-R001a/F001



LEGEND:

 Application Site

Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Extract of Lot Index Plan No. ags_S00000079219_0001

Figure:

2

Scale:

Not to Scale

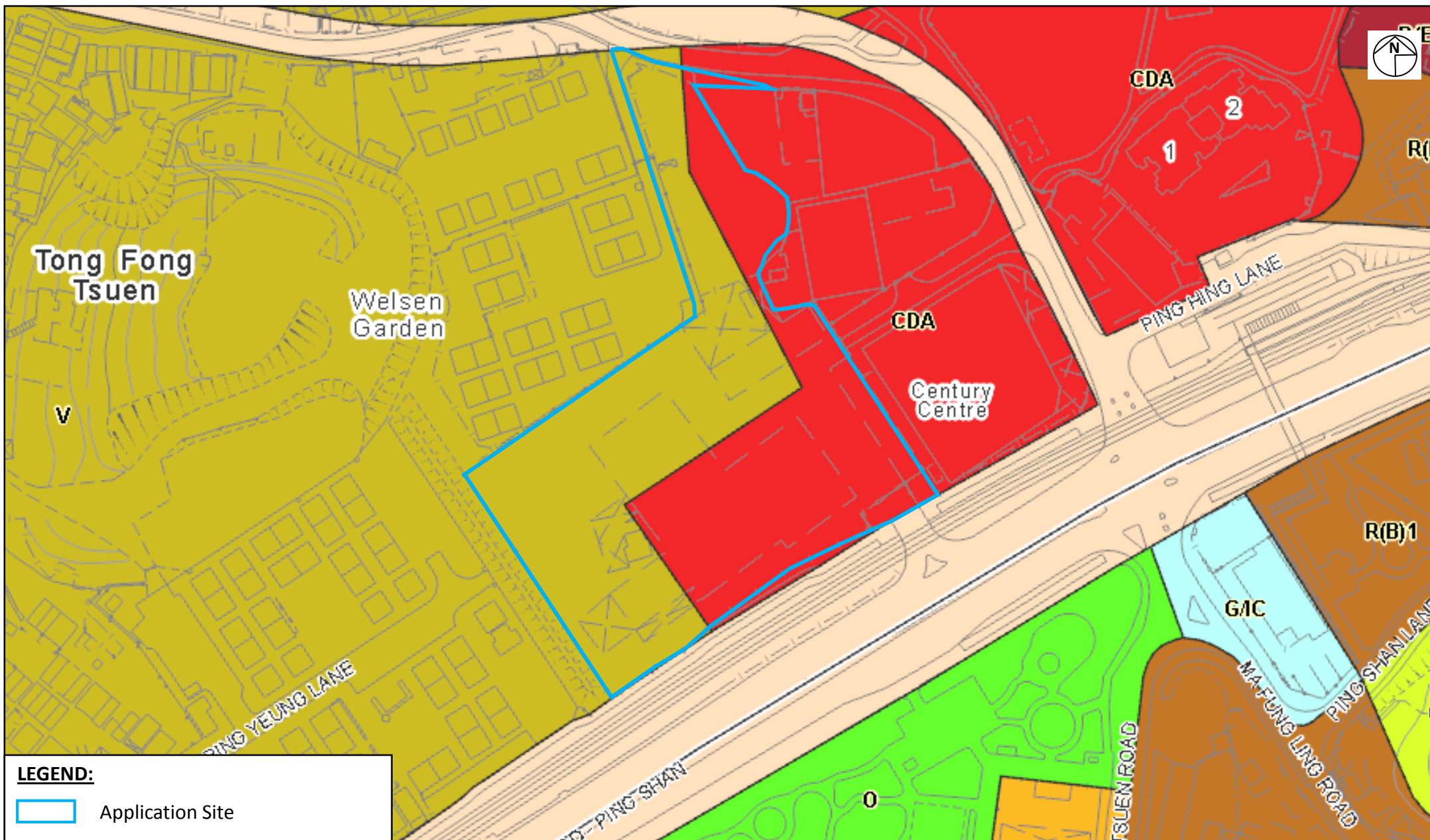
Date:

Oct 2021

Ref.: ADCL/PLG-10224-R001a/F002



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Project:

Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Extract of Approved Ping Shan Outline Zoning Plan No. S/YL-PS/18

Figure:

3

Scale:

Not to Scale

Date:

Oct 2021

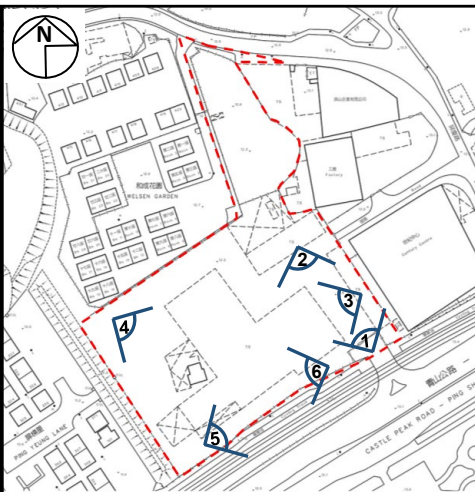
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AIKON DEVELOPMENT CONSULTANCY LTD.

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Illustration 2	Surrounding Land use Characteristics
Illustration 3	Extract of Aerial Photos (Nos. CW58449 01.08.2004 AND E089204C dated 18.02.2020)



Project:
Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

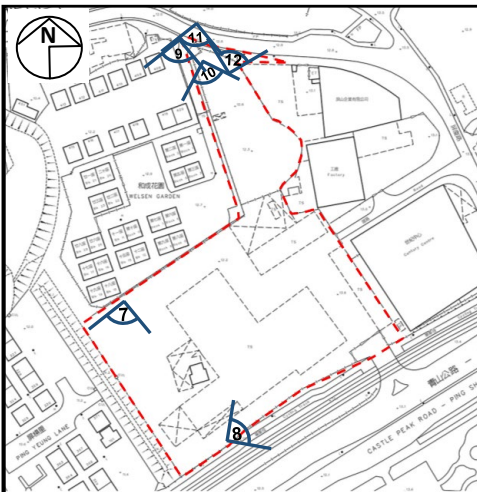
Title:
Current Condition of the Application Site (I)

Ref.: ADCL/PLG-10224-R001/I001-I

Illustration:
1-I

Scale:
Not to Scale

Date:
Sep 2021



Project:
Section 12A Rezoning Application - Request for Amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 from "Village Type Development" Zone and "Comprehensive Development Area" Zone to "Residential (Group B) 2" Zone at Various Lots in D.D 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

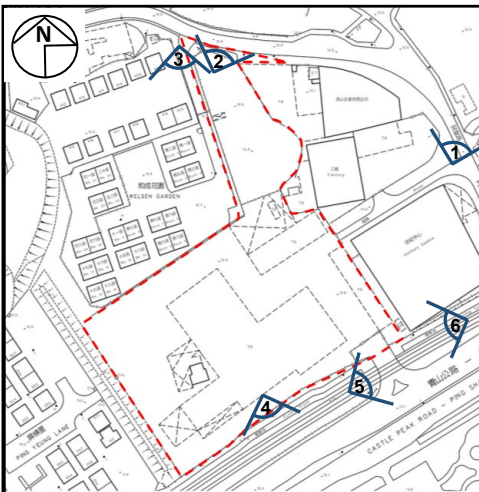
Title:
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Ref.: ADCL/PLG-10224-R001/I001-II

Illustration:
1-II

Scale:
Not to Scale

Date:
Aug 2021



Project:

Section 12A Planning Application to rezone the Application Site from “Village Type Development” and “Comprehensive Development Area” Zones to “Residential (Group B) 2” for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Flats at Various Lots in D.D. 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:

Surrounding Land Use Characteristics

Illustration:
2

Scale:
Not to Scale

Date:
Sep 2021

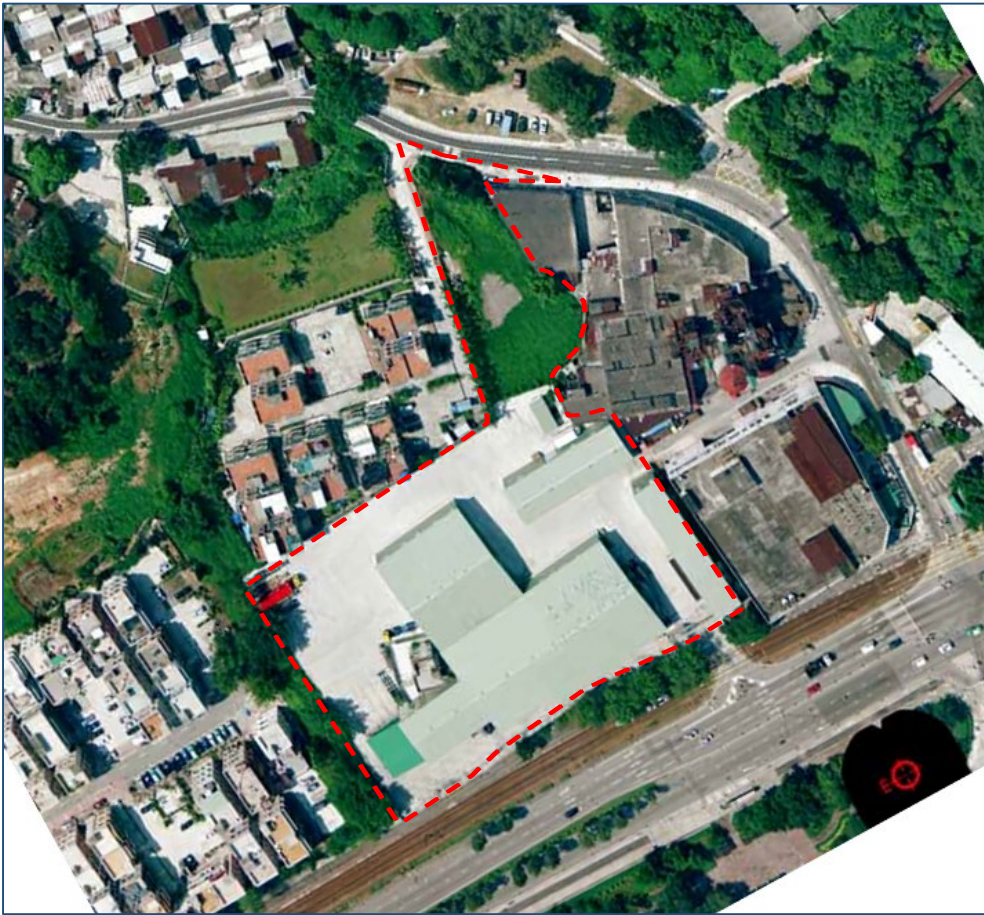
Ref.: ADCL/PLG-10224-R001/I002



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Aerial Photo dated 01.08.2004

Aerial Photo dated 18.02.2020



LEGEND:
Application Site

Project:
Section 12A Planning Application to rezone the Application Site from “Village Type Development” and “Comprehensive Development Area” Zones to “Residential (Group B) 2” for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Flats at Various Lots in D.D. 121 and D.D. 122 and Adjoining Government Land, Ping Shan, Yuen Long, New Territories

Title:
Extract of Aerial Photos
(Nos. CW58449 dated 01.08.2004 and E089204C dated 18.02.2020)

Ref.: ADCL/PLG-10224-R001/I003

Illustration:
3
Scale:
Not to Scale
Date:
Sep 2021

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Appendix III	Tree Preservation and Landscape Proposal
Appendix IV	Traffic Impact Assessment
Appendix V	Environmental Assessment
Appendix VI	Sewerage Impact Assessment
Appendix VII	Visual Impact Assessment
Appendix VIII	Quantitative Risk Assessment
Appendix IX	Water Supply Impact Assessment

Appendix I

Proposed Amendments to the Notes of the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19

RESIDENTIAL (GROUP B)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat	Ambulance Depot
Government Use (Police Reporting Centre, Post Office only)	Eating Place
House	Educational Institution
Library	Government Refuse Collection Point
Residential Institution	Government Use (not elsewhere specified)
School (in free-standing purpose-designed building only) #	Hospital
<u>Shop and Services</u> <u>(on land designated "R(B)2" only)</u>	Hotel
<u>Social Welfare Facility</u> <u>(on land designated "R(B)2" only)</u>	Institutional Use (not elsewhere specified)
Utility Installation for Private Project	Off-course Betting Centre
	Office
	Petrol Filling Station
	Place of Entertainment
	Place of Recreation, Sports or Culture
	Private Club
	Public Clinic
	Public Convenience
	Public Transport Terminus or Station
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Recyclable Collection Centre
	Religious Institution
	Rural Committee/Village Office
	School (not elsewhere specified)
	Shop and Services
	Social Welfare Facility
	Training Centre

Planning Intention

This zone is intended primarily for sub-urban medium-density residential developments in rural areas where commercial uses serving the residential neighborhood may be permitted on application to the Town Planning Board.

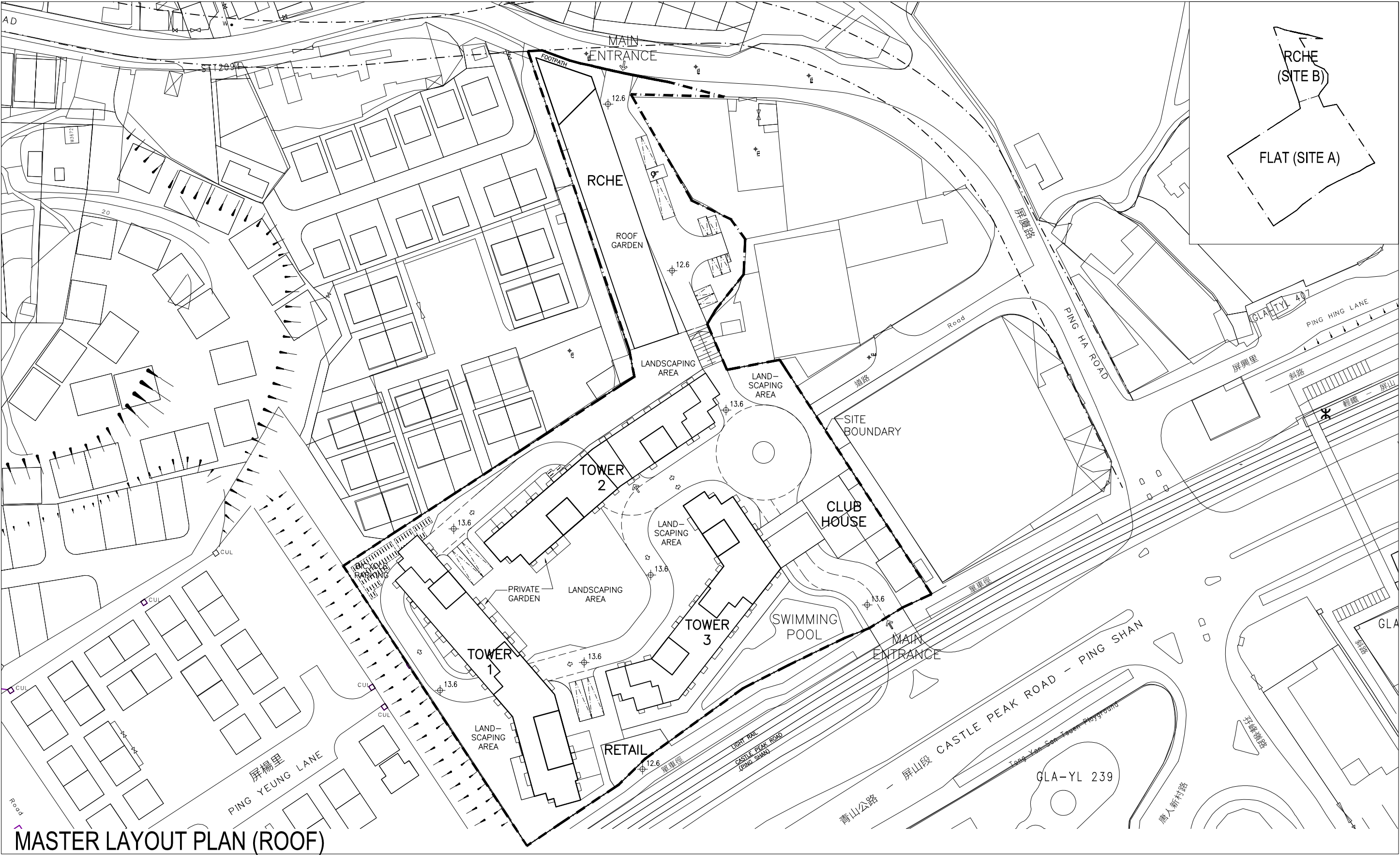
(Please see next page)

Remarks

- (a) On land designated "Residential (Group B) 1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 1, a maximum site coverage of 40% and a maximum building height of 5 storeys (15m) including 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 draft development permission area plan, whichever is the greater.
- (b) *On land designated "Residential (Group B) 2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum domestic plot ratio of 3, a maximum non-domestic plot ratio of 0.39, a maximum site coverage of 31.66% and a maximum building height of 20 storeys (65.85m) including 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 draft development permission area plan, whichever is the greater.*
- (c) In determining the maximum plot ratio and site coverage for the purposes of paragraphs (a) and (b) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and 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.
- (d) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions stated in paragraphs (a) and (b) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

A p p e n d i x I I

Master Layout Plan and Architectural Drawings



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	15/07/21
A	GENERAL REVISION	NC	DY	DY	29/07/21
B	GENERAL REVISION	NC	DY	DY	05/08/21
C	GENERAL REVISION	NC	DY	DY	10/08/21
D	GENERAL REVISION	NC	DY	DY	07/12/21
E	GENERAL REVISION	NC	DY	DY	08/12/21
F	GENERAL REVISION	NC	DY	DY	07/02/22
G	GENERAL REVISION	NC	DY	DY	08/02/22

Rev	Description	Drawn	Checked	Approved	Date

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Telephone : (852) 22 345 647
Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title

PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG

Drawing Title

MASTER LAYOUT PLAN (ROOF)

Project No. 20/HK/YL02	Issue Date. 15/07/2021
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Drawing No.	A-P-001 (G)

Authority's / Client's Approval

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PARKING PROVIDED:

PRIVATE CAR: 180 (B/F)

PRIVATE CAR (VISITOR): 15 (B/F)

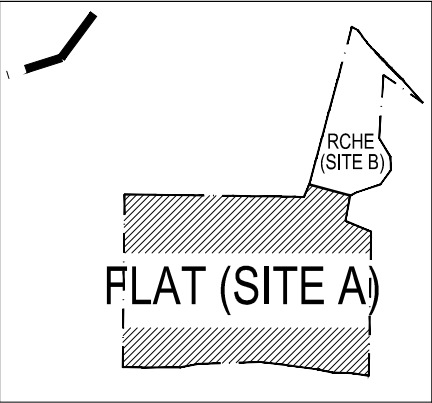
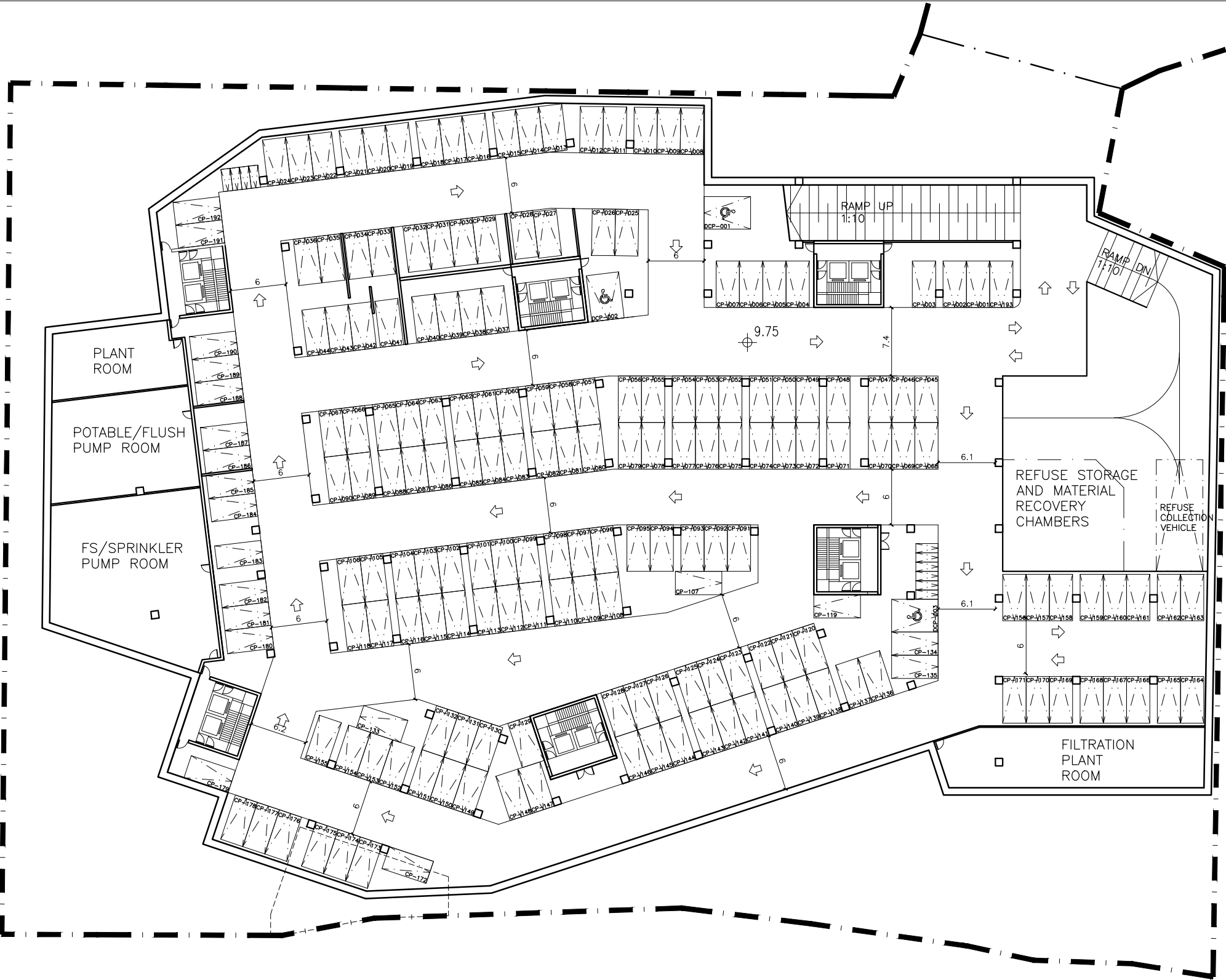
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PRIVATE MOTORCYCLE: 9 (B/F)

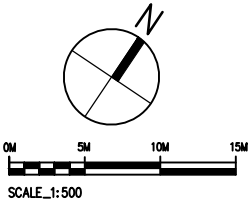
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BICYCLE: 112 (G/F)

GOODS VEHICLE: 4 (G/F)



BASEMENT



Rev	Description	Drawn	Checked	Approved	Date
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A	GENERAL REVISION	NC	DY	DY	20./04/21
B	GENERAL REVISION	BP	DY	DY	11./05/21
C	GENERAL REVISION	NC	DY	DY	18./05/21
D	GENERAL REVISION	NC	DY	DY	01./06/21
E	GENERAL REVISION	NC	DY	DY	29./07/21
F	GENERAL REVISION	NC	DY	DY	04./10/21
G	GENERAL REVISION	NC	DY	DY	08./12/21

Rev	Description	Drawn	Checked	Approved	Date

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Website : www.mgdesignhk.com

Project Title PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	Drawing Title RESIDENTIAL DEVELOPMENT LAYOUT PLAN BASEMENT	Project No. 20/HK/YL02	Issue Date. 29/04/2021	Authority's / Client's Approval
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		SCALE. 1 : 500	(A3)	
		Drawing No. A-P-201	(G)	

SITE AREA: = 14080 SQ. M.

CLASS "A" SITE

GROSS FLOOR AREA (TOWER 1)

G / F : 625 SQ. M. (1 STOREY)
1 / F - 5 / F, 15 / F : 7044 SQ. M. (6 STOREYS)
6 / F - 14 / F : 9918 SQ. M. (9 STOREYS)
16 / F : 1068 SQ. M. (1 STOREY)
17 / F - 18 / F : 1282 SQ. M. (2 STOREYS)
U. P. / BAL. : 522 SQ. M.
P. D. / E / M / R / S / M / S / R : 598 SQ. M. (DEDUCT)

TOTAL : 19861 SQ. M. (19 STOREYS)

GROSS FLOOR AREA (TOWER 2)

G / F : 488 SQ. M. (1 STOREY)
1 / F - 4 / F : 4192 SQ. M. (4 STOREYS)
5 / F - 11 / F : 6755 SQ. M. (7 STOREYS)
12 / F : 860 SQ. M. (1 STOREY)
13 / F - 14 / F : 1102 SQ. M. (2 STOREYS)
U. P. / BAL. : 364 SQ. M.
P. D. / E / M / R / S / M / S / R : 229 SQ. M. (DEDUCT)

TOTAL : 13532 SQ. M. (15 STOREYS)

GROSS FLOOR AREA (TOWER 3)

G / F : 172 SQ. M. (1 STOREY)
1 / F - 5 / F : 5155 SQ. M. (5 STOREYS)
6 / F : 1079 SQ. M. (1 STOREY)
7 / F : 972 SQ. M. (1 STOREY)
8 / F - 10 / F : 1656 SQ. M. (3 STOREYS)
U. P. / BAL. : 234 SQ. M.
P. D. / E / M / R / S / M / S / R : 421 SQ. M. (DEDUCT)

TOTAL : 8847 SQ. M. (11 STOREYS)

TOTAL GROSS FLOOR AREA

T1 + T2 + T3 = 42240 SQ. M. (APPROX.)

NON-ACCOUNTABLE GROSS FLOOR AREA

PLANT ROOM + BAL. / U. P. + P. D. = 3007 SQ. M. (APPROX.)

PLOT RATIO : 42240 / 14080 = 3.0

CLASS "A" SITE, DOMESTIC BUILDING

HEIGHT OF BUILDING

OVER 61 m

SITE COVERAGE : 3454 / 14080

= 24.53 % < 33.33 % (APPROX.)

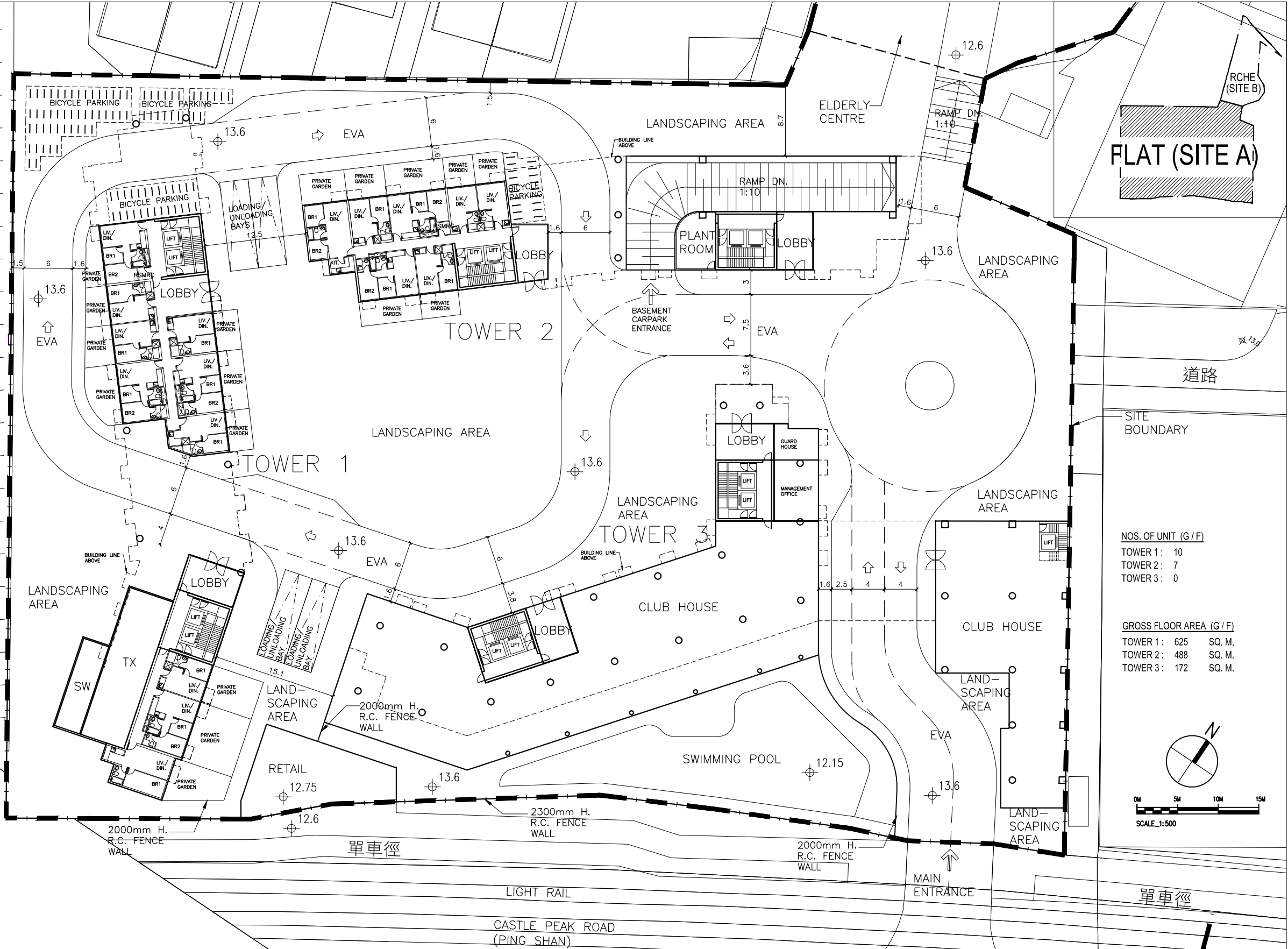
CLUB HOUSE AREA : 1794 / 42240

= 4.25 % (APPROX.)

GROSS FLOOR AREA OF RETAIL

= 140 SQ. M. (APPROX.)

G / F



NOS. OF UNIT (G / F)

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TOWER 2 : 7

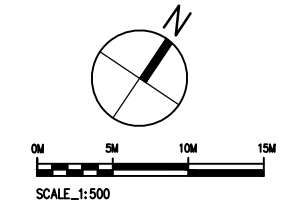
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GROSS FLOOR AREA (G / F)

TOWER 1 : 625 SQ. M.

TOWER 2 : 488 SQ. M.

TOWER 3 : 172 SQ. M.



Rev	Description	Drawn	Checked	Approved	Date
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B	GENERAL REVISION	BP	DY	DY	11 / 05 / 21
C	GENERAL REVISION	NC	DY	DY	18 / 05 / 21
D	GENERAL REVISION	NC	DY	DY	01 / 06 / 21
E	GENERAL REVISION	NC	DY	DY	02 / 06 / 21
F	GENERAL REVISION	NC	DY	DY	29 / 07 / 21
G	GENERAL REVISION	NC	DY	DY	05 / 08 / 21
H	GENERAL REVISION	NC	DY	DY	09 / 08 / 21

Rev	Description	Drawn	Checked	Approved	Date
I	GENERAL REVISION	NC	DY	DY	10 / 08 / 21
J	GENERAL REVISION	NC	DY	DY	18 / 12 / 21

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Telephone : (852) 22 345 647
Facsimile : (852) 22 345 648
Website : www.mgdesignhk.com

Project Title
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

Drawing Title
**RESIDENTIAL DEVELOPMENT
LAYOUT PLAN
G / F**

Project No.
20/HK/YL02
Issue Date.
29/04/2021
Cod File No.
layout_plan.dwg
SCALE.
1 : 500 (A3)
Drawing No.
A-P-202 (J)

Authority's / Client's Approval

NOS. OF UNIT

TOWER 1: 24
TOWER 2: 22
TOWER 3: 20

GROSS FLOOR AREA

TOWER 1: 1174 SQ. M.
TOWER 2: 1048 SQ. M.
TOWER 3: 1031 SQ. M.

NOS. OF UNIT (TOWER 1)

G/F: 10 (1 STOREY)
1/F - 5/F: 144 (6 STOREYS)
6/F - 14/F: 198 (9 STOREYS)
16/F: 22 (1 STOREYS)
17/F - 18/F: 22 (2 STOREYS)
TOTAL: 396 (19 STOREYS)

NOS. OF UNIT (TOWER 2)

G/F: 7 (1 STOREY)
1/F - 4/F: 88 (4 STOREYS)
5/F - 11/F: 140 (7 STOREYS)
12/F: 18 (1 STOREYS)
13/F - 14/F: 22 (2 STOREYS)
TOTAL: 275 (15 STOREYS)

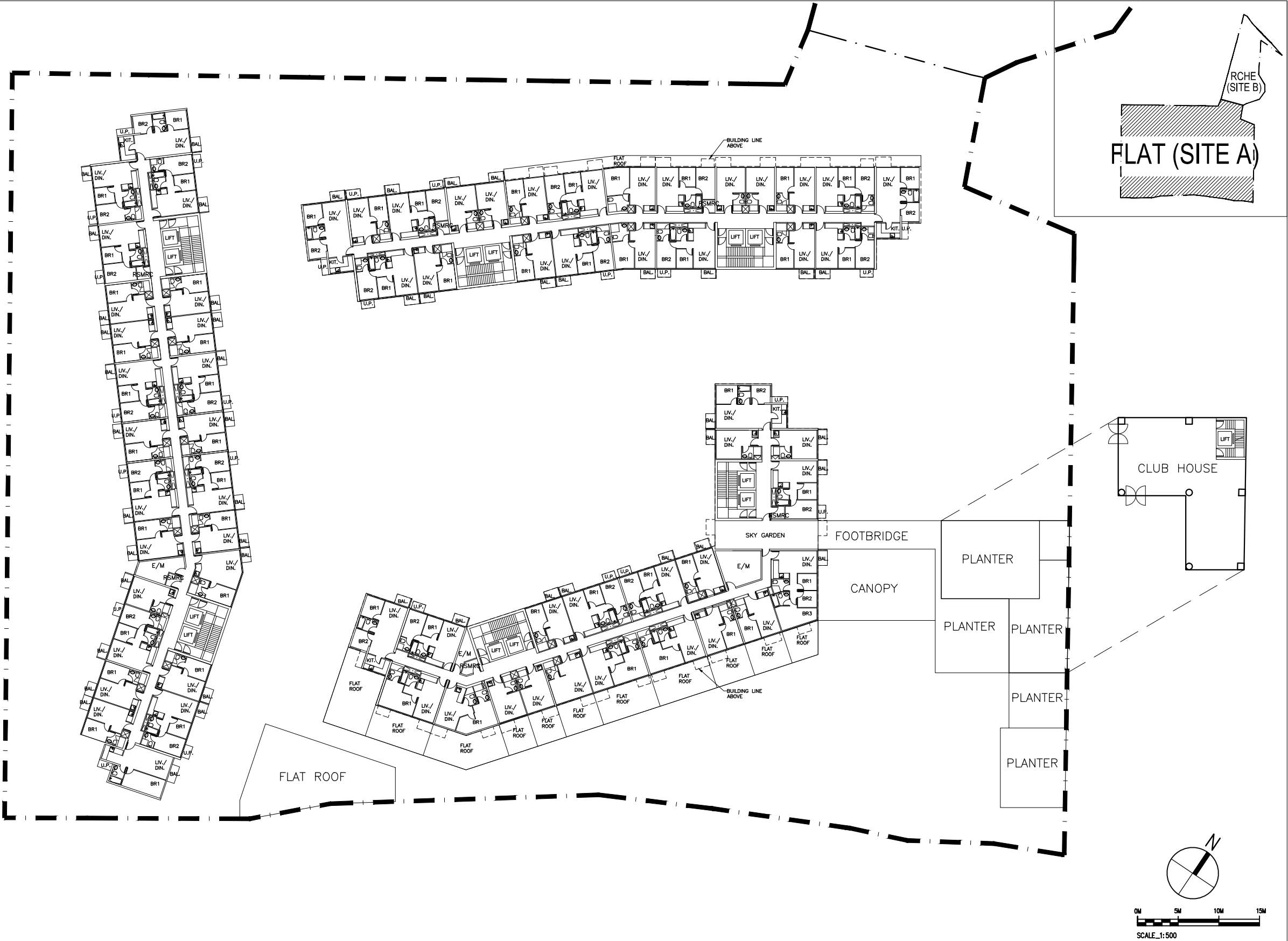
NOS. OF UNIT (TOWER 3)

G/F: 0 (1 STOREY)
1/F - 5/F: 100 (5 STOREYS)
6/F: 22 (1 STOREY)
7/F: 20 (1 STOREY)
8/F - 10/F: 27 (3 STOREYS)
TOTAL: 169 (9 STOREYS)

TOTAL NOS. OF UNIT

T1 + T2 + T3 = 840

1 / F



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21
A	GENERAL REVISION	NC	DY	DY	02/06/21
B	GENERAL REVISION	NC	DY	DY	29/07/21
C	GENERAL REVISION	NC	DY	DY	09/08/21

Rev	Description	Drawn	Checked	Approved	Date

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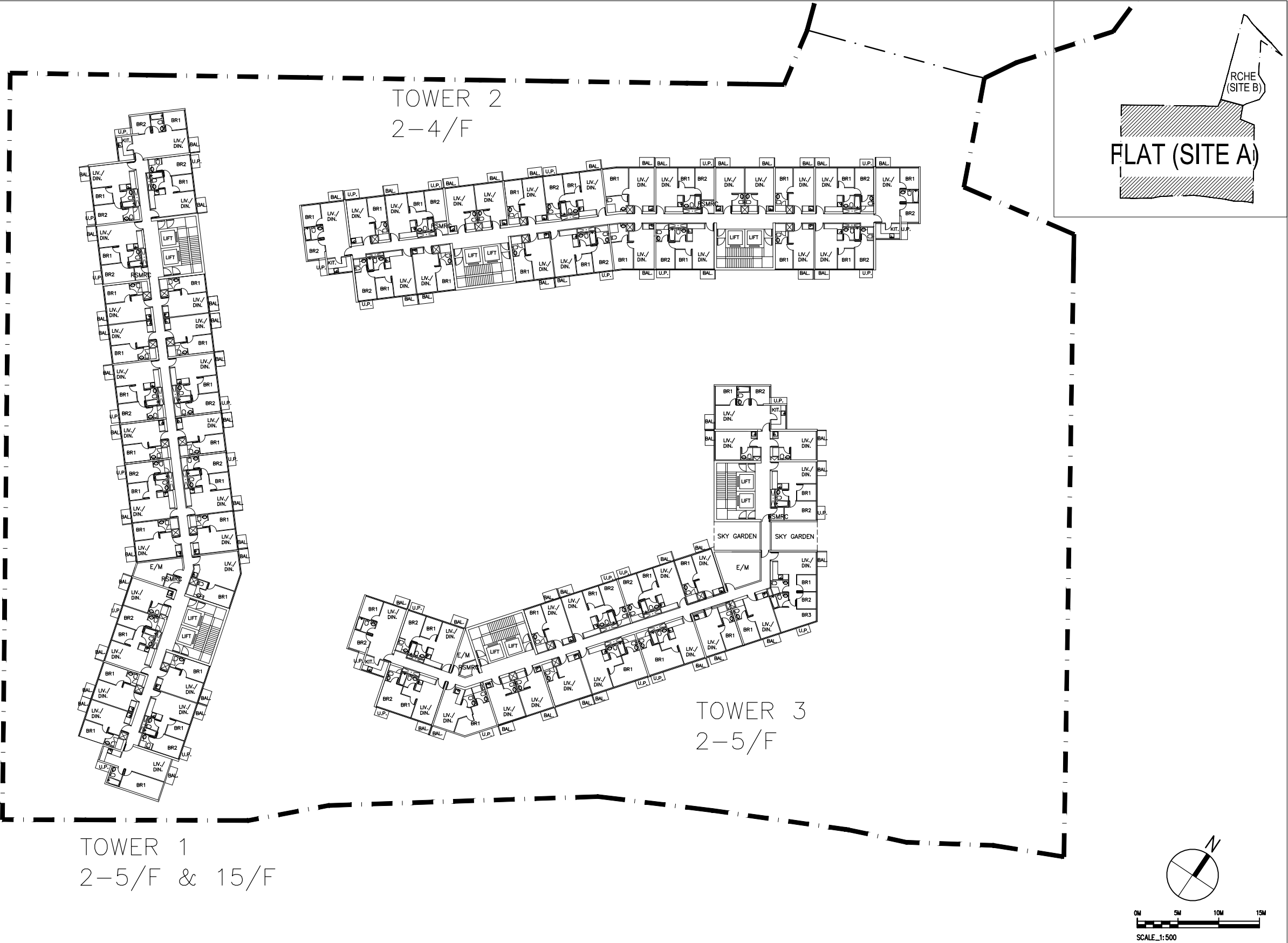
Project Title	Drawing Title	Project No.	Issue Date	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RESIDENTIAL DEVELOPMENT LAYOUT PLAN 1 / F	20/HK/YL02	18/05/2021	
		Cad File No.	layout_plan.dwg	
		SCALE.	1 : 500 (A3)	
		Drawing No.	A-P-202A (C)	

NOS. OF UNIT (TYPICAL A)

TOWER 1: 24
TOWER 2: 22
TOWER 3: 20

GROSS FLOOR AREA (TYPICAL A)

TOWER 1: 1174 SQ. M.
TOWER 2: 1048 SQ. M.
TOWER 3: 1031 SQ. M.



TYPICAL FLOOR A

Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	29/04/21
A	GENERAL REVISION	BP	DY	DY	20/04/21
B	GENERAL REVISION	NC	DY	DY	11/05/21
C	GENERAL REVISION	NC	DY	DY	18/05/21
D	GENERAL REVISION	NC	DY	DY	02/06/21
E	GENERAL REVISION	NC	DY	DY	29/07/21
F	GENERAL REVISION	NC	DY	DY	09/08/21

Rev	Description	Drawn	Checked	Approved	Date

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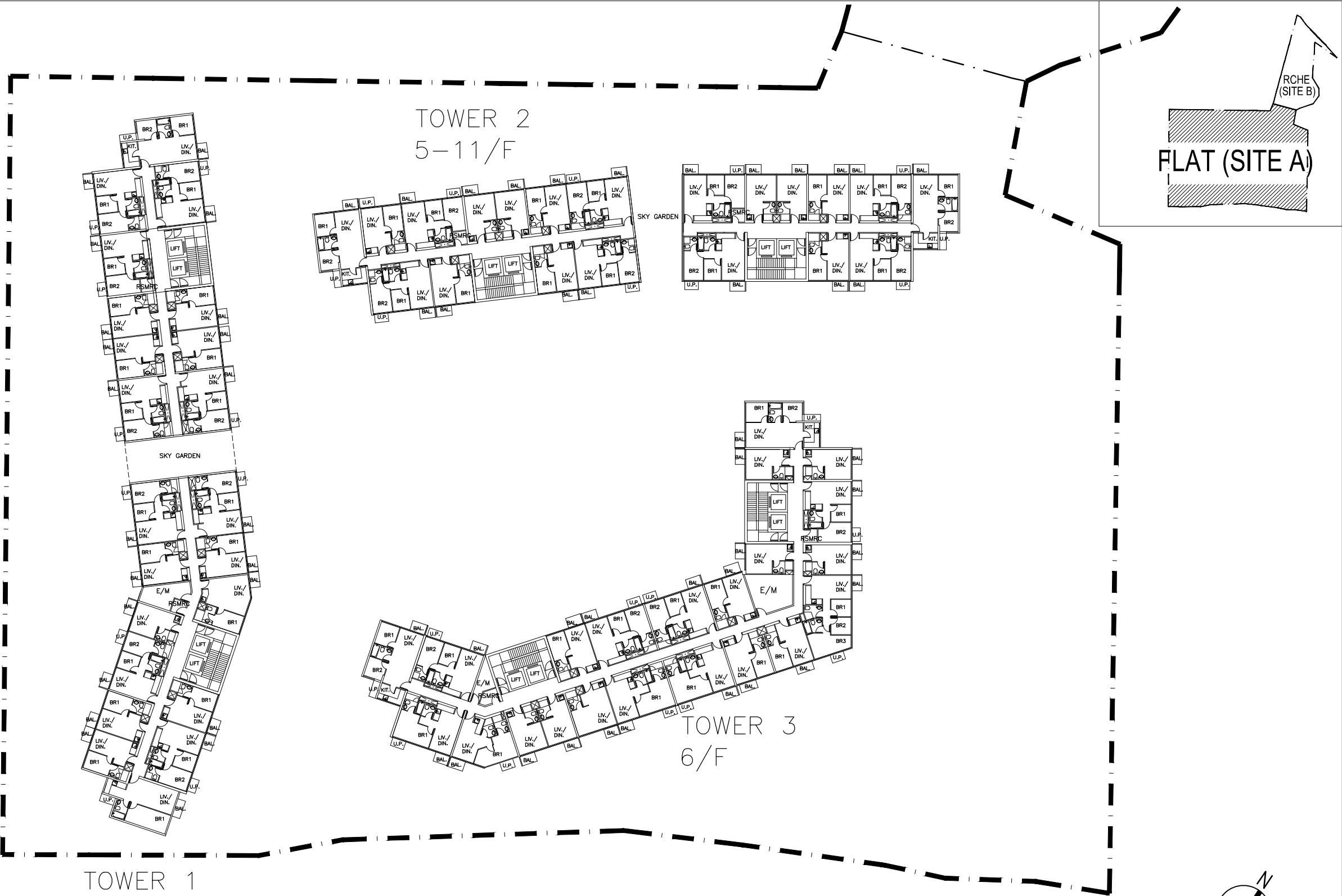
Project Title	Drawing Title	Project No. 20/HK/YL02	Issue Date. 29/04/2021	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RESIDENTIAL DEVELOPMENT LAYOUT PLAN - 1	Cad File No.	layout_plan.dwg	
		SCALE.	1 : 500 (A3)	
		Drawing No.		
		A-P-203 (F)		

NOS. OF UNIT (TYPICAL B)

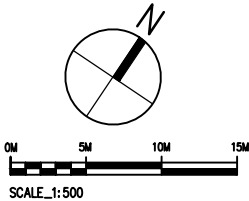
TOWER 1: 22
TOWER 2: 20
TOWER 3: 22

GROSS FLOOR AREA TYPICAL B)

TOWER 1: 1102 SQ. M.
TOWER 2: 965 SQ. M.
TOWER 3: 1079 SQ. M.



TYPICAL FLOOR B (WITH SKY GARDENS)



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	29/04/21
A	GENERAL REVISION	BP	DY	DY	20/04/21
B	GENERAL REVISION	NC	DY	DY	11/05/21
C	GENERAL REVISION	NC	DY	DY	18/05/21
D	GENERAL REVISION	NC	DY	DY	01/06/21
E	GENERAL REVISION	NC	DY	DY	02/06/21
F	GENERAL REVISION	NC	DY	DY	29/07/21
G	GENERAL REVISION	NC	DY	DY	09/08/21

Rev	Description	Drawn	Checked	Approved	Date

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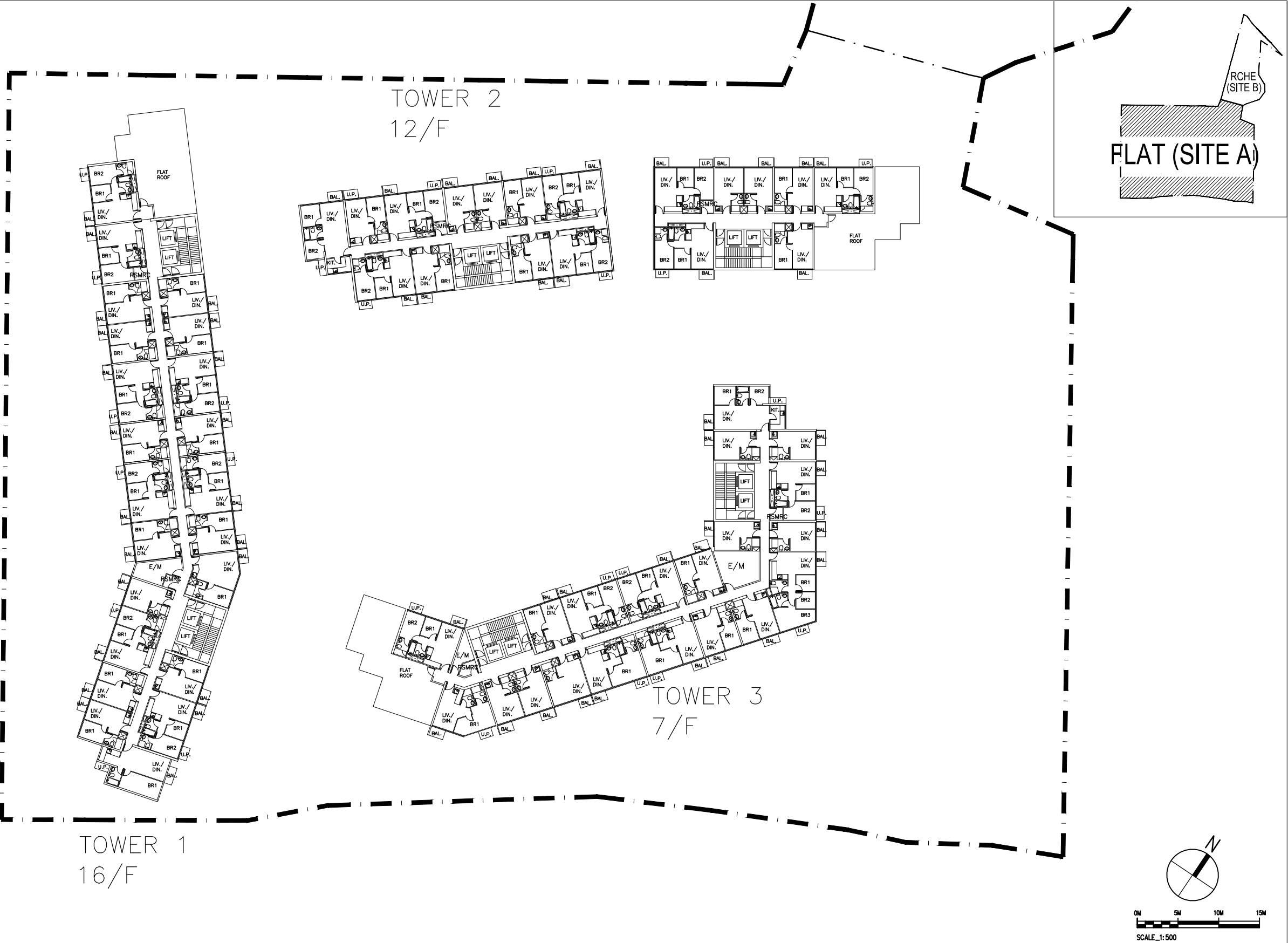
Project Title	Drawing Title	Project No.	Issue Date.	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RESIDENTIAL DEVELOPMENT LAYOUT PLAN - 2	20/HK/YL02	29/04/2021	
		Cad File No.	layout_plan.dwg	
		SCALE.	1:500 (A3)	
		Drawing No.	A-P-204 (G)	

NOS. OF UNIT (TYPICAL C)

TOWER 1: 22
TOWER 2: 18
TOWER 3: 20

GROSS FLOOR AREA (TYPICAL C)

TOWER 1: 1068 SQ. M.
TOWER 2: 860 SQ. M.
TOWER 3: 972 SQ. M.



TYPICAL FLOOR C

Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	29/04/21
A	GENERAL REVISION	NC	DY	DY	20/04/21
B	GENERAL REVISION	NC	DY	DY	11/05/21
C	GENERAL REVISION	NC	DY	DY	18/05/21
D	GENERAL REVISION	NC	DY	DY	01/06/21
E	GENERAL REVISION	NC	DY	DY	02/06/21
F	GENERAL REVISION	NC	DY	DY	29/07/21
G	GENERAL REVISION	NC	DY	DY	09/08/21

Rev	Description	Drawn	Checked	Approved	Date

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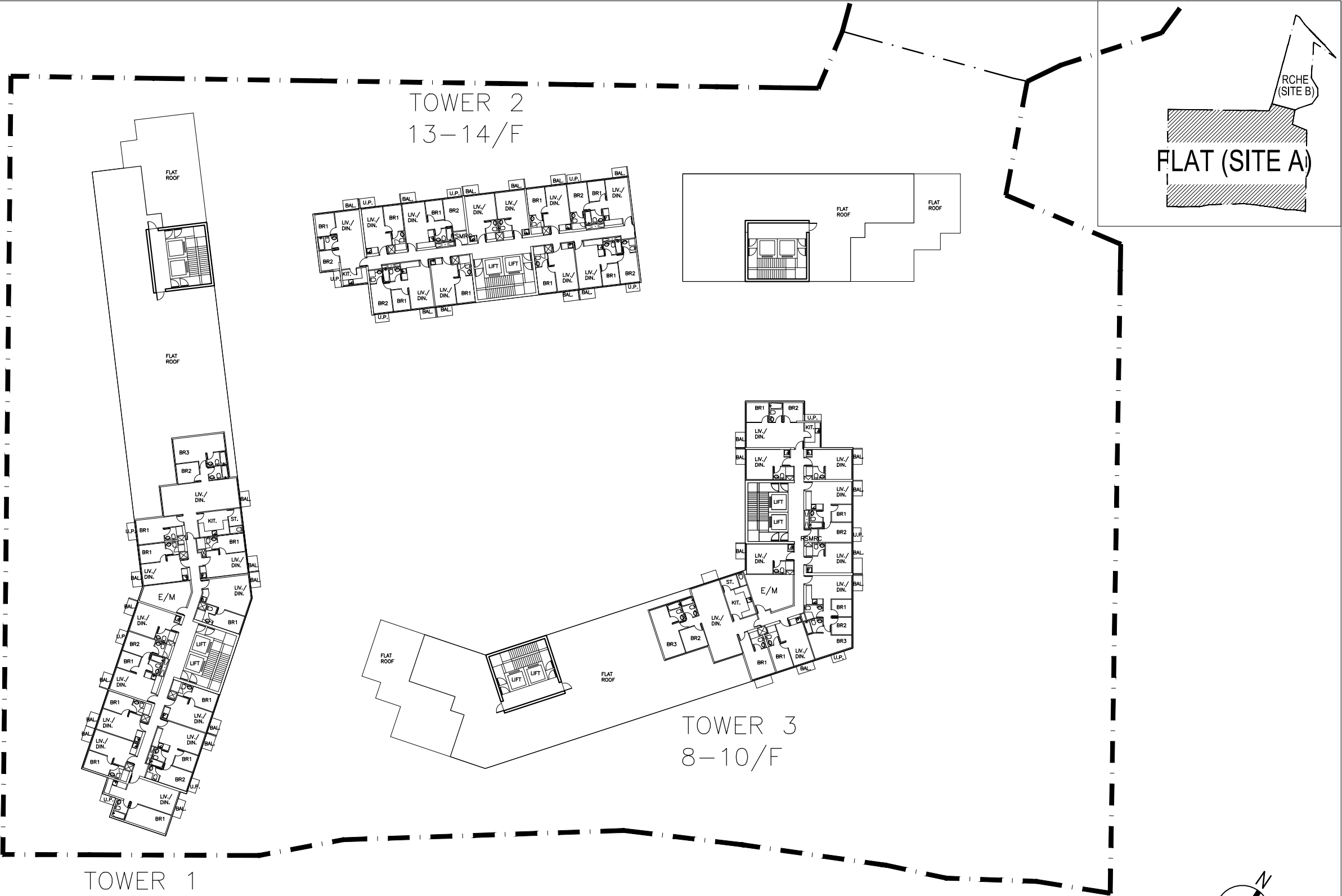
Project Title		Drawing Title		Project No. 20/HK/YL02		Issue Date. 29/04/2021		Authority's / Client's Approval	
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG		RESIDENTIAL DEVELOPMENT LAYOUT PLAN - 3		Cad File No.		layout_plan.dwg			
				SCALE.		1 : 500 (A3)			
				Drawing No.					
				A-P-205 (G)					

NOS. OF UNIT (TYPICAL D)

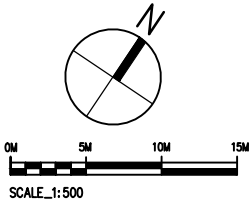
TOWER 1: 11
TOWER 2: 11
TOWER 3: 9

GROSS FLOOR AREA (TYPICAL D)

TOWER 1: 641 SQ. M.
TOWER 2: 551 SQ. M.
TOWER 3: 552 SQ. M.



TYPICAL FLOOR D



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	29/04/21
A	GENERAL REVISION	NC	DY	DY	11/05/21
B	GENERAL REVISION	NC	DY	DY	18/05/21
C	GENERAL REVISION	NC	DY	DY	01/06/21
D	GENERAL REVISION	NC	DY	DY	02/06/21
E	GENERAL REVISION	NC	DY	DY	29/07/21
F	GENERAL REVISION	NC	DY	DY	09/08/21

Rev	Description	Drawn	Checked	Approved	Date

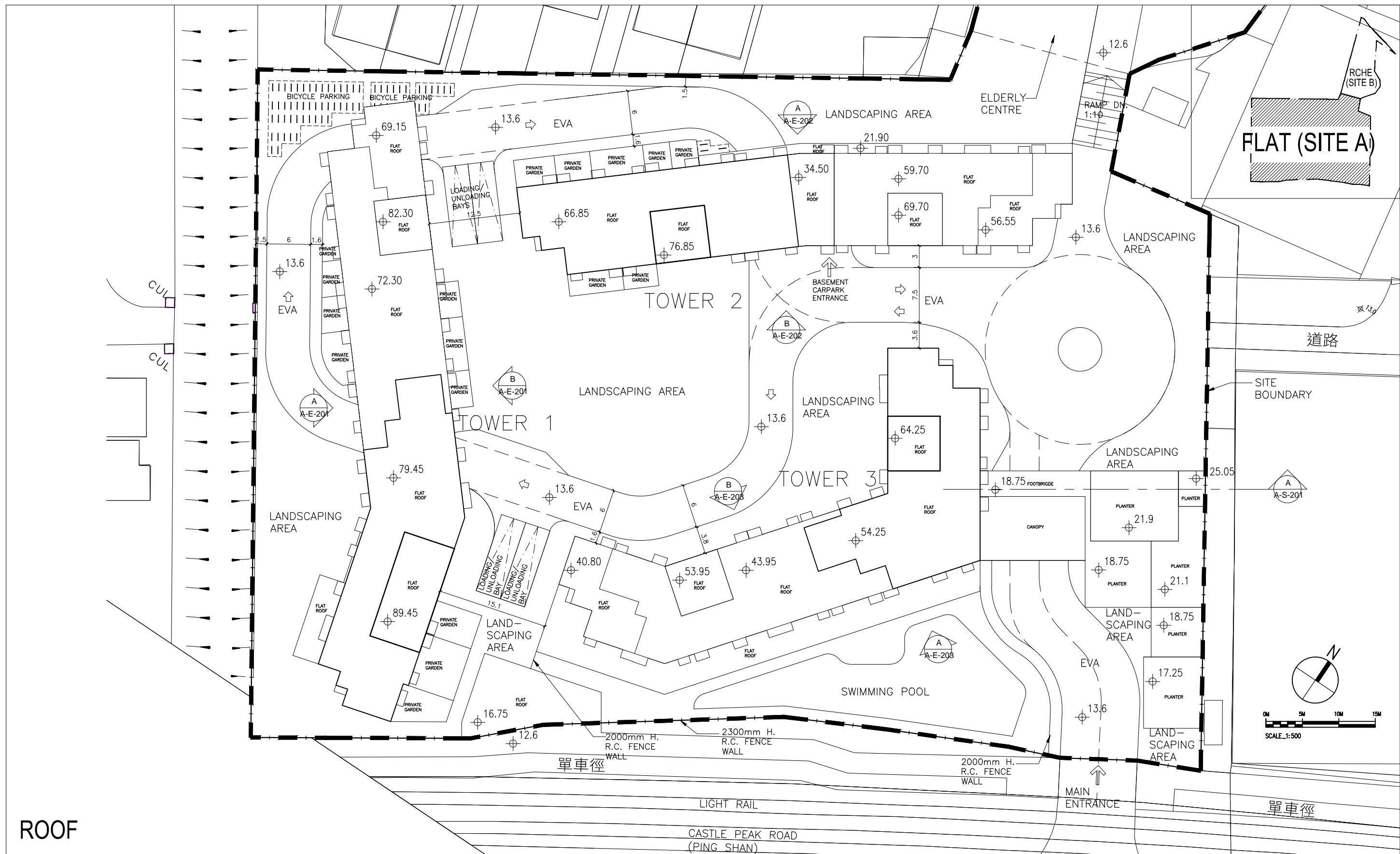
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Project Title PROPOSED RESIDENTIAL CARE HOME FOR ELDERLY & RESIDENTIAL DEVELOPMENT AT LOT 1341 S.B. IN D.D.121, HANG MEI TSUEN, YUEN LONG	Drawing Title RESIDENTIAL DEVELOPMENT LAYOUT PLAN - 4	Project No. 20/HK/YL02	Issue Date. 29/04/2021	Authority's / Client's Approval
		Cad File No. layout_plan.dwg		
		SCALE. 1 : 500	(A3)	
		Drawing No. A-P-206	(F)	



Rev	Description	Drawn	Checked	Approved	Date
A	DESIGN	NC	DY	DY	11 / 05 / 21
B	GENERAL REVISION	NC	DY	DY	18 / 05 / 21
C	GENERAL REVISION	NC	DY	DY	01 / 06 / 21
D	GENERAL REVISION	NC	DY	DY	29 / 07 / 21
E	GENERAL REVISION	NC	DY	DY	05 / 08 / 21
F	GENERAL REVISION	NC	DY	DY	10 / 08 / 21
G	GENERAL REVISION	NC	DY	DY	07 / 12 / 21
	GENERAL REVISION	NC	DY	DY	08 / 12 / 21

[illegible]

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Website : www.mqdesignhk.com

Project Title
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG

Drawing Title
RESIDENTIAL DEVELOPMENT ROOF PLAN

Project No. 20/HK/YL02	Issue Date. 11/05/2021
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Cad File No.	layout_plan.dwg
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SCALE.	1 : 500	(A3)
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Drawing No. A-P-210 (G)

Authority's / Client's Approval

[illegible]

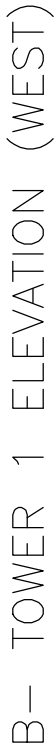
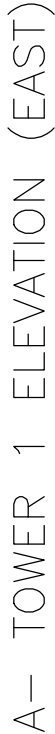
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ELEVATIONS



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18 / 05 / 21
A	GENERAL REVISION	NC	DY	DY	29 / 07 / 21

Rev	Description	Drawn	Checked	Approved	Date

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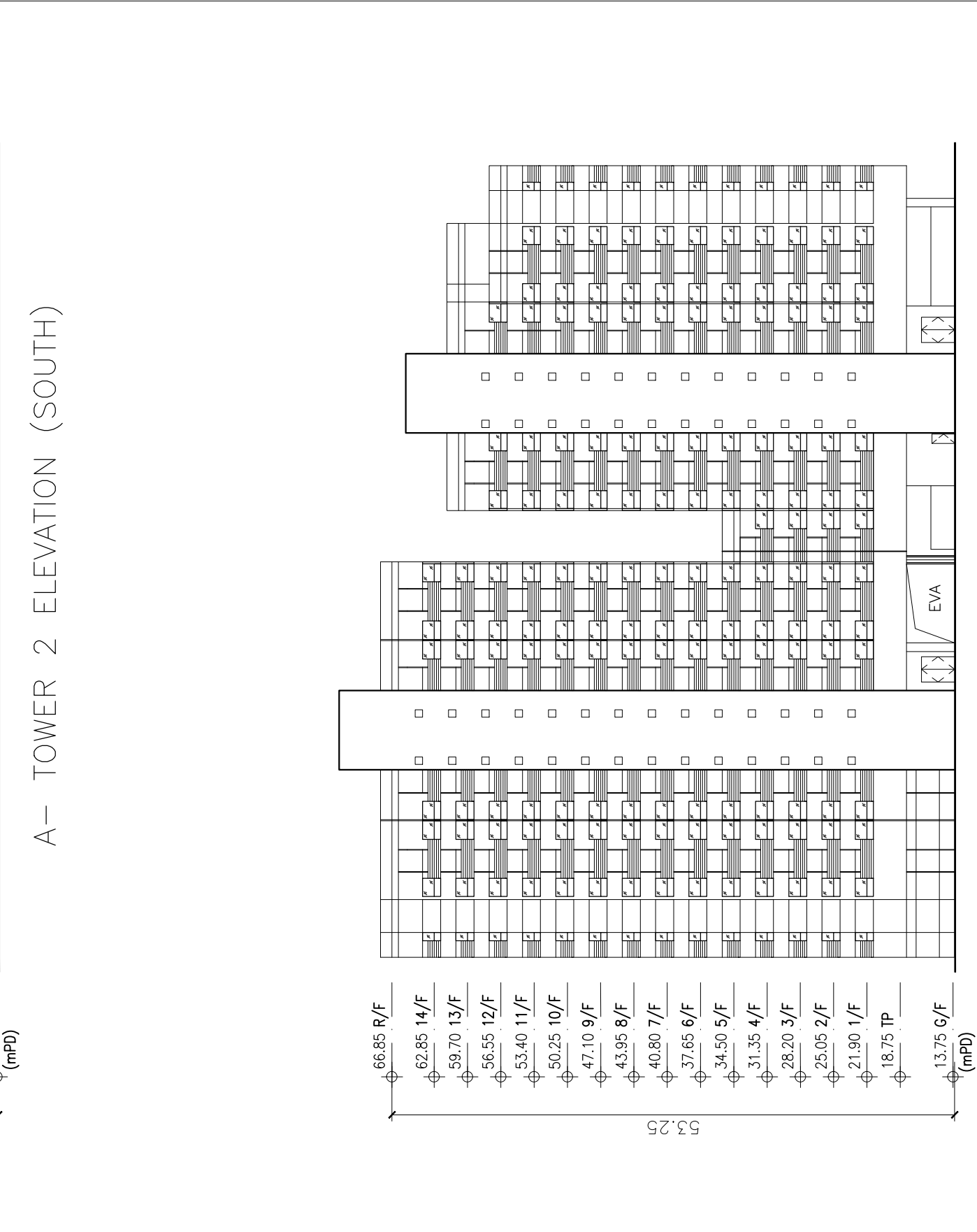
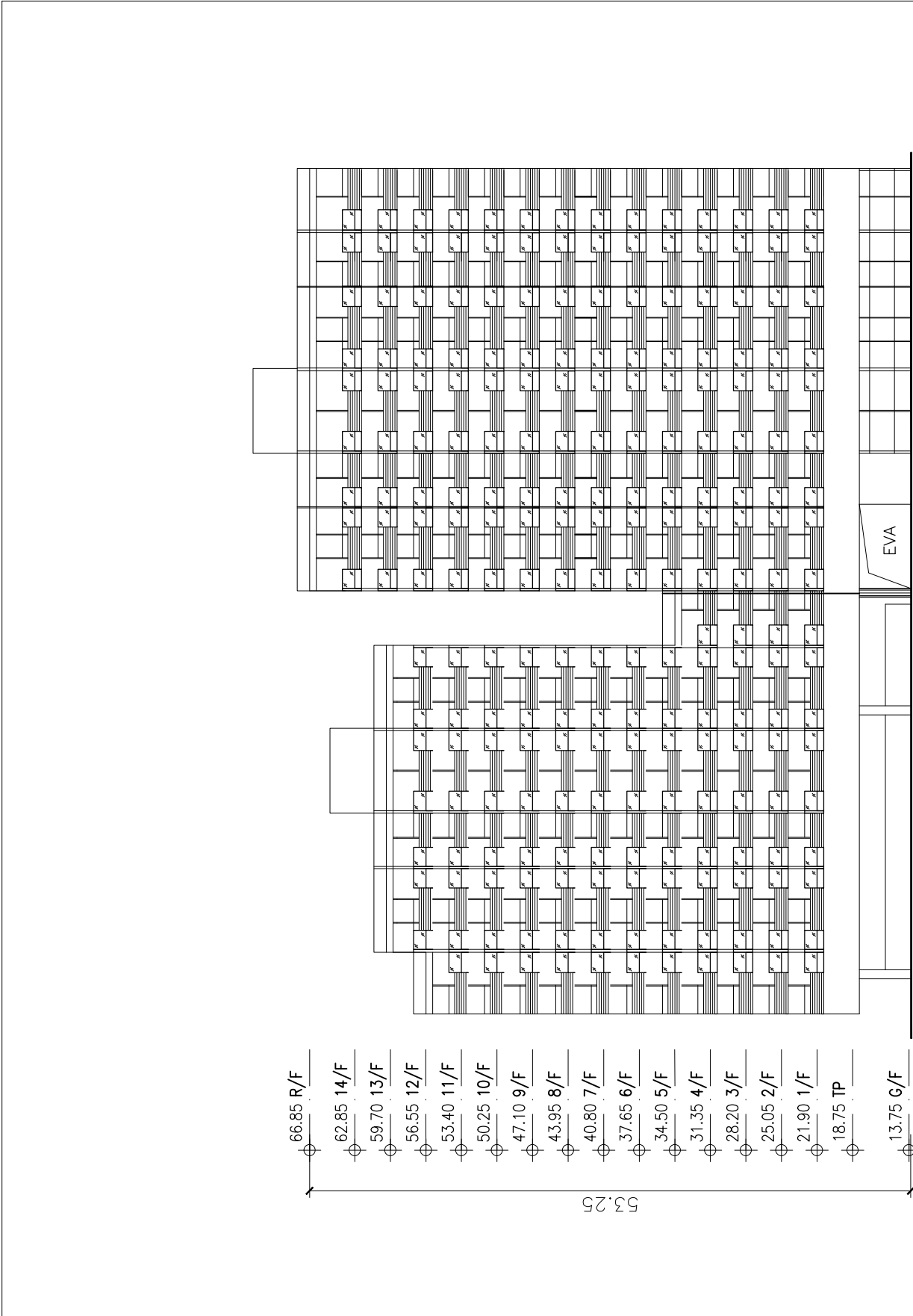
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Project Title		Drawing Title		Project No.	Issue Date.	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG		RESIDENTIAL DEVELOPMENT ELEVATIONS - TOWER 2		20/HK/YL02	18/05/2021	
				Cad File No.	Section.dwg	
				SCALE.	1 : 500 (A3)	
				Drawing No.	A-E-202 (A)	



ELEVATIONS

Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21
A	GENERAL REVISION	NC	DY	DY	29/07/21

Rev	Description	Drawn	Checked	Approved	Date

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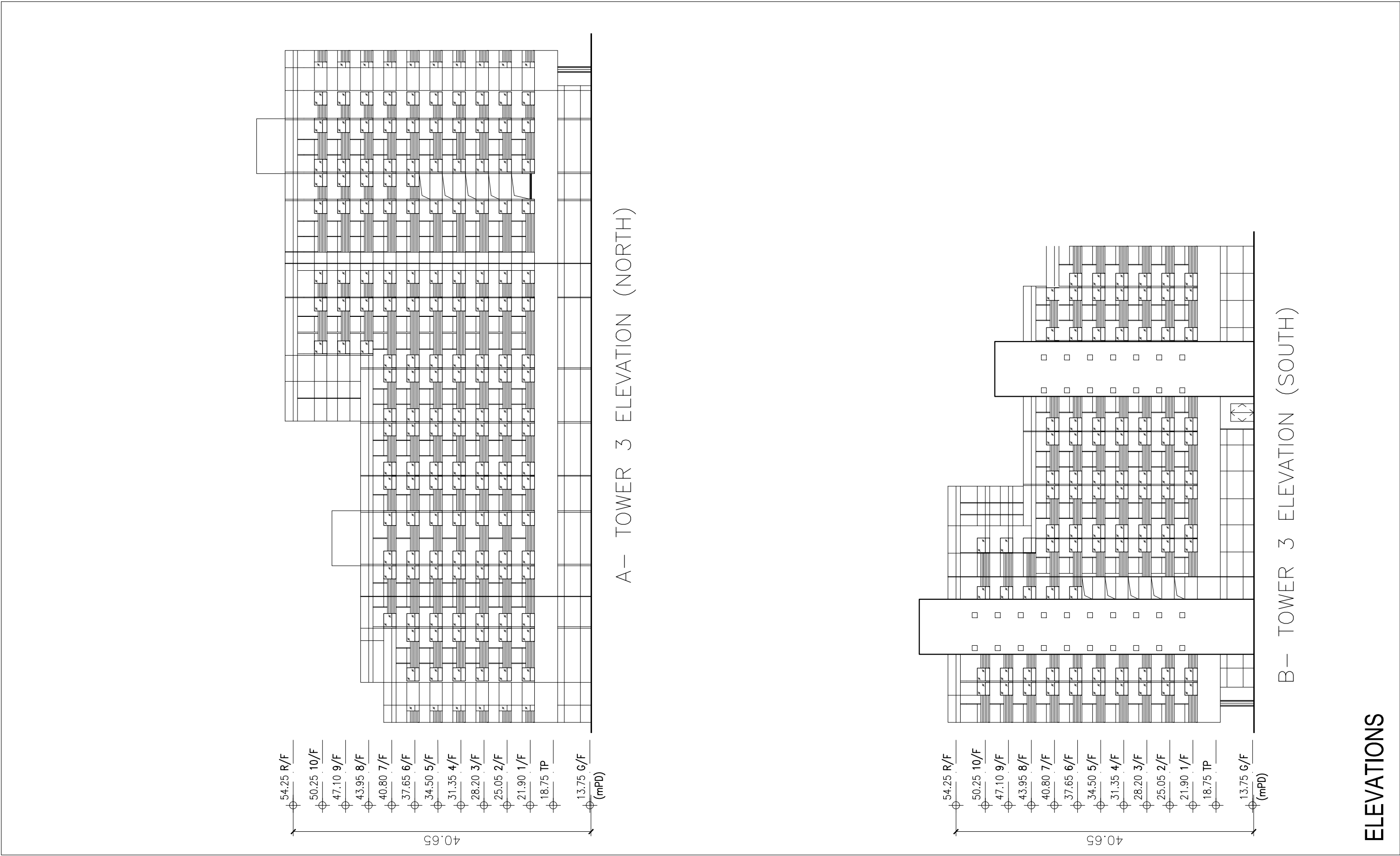
Unit 507, 5/F, MegaCube, 8 Wang Kwong Road, Kowloon Bay, Kowloon, H.K.

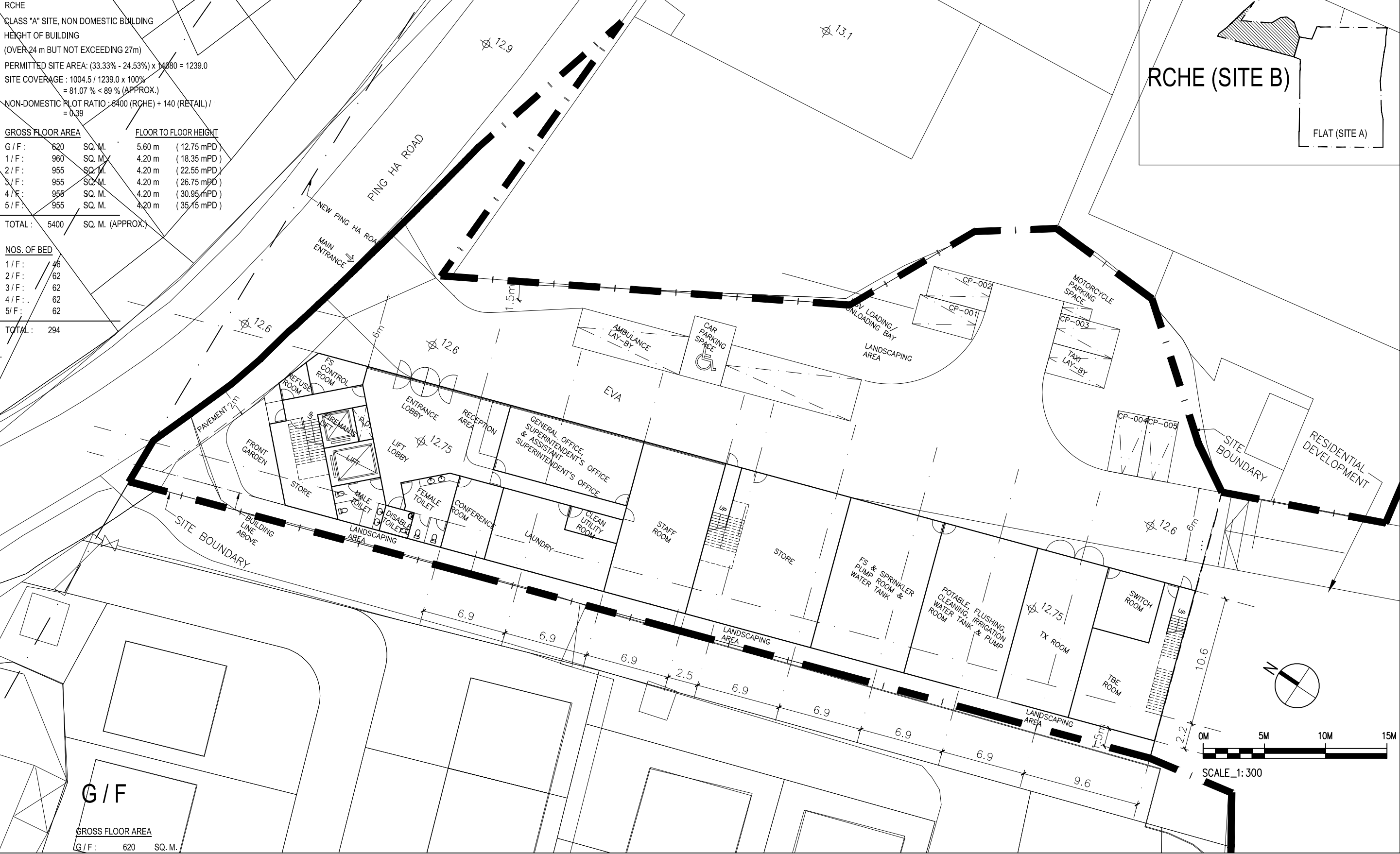
Telephone : (852) 22 345 647

Facsimile : (852) 22 345 648

Website : www.mgdesignhk.com

Project Title	Drawing Title	Project No. 20/HK/YL02	Issue Date. 18/05/2021	Authority's / Client's Approval
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG	RESIDENTIAL DEVELOPMENT ELEVATIONS - TOWER 3	Cad File No.	Section.dwg	
		SCALE.	1 : 500 (A3)	
		Drawing No.	A-E-203 (A)	





Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	06/11/20
A	GENERAL REVISION	NC	DY	DY	10/11/20
B	GENERAL REVISION	NC	DY	DY	20/04/21
C	GENERAL REVISION	BP	DY	DY	11/05/21
D	GENERAL REVISION	NC	DY	DY	18/05/21
E	GENERAL REVISION	NC	DY	DY	01/06/21
F	GENERAL REVISION	NC	DY	DY	01/06/21
G	GENERAL REVISION	NC	DY	DY	29/07/21

Rev	Description	Drawn	Checked	Approved	Date

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Project Title
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

Drawing Title
**LAYOUT PLAN
(G/F)**

Project No. 20/HK/YL02	Issue Date. 06/11/2020
Cad File No. layout_plan.dwg	
SCALE. 1:300 (A3)	
Drawing No. A-P-101 (G)	

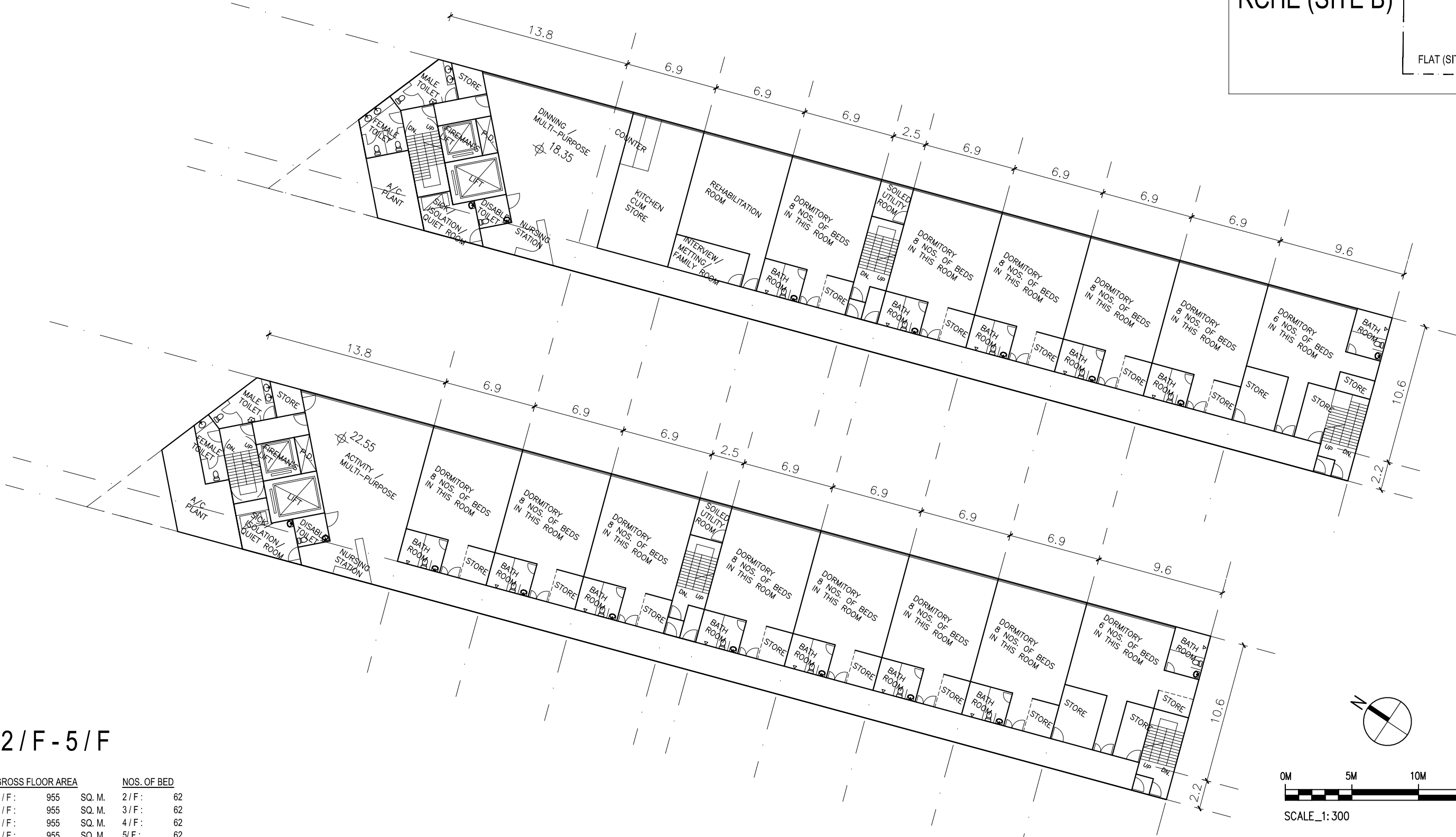
Authority's / Client's Approval

1 / F

GROSS FLOOR AREA		NOS. OF BED	
1 / F :	960 SQ. M.	1 / F :	46

RCHE (SITE B)

FLAT (SITE A)



2 / F - 5 / F

GROSS FLOOR AREA		NOS. OF BED	
2 / F :	955 SQ. M.	2 / F :	62
3 / F :	955 SQ. M.	3 / F :	62
4 / F :	955 SQ. M.	4 / F :	62
5 / F :	955 SQ. M.	5 / F :	62

Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	06 / 11 / 20
A	GENERAL REVISION	NC	DY	DY	10 / 11 / 20
B	GENERAL REVISION	NC	DY	DY	20 / 04 / 21
C	GENERAL REVISION	BP	DY	DY	11 / 05 / 21
D	GENERAL REVISION	NC	DY	DY	29 / 07 / 21

Rev	Description	Drawn	Checked	Approved	Date

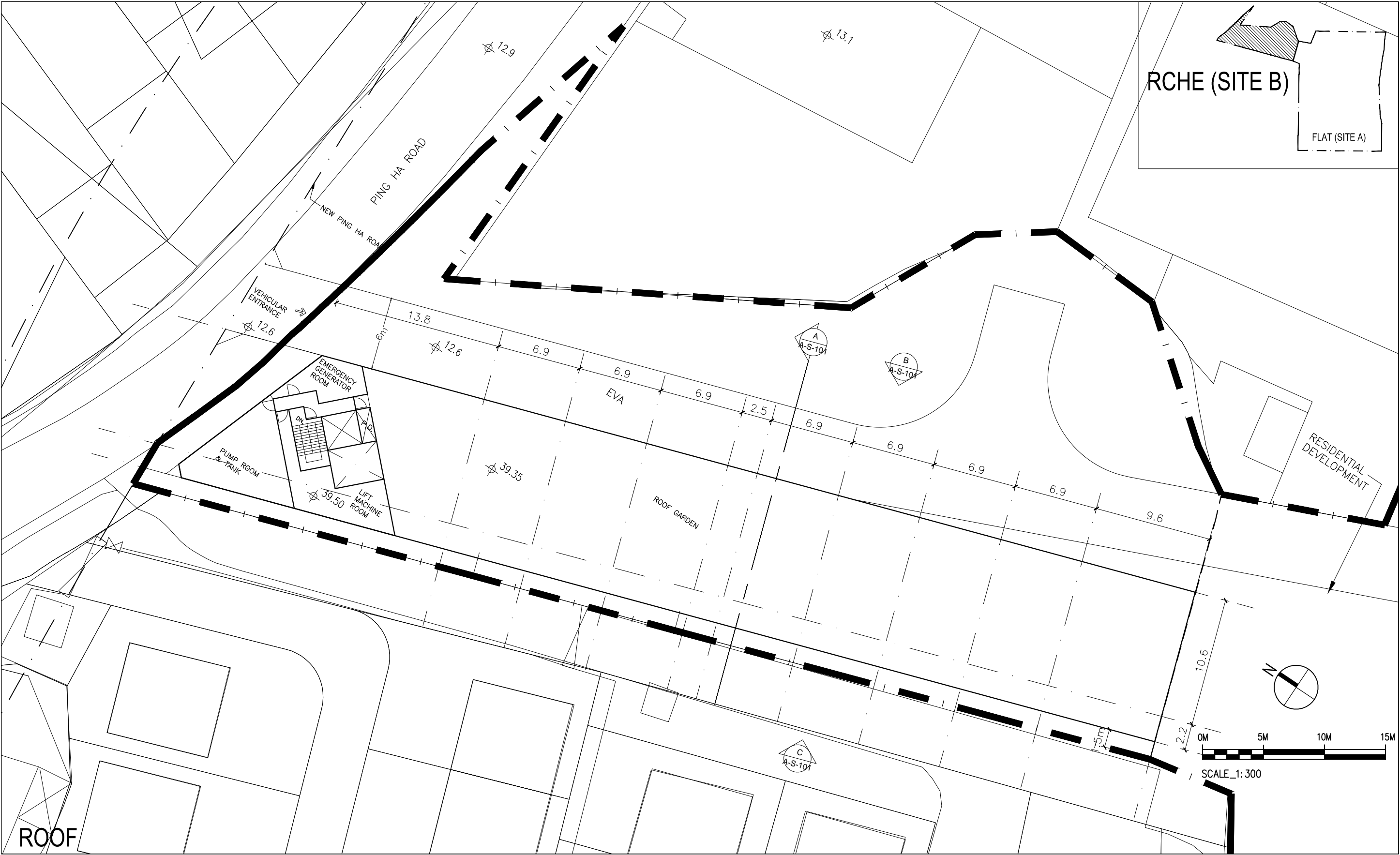
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Project Title		Drawing Title		Project No. 20/HK/YL02		Issue Date. 06/11/2020		Authority's / Client's Approval	
PROPOSED RESIDENTIAL CARE FOR HOME ELDERLY & FLAT AT VARIOUS LOTS IN D.D.121 & D.D.122, PING SHAN, YUEN LONG		LAYOUT PLAN (1/F - 5/F)		Cad File No.		layout_plan.dwg			
				SCALE.		1 : 300 (A3)			
				Drawing No.		A-P-102 (D)			



Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	06/11/20
A	GENERAL REVISION	NC	DY	DY	10/11/20
B	GENERAL REVISION	NC	DY	DY	20/04/21
C	GENERAL REVISION	NC	DY	DY	11/05/21
D	GENERAL REVISION	NC	DY	DY	18/05/21
E	GENERAL REVISION	NC	DY	DY	01/06/21
F	GENERAL REVISION	NC	DY	DY	29/07/21

Rev	Description	Drawn	Checked	Approved	Date

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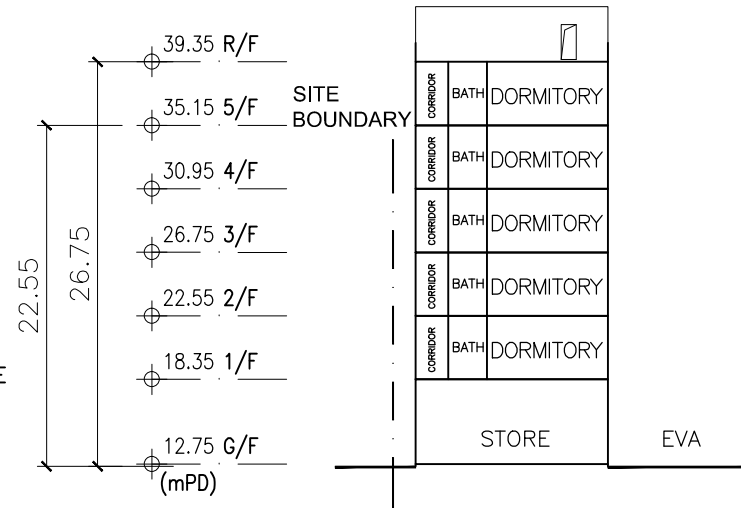
Project Title
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

Drawing Title
**LAYOUT PLAN
(ROOF)**

Project No.
20/HK/YL02
Issue Date.
06/11/2020
Cad File No.
layout_plan.dwg
SCALE.
1 : 300 (A3)
Drawing No.
A-P-104 (F)

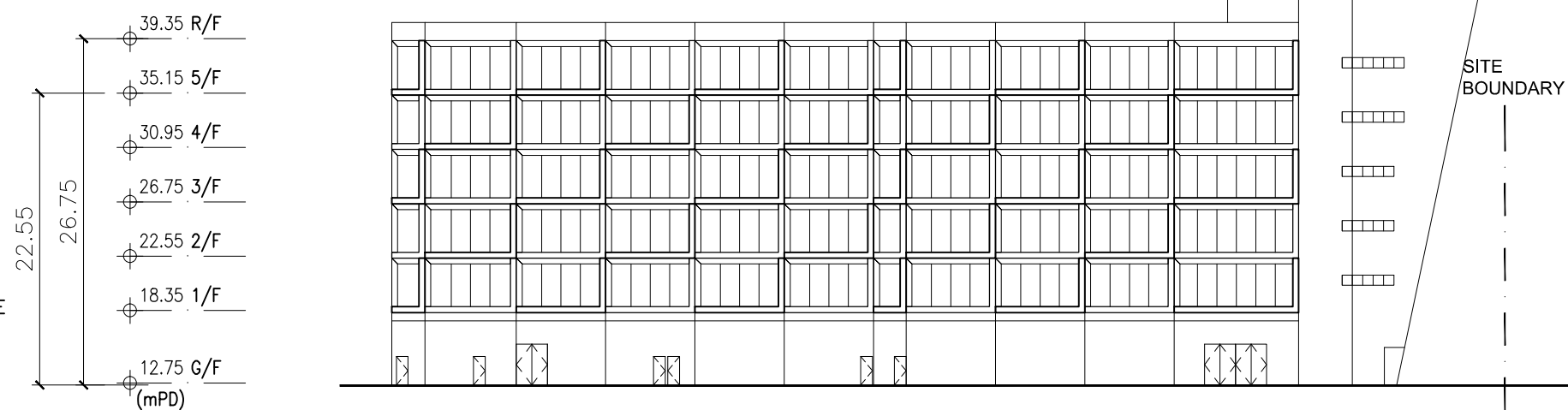
Authority's / Client's Approval

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



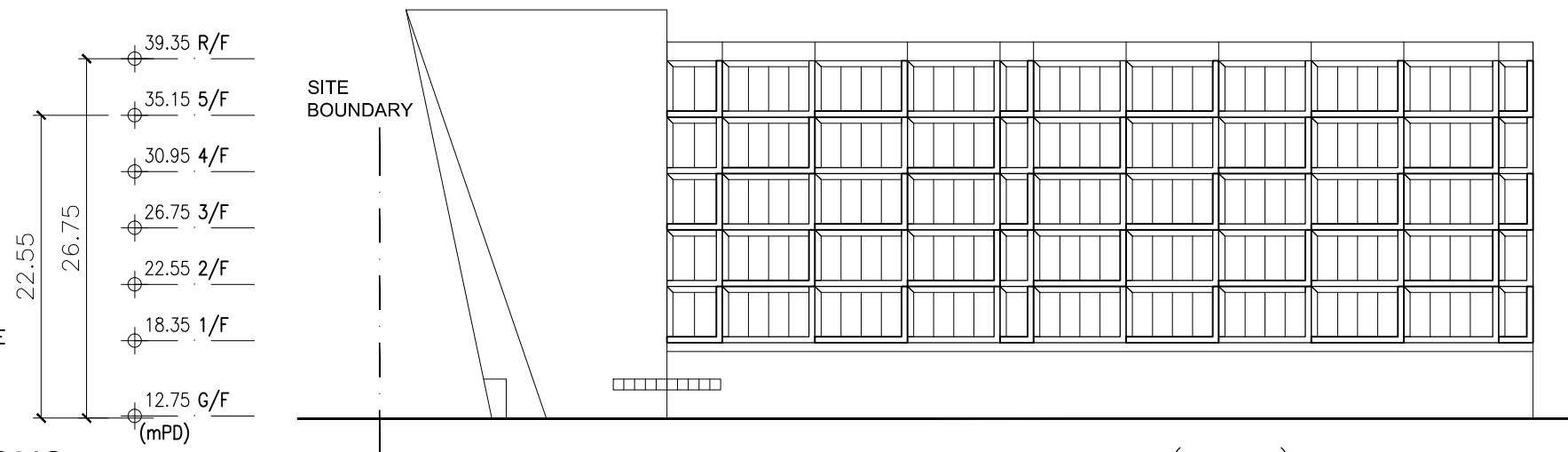
RCHE SECTION A

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



B - RCHE ELEVATION (WEST)

DISTANCE FROM
GROUND FLOOR OF
THE BUILDING TO
THE FLOOR OF THE
PREMISES IN WHICH
THE RCHE IS TO BE
SITUATED



C - RCHE ELEVATION (EAST)

SECTION & ELEVATIONS

Rev	Description	Drawn	Checked	Approved	Date
-	DESIGN	NC	DY	DY	18/05/21
A	GERENAL REVISION	NC	DY	DY	29/07/21

Rev	Description	Drawn	Checked	Approved	Date

Check all measurements on site.
Do not scale off drawings.

This drawing is to be read in
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Project Title
**PROPOSED RESIDENTIAL CARE
FOR HOME ELDERLY & FLAT AT
VARIOUS LOTS IN D.D.121 &
D.D.122, PING SHAN, YUEN LONG**

Drawing Title
**RCHE
SECTION & ELEVATIONS**

Project No. 20/HK/YL02	Issue Date. 18/05/2021
Cad File No.	Section.dwg
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Drawing No.	A-S-101 (A)

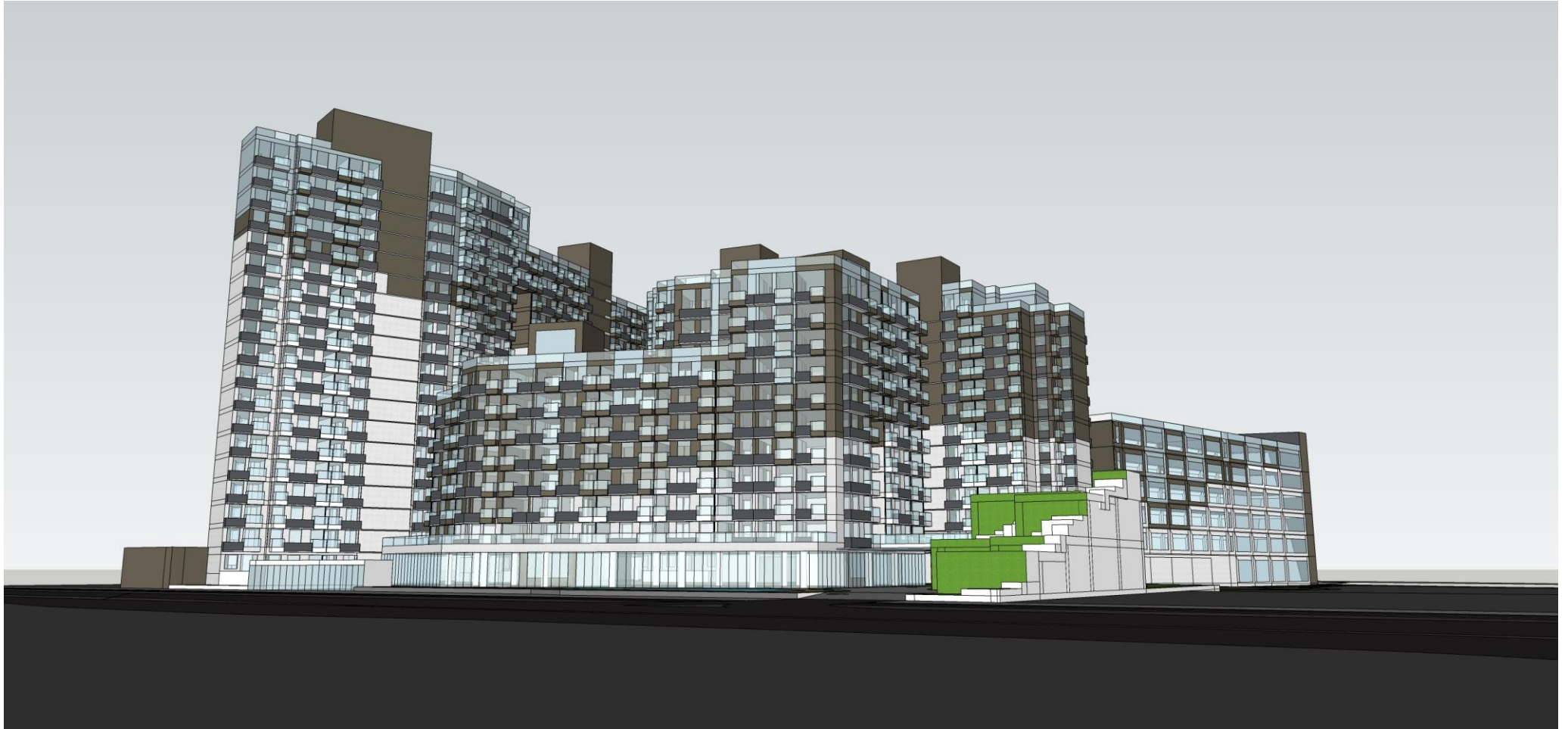
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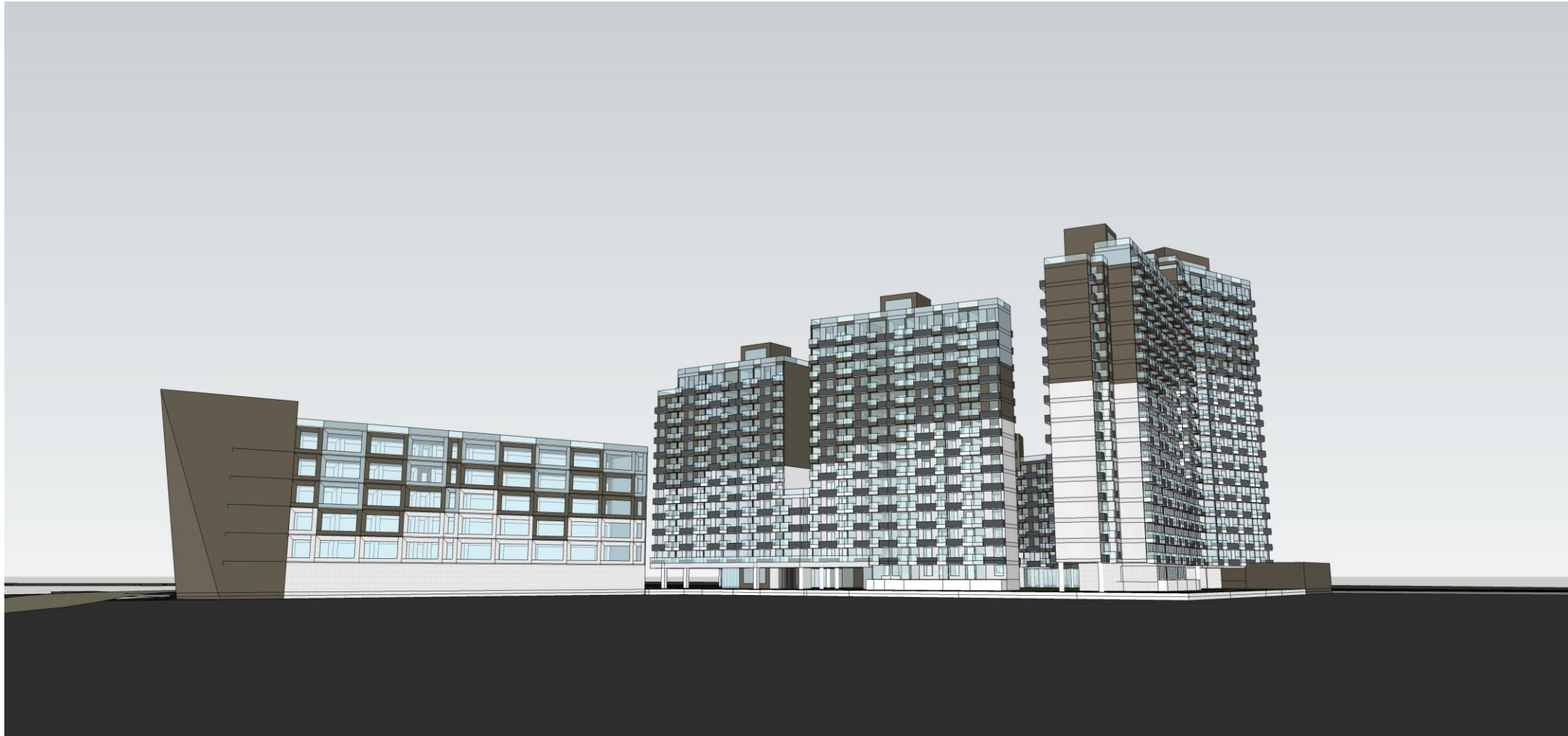


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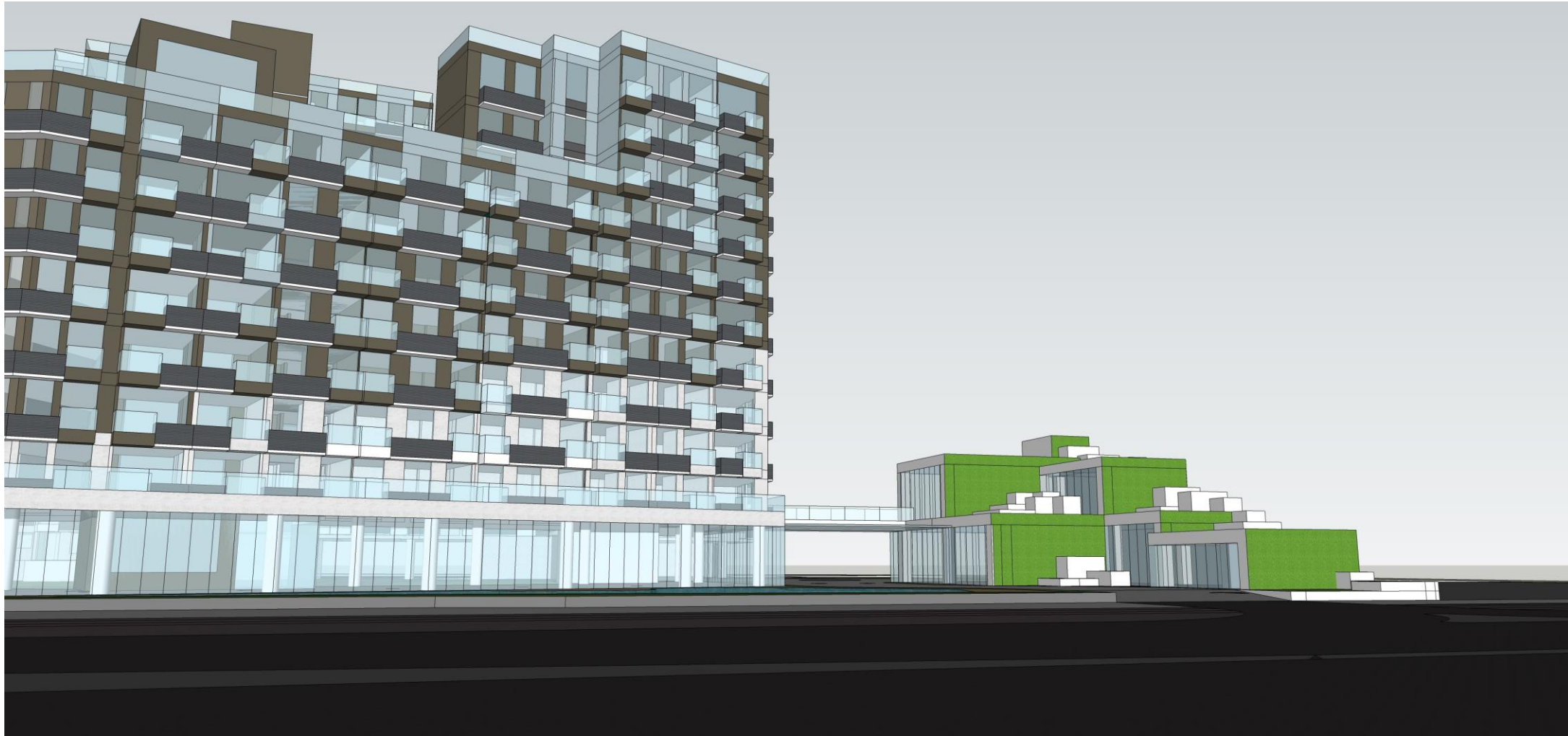
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Appendix III

Tree Preservation and Landscape Proposal

CONTENTS

- 1.0 Introduction
- 2.0 The Site and Its Context
- 3.0 The Proposed Development
- 4.0 Existing Vegetation
- 5.0 Landscape Proposal
 - 5.1 Landscape Design Concept
 - 5.2 Active and Passive Recreational Facilities
 - 5.3 Site Coverage of Greenery
 - 5.4 Soil Depth and Drainage for Planting
 - 5.5 Irrigation
 - 5.6 Future Maintenance
- 6.0 Planting Proposal
- 7.0 Proposal for Tree Preservation

APPENDICES

- Appendix A Tree Survey Plan, Tree Assessment Schedule and Photographic Record of Existing Trees
- Appendix B Landscape Master Plan and Landscape Details
- Appendix C Planting Plans
- Appendix D Site Coverage of Greenery and Communal Open Space Provision

1.0 Introduction

- 1.1 The proposed residential development and Residential Care Home for the Elderly (RCHE) (The Proposed Development) is located at various Lots in D.D. 121 & D.D.122 Ping Shan, Yuen Long. This report is prepared in support of the Proposed Development under this rezoning application.
- 1.2 This report describes the concepts and principles underlying the Landscape Master Plan of the Proposed Development. It describes the proposed residential development, RCHE and the associated landscape design as well as tree preservation strategies. A more comprehensive package of proposals will be formulated during the detailed design stage of the project.
- 1.3 This landscape proposal presents:
 - The existing tree vegetation;
 - The Landscape Master Plan; and
 - Planting Proposal of the Proposed Development.

2.0 The Site and Its Context

- 2.1 The Site is situated at various Lots in D.D. 121 & D.D.122 Ping Shan, Yuen Long. To the immediate south is the Tong Yan San Tsuen Playground while Tang Ancestral Hall is located to its north. It is bounded by Castle Peak Road – Ping Shan and Ping Ha Road to its south and north respectively. Both will serve as vehicular access to the Site.
- 2.2 The Site is currently occupied by a logistics centre and there are several buildings at central portion of the Site. Majority of the area is covered by concrete and few trees were identified to the north of the Site. They are generally in semi-mature size and exhibited fair tree form and health conditions. It is confirmed that no OVT or protected species has been identified within the Site in accordance with the DEVB TCW No. 5/2020 – Registration and Preservation of Old and Valuable Trees (OVT) and the Forests and Countryside Ordinance. However, 2 nos. of potential OVT, i.e. **T07 & T09** in accordance with the DEVB TCW No. 5/2020 have been identified outside the site boundary.
- 2.3 The landscape character of the Site and its surrounding is mainly rural comprised of villages, e.g. Tong Fong Tsuen, Ping Shan San Tsuen, low to medium-rise residential development, i.e. Imperial Villas, Villas Sunshine and industrial blocks, e.g. KIA Hong Kong – Yuen Long Service Centre, Sagawa Logistics Centre.

3.0 The Proposed Development

- 3.1 The development proposal comprises of residential flats (Site A) and RCHE (Site B) to the south and north of the Site respectively. In Site A, there are three residential towers ranging 19-storey, 15-storey and 13-storey high on top of a communal basement carpark, emergency vehicular access (EVA) and common landscape areas. In Site B, there are one 6-storey RCHE block, carparks, EVA and common landscape areas. Drawings of the Proposed Development could be referred to Architect's drawings submitted under the same planning application.
- 3.2 As the ground surface within the Site needs to be recontoured and some of the vegetation would be affected by the site formation work. The detailed tree assessment shall refer to the Para 4.0 below. The architectural layout has overlaid on the Tree Survey Plan to illustrate the impact of the Proposed Development on existing vegetation. The tree survey plan, tree assessment schedule and photographic record of the trees are included in **Appendix A** for reference.

4.0 Existing Vegetation

- 4.1 A tree survey was carried out on **15 May 2021** in accordance with LAO PN No. 2/2020. In order to investigate the landscape impact on existing vegetation within the Site and adjoining areas, trees located within **5m** from the Site boundary are included in the tree survey. A total of **25** trees were recorded (i.e. **7** within and **18** outside the Application Site Boundary). The tree survey schedule, tree survey plan and photographic record of existing trees are shown in **Appendix A** and are outlined below:

Table 1.0 Species Composition of Existing Trees

Scientific Name	Chinese Name	Quantity	Tree No.
<i>Bischofia javanica</i>	秋楓	1	T22
<i>Bombax ceiba</i>	木棉	3	T01, T16, T23
<i>Broussonetia papyrifera</i>	構樹	1	T17
<i>Celtis sinensis</i>	朴樹	3	T18, T19, T20
<i>Cinnamomum camphora</i>	樟樹	1	T21
<i>Eucalyptus robusta</i>	桉樹	3	T11, T12, T13
<i>Ficus microcarpa</i>	細葉榕	7	T02, T03, T04, T05, T06, T07, T09
<i>Macaranga tanarius</i>	血桐	3	T08, T14, T15
<i>Melaleuca leucadendron</i>	白千層	3	T10, T24, T25
	Total:	25	

- 4.2 The Site is dominated by *Ficus microcarpa* 細葉榕 (**7** nos.), *Celtis sinensis* 朴樹 (**3** nos.) and *Eucalyptus robusta* Smith 桉樹 (**3** nos.) which are common hillside species in Hong Kong.
- 4.3 The health condition of the bulk of these trees is generally in Fair condition (**88.0%**) and the remaining trees are in Poor condition (**12.0%**).
- 4.4 No OVT or protected species has been identified in accordance with the DEVB TCW No. 5/2020 – Registration and Preservation of Old and Valuable Trees and the Forests and Countryside Ordinance respectively. However, **2** nos. of potential OVT, i.e. **T07 & T09** in accordance with the DEVB TCW No. 5/2020 have been identified outside the site boundary.

Impact of the Proposed Development

- 4.5 Impact of the Proposed Development is generally caused by the site formation works, construction of the internal roads and building, removal of existing vegetation for the build element and the related construction activities, excavation works for E&M reserves and structural footings. The proposed building layout has been overlaid on **Tree Survey Plans** in **Appendix A** to illustrate the impact on the existing trees.

Retention of Trees

- 4.6 **9** out of total **25** surveyed existing trees including **7** within and **2** outside the Site will be in conflict with the proposed works while **16** of the surveyed existing trees outside the Site Boundary will be unaffected by the Proposed Development. The retained trees will be protected and maintained in accordance with the details set out in Section 25 – Landscape Work in the General Specification for Building (2017) and relevant guidelines promulgated by GLTM.
- 4.7 It is important to mentioned that **2** nos. of potential OVT, i.e. **T07 & T09** were identified to the southeast of the Site outside the Site boundary. As their branches have been intruding into the Site, no works is proposed within the driplines of the tree canopies in order to preserve them in-situ. Moreover, proper protective measures in accordance with relevant guidelines by GLTM and DEVB TCW No. 4/2020 will be undertaken during the construction phase.

Felling and Transplantation of Trees

- 4.8 For trees that will be in conflict with the proposed works shall be proposed to be transplanted if they fulfil all the criteria below:
- Trees have high amenity value;
 - Trees with good form and health;
 - Suitable access;
 - Tree species able to be transplanted easily;
 - Trees have suitable size and;
 - Trees are young to semi-mature.
- 4.9 In this project, **9** of existing trees within the Site Boundary are in direct conflict with the proposed works and cannot be retained in situ. None of the disturbed trees fulfil the above criteria and none of them is recommended for transplantation.
- 4.10 **2** affected trees are **T24, T25** - *Melaleuca leucadendron* which are common roadside plantation species in Hong Kong. Both of them have attained their maturity. As their root systems were embedded by concrete structures, it is very difficult to form a viable and sufficient-sized rootballs for transplantation. Therefore, it is proposed to fell them, instead of transplanting them.
- 4.11 **6** affected trees including **T11, T12, T13** - *Eucalyptus robusta* and **T14, T15** - *Macaranga tanarius* and **T17** - *Broussonetia papyrifera* are common hillside species in Hong Kong. As their root systems are susceptible to environmental change and this renders them a relatively low survival rate after transplantation. Moreover, all of them are growing close to the existing road and their root system is embedded by concrete structures. Hence, all of these trees are also proposed to be felled.
- 4.12 **1** affected tree, **T16** – *Bombax ceiba* is growing at the roadside planter. It exhibited an asymmetrical tree form. As it's root system is restricted by a concrete planter, it is not possible to form a viable and sufficient-sized rootball for transplantation. Therefore, it is proposed to fell it as well.
- 4.13 In this project, **9** out of total **25** nos. identified existing trees are proposed to be felled while none of them are proposed to be transplanted.

4.14 A summary of the tree proposals for the Proposed Development is provided in Table 2.0 below.

Table 2.0 Summary of Proposed Treatment for Existing Trees

Area	Number of Trees to be Retained	Number of Trees to be Felled	Number of Trees to be Transplanted	Number of Trees in Survey
Within Application Site Boundary	0	7	0	7
Outside Application Site Boundary	16	2	0	18
Total:	16	9	0	25

5.0 Landscape Proposals (Refer to Appendix B)

- 5.0.1 The aim of the landscape proposals is to respond to site conditions, building form and function of the Proposed Development and to provide a quality landscape scheme. The main factors to be taken into consideration are:
- Response to the site context, both in terms of landscape character and visual amenity;
 - Response to the proposed building and its architectural style;
 - Creation of a green setting by maximising the opportunity for soft landscape;
 - Establishment of pleasant landscape areas which meets the varying needs of occupants and satisfy the recreational requirements of them; and
 - Minimization of future maintenance requirements.
- 5.0.2 Landscape drawings showing the proposed landscape treatment for the Proposed Development, and their underlying principles have been attached in **Appendix B** for ease of reference.
- Hong Kong Planning Standards and Guidelines;
 - Technical Guidelines on Landscape Treatment for Slopes (GEO Publication No. 1/2011);
 - Design Manual: Barrier Free Access 2008 (Buildings Department);
 - LAO Practice Note No. 2/2020 - Tree Preservation and Tree Removal Application for Building Development in Private Projects Compliance of Tree Preservation Clause under Lease; and
 - BD PNAP APP-152 – Sustainable Building Design Guidelines (2019 version)

5.1 Landscape Design Concept

- 5.1.1 The landscape concept mentioned below describe considerations, which had been considered as being general to the whole landscape design.

Screening Plantation on the Periphery of the Proposed Development

- 5.1.2 In view of the existing landscape context, there are mature trees growing along the south and west outside the Application Site Boundary. Some of their branches have been extending into the Site. The building footprint has been recessed from these boundaries and no major works is proposed in these areas in order to preserve the important landscape resources, including mature trees nos. **T01** to **T07**, **T09**, **T19** and **T23**. They will help to retain the existing visual amenity on Site and alleviate the visual intrusion of the Development during and after construction stages.
- 5.1.3 Moreover, edge planting strips with min. 1.5m wide are proposed along the boundary to form a soft-planted edges along the periphery of the Site. This will help to provide smooth transition between the development and the adjacent road corridors and adjoining neighbors. Planting verges will accommodate adequate growing medium for provision of ornamental trees, shrubs and groundcover and planting will be primary evergreen in nature.

Maximization of Greenery along the Internal Access

- 5.1.4 The private car parks for Site A will be located at basement floor while the driveway at G/F will be utilized mainly for footpath and EVA. Planting verges are proposed along the internal access in order to provide shade and visual amenity to the occupants and visitors. Heavy standard trees and medium shrubs are proposed to enhance the instant greening effect and to form a green boulevard along the internal access.

Planting Design

- 5.1.5 A majority of proposed plantings will be planted along the internal access, common planting beds, and planting strips along the periphery of the Site. This will create a tranquil and harmonic environment for enjoyment of future residents. The use of tree planting in heavy standard size and in good quality would be encouraged to provide a more instant effect.

5.1.6 Where practicable and feasible, heavy standard trees, medium shrubs and foliage plants are proposed. These soft landscape measures will enable to soften the hard lines of the Proposed Development. The use of planting heavy standard sized vegetation would offer a more instant greening effect. Planting Plans shall refer to **Appendix C**.

5.1.7 In order to enhance the local biodiversity, local species or broad-leaf species will be selected for tree planting.

Compensation for Vegetation Disturbed due to the Development

5.1.8 The Proposed Development will require vegetation clearance for construction of the basement, EVA, clubhouse and building blocks. On-site existing trees will inevitably be disturbed. The proposal aims to compensate the loss of vegetation, in particular, through planting of new trees. Further details of the compensatory planting proposal are in **Section 6.0** and **Appendix C**.

5.1.9 **143** new trees with average **80mm** DBH are proposed to be planted to compensate the loss of **9** existing trees. All proposed trees will be maintained by the individual house owners and the future management office of the Proposed Development.

5.2 Active and Passive Recreational Facilities

5.2.1 In Site A, recreational facilities like children's play area, meandering path, fitness equipment for the adult and swimming pool are provided at G/F level. Besides, in order to facilitate the occupants in this development, several proposed sitting courtyard are scattered at several location for enjoyment of the occupants and visitors.

5.2.2 In Site B, as the Site is mainly occupied by proposed RCHE, EVA, parking lots and common greenery areas. Outdoor recreational facilities including outdoor dining area, fitness equipment for the elderly, chess garden and sitting courtyard are mainly located on roof top of the building. Besides, meandering path, trellis and sitting garden are also provided at G/F for enjoyment of the occupants.

5.2.3 It is expected that there will be about **2,814** occupants at the Proposed Development while the proposed area of the communal open spaces under application will be around **2,834.9** m². Hence, the provision of the communal open space can meet the requirement set out in HKPSG, i.e. 1 m² per person. Please refer to the Communal Open Space Calculation in **Appendix D**.

5.3 Site Coverage of Greenery

5.3.1 The landscape proposal aims to strengthen the local greenery within the Site. The common greenery calculation is based on BD PNAP-APP 152 – Sustainable Building Design Guidelines the present scheme is shown in the schedule below, and drawing showing the greenery calculation shall refer to dwg. No. GR01 in **Appendix D**.

Table 3.0 Greenery Calculation

Site Area:	14,080.0 m ²
Required Total Greenery	14,080.0 m ² x 20% = 2,816.0 m ²
Required Greenery at Primary Zone	14,080.0 m ² x 10% = 1,408.0 m ²
Allowable Greenery Features:	2,816.0 m ² x 30% = 844.80 m ²
Provided Greenery:	
Uncovered Planting Area at G/F:	3,275.90 m ²
Greenery Features - Covered Planting Area at G/F	= 22.5/2 m ² = 11.25 m ² (<844.80 m ²)
Greenery at Primary Zone:	(3,275.90+11.25) m ² = 3,287.15 m ² (>1,408.0 m ²)
Greenery at Other Areas (R/F of Clubhouse and RCHE)	609.90 m ²
Total Greenery:	(3,275.90 + 609.90) m ² = 3,897.05 m ² (>2,816.0 m ²)
Greenery Ratio	3,897.05/14,080.0 x 100% = 27.68%

- 5.3.2 Total Greenery Area is approx. **3,897.05 m²** (i.e. more than the required 20% greenery requirement, **2,816.0 m²**), as set out in PNAP APP-152 – Sustainable Building Design Guidelines. Besides, the proposed greenery areas are easily accessible by the public is referred to “Greenery at Primary Zone”, i.e. **3,287.15 m²** (i.e. more than the required **1,408.0 m²**).

5.4 Soil Depth and Drainage for Planting

- 5.4.1 The requirement of soil depth is directly related to the planting design and its associated loading requirement upon structure. In general, the soil depth provided, with all drainage layers, water-proofing and protective screeding exclusive is listed below:

Table 4.0 Planting Medium (Soil Depth)

Planting Type	Soil Depth (Minimum)
Tree/ Palm tree	1200mm
Shrub/ Climbers	600mm
Groundcover/ Turf	300mm

All Planting areas on slab shall be provided with sub-soil drainage system.

5.5 Irrigation

- 5.5.1 The proposed irrigation system will be by tap water pipe for manual operation. Lockable water points will be provided at 40m centres covering the entire site. The proposed source of water supply is subject to final approval from the Water Services Department.

5.6 Future Maintenance

Hard Landscape Elements

- 5.6.1 Maintenance for hard landscape elements shall be carried out by the future management office of the Proposed Development with maintenance intention as follows:

I – Routine Maintenance (Daily – Weekly)

- a. Rubbish and litter removal
- b. Sweeping and cleaning
- c. Damage inspection and repair for site furniture and light bulb replacement

II – Annual/ Long Term Maintenance

- a. Repainting
- b. Resurfacing of worn pavements
- c. Replacing worn parts site furniture, lighting fixture and other facilities
- d. Replacement of worn landscape furniture.

Soft Landscape Element

- 5.6.2 The softworks contractor will be responsible for maintenance of the planting during the establishment period allowed for in the construction contract, usually for the first year after the beginning of the schemes operational phase. This will ensure that the soft landscape measures are in a healthy condition prior to the finished scheme being handed back to the lot owner.
- 5.6.3 Ultimately the future management office will employ skilled maintenance staff to take care of all landscape areas within the Site.

6.0 PLANTING PROPOSALS (Refer to Appendix C)

6.1 In order to provide quality landscape for the Proposed Development, soft landscape works will be the major landscape element of the landscaping proposal and satisfy the following criteria:

- To compensate the loss of affected trees;
- To screen the residential building and reduce the visual impact to the nearby residents/ visitors;
- To minimize future maintenance; and
- To be compatible with the hillside environment.

6.2 The proposed planting species list is shown as follows and details shall refer to the Planting Plans in **Appendix C**.

Table 5.0 Proposed Planting Schedule

Botanical Name	Chinese Name	Size (mm)	Spacing (mm)
TREES		Height x Spread x DBH (mm)	
<i>Camellia Japonica</i>	山茶	3000x1250x80	4000
<i>Bischofia javanica</i>	秋楓	4500x1500x80	4000
<i>Sapium dicolor</i>	山烏柏	4000x1500x80	4000
<i>Garcinia Subelliptica</i>	菲島福木	4000x1250x80	4000
<i>Lagerstroemia indica</i>	紫薇	3000x1500x80	4000
<i>Plumeria rubra</i>	紅雞蛋花	3000x2000x80	4000
<i>Osmanthus fragran</i>	桂花	3000x1500x80	4000
<i>Terminalia mantaly</i>	細葉欖仁	4500x1500x80	4000
SHRUBS		Height x Spread (mm)	
<i>Carmona microphylla</i>	福建茶	450x400	400
<i>Codiaeum variegatum</i>	黃洒金	350x300	300
<i>Codiaeum variegatum 'mixed'</i>	洒金榕	600x500	450
<i>Iris tectorum</i>	鳶尾	500x350	200
<i>Juniperus chinensis</i>	龍柏	1200x600	As shown
<i>Melastoma candidum</i>	野牡丹	350x300	300
<i>Madagascar jasmine stephanotis floribumda</i>	非洲茉莉	500x500	400
<i>Murraya paniculata</i>	九里香	600x500	450
<i>Rhapis excelsa</i>	小葉棕竹	1200x600	600
<i>Ruellia coerulea</i>	翠蘆莉	400x400	350
<i>Schefflera arboricola</i>	鵝掌藤	600x500	450
<i>Schefflera arboricola "Trinette"</i>	黃金鵝掌藤	500x500	450
GROUNDCOVERS		Height x Spread (mm)	
<i>Nephrolepis auriculata</i>	腎蕨	250x150	150
<i>Lantana</i>	小葉馬纓丹	300x300	250

<i>montevidensis</i>			
<i>Sansevieria spp.</i>	虎尾蘭	300x300	300
<i>Ophiopogon bodinieri</i>	沿階草	250x250	200
<i>Phyllanthus myrtifolius</i>	錫蘭葉下珠	200x300	300
GRASS			
<i>Zoysia japonica</i>	朝鮮草	-	-

- 6.3 In this study area, a total of **25** trees (i.e. **7** within and **18** outside the Site Boundary) were recorded. The **16** trees outside the Site will be retained in-situ (as unaffected by the Proposed Development) while the **9** trees including **7** inside and **2** outside the Site will be felled due to in conflict with the Proposed Development and the associated works.
- 6.4 **143** heavy standard trees with average DBH approx. 80mm are proposed to be planted to compensate the loss of the **9** existing trees. They will be planted at the common landscape areas, peripheral planting strips and roadside planting verge within the site boundary. All these new trees within the lot boundary will all be maintained by the future management office and the individual Lot owners of the Proposed Development.
- 6.5 Upon the above, the compensation ratio in terms of quantity and quality is shown as follows:
- | | |
|---------------------------------|----------|
| Quantity of loss of trees: | 9 nos. |
| Accumulated DBH loss of trees: | 4.35 m |
| Quantity of compensatory trees: | 143 nos. |
| Quantity compensation ratio: | 1:15.89 |
| DBH compensation: | 11.44m |
| DBH compensation ratio: | 1:2.63 |

7.0 PROPOSAL FOR TREE PRESERVATION

- 7.1 In this project, **16** trees outside the Site will be retained on site. The following measures should be undertaken for the preservation and protection of existing trees in surrounding areas:
- 7.2 In order to determine the impact to the existing vegetation by the proposed development, a full Tree Felling Application in accordance with DEVB TCW No. 6/2015 "Maintenance of Vegetation and Hard Landscape Features" and LAO Practice Note No. 2/2020 "Tree Preservation and Tree Removal Application for Building Development in Private Projects Compliance of Tree Preservation Clause under Lease" should be undertaken and submitted to the relevant Government departments for approval.
- 7.3 It is proposed that unaffected trees are to be retained on site due to their amenity and conservation value. The contractor will need to be made aware of the need to minimize the encroachment of the construction works on the trees. The area under the drip line of the tree canopy will be fenced by 1.2m high temporary protective fencing during construction stage. Besides, all provisions for tree preservation and protection measures of retained trees should follow the details in Section 25 – Landscape Work in the General Specification for Building (2017).
- 7.4 Appropriate protection to these trees, e.g. wrapping of the tree stems with protective cover will be adopted during the construction process. As a precautionary measure and only if necessary, pruning of branches of existing trees identified for retention will be on an absolute need basis and strictly adhere to the principle of crown thinning in maintaining their form and amenity value. The tree preservation works will be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. The site situation will be carefully monitored, including the key stages in the preparation of the trees, the implementation of protection measures and health monitoring throughout the construction period. A tree protection specification would be included within the contract document.
- 7.5 The softworks contractor will be responsible for maintenance of the planting during the establishment period allowed for in the construction contract, usually for the first year after the beginning of the schemes operational phase. This will ensure that the soft landscape measures within lot boundary and at open space are in a healthy condition prior to the finished scheme being handed back to management office of the site.

Appendix A

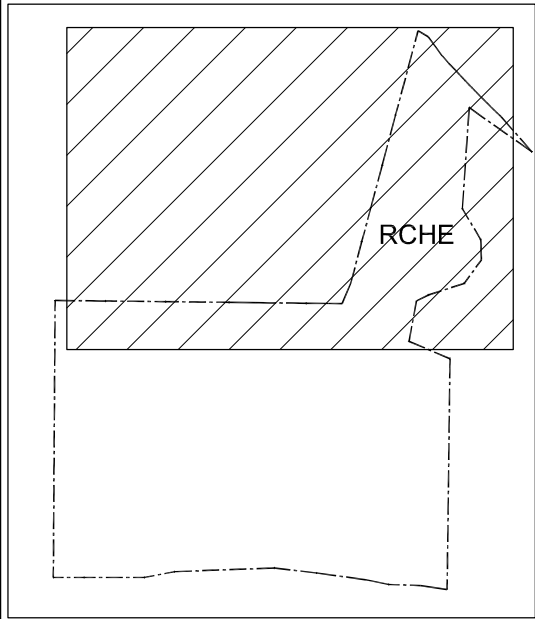
Tree Survey Plan, Tree Assessment Schedule

And

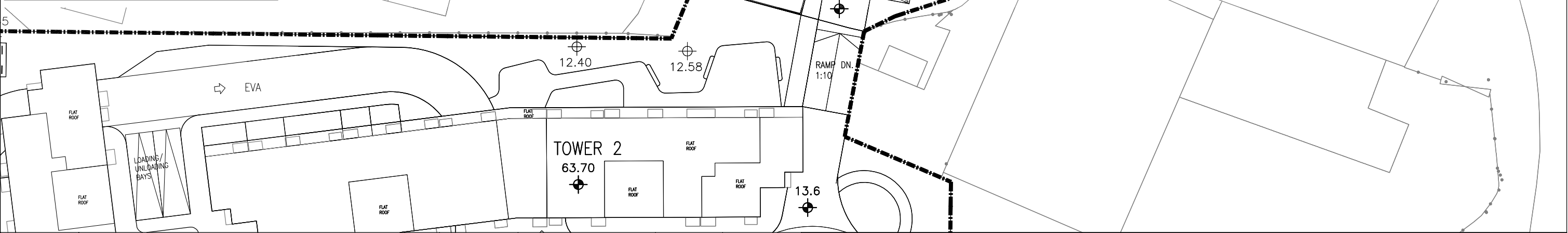
Photographic Record of Existing Trees

LEGEND:

- APPLICATION SITE BOUNDARY
- T01 EXISTING TREE TO BE FELLED
(WITHIN APPLICATION SITE BOUNDARY)
- T29 EXISTING TREE TO BE RETAINED
(OUTSIDE APPLICATION SITE BOUNDARY)
- T17 EXISTING TREE TO BE FELLED
(OUTSIDE APPLICATION SITE BOUNDARY)
- 12.65 EXISTING LEVEL
- 13.6 PROPOSED LEVEL



KEY PLAN
SCALE 1:2500



REVISION 校訂	DESCRIPTION 內容摘要	DRAWN 繪圖	DATE 日期	CHECKED 審核	APPROVED 審批	DO NOT SCALE FROM THIS DRAWING 勿按圖量比例	SCALE 比例	DESIGNED 設計	COPYRIGHT RESERVED 保留版權
						PROJECT 工程項目 PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG	1:500	TEL	
						DRAWING TITLE 圖紙名稱 TREE SURVEY PLAN (RCHE)	DATE 日期 APR 2021	DRAWN 繪圖 CAD	
							REVISION 校訂 —	CHECKED 審核 TEL	
							DRAWING NUMBER 圖號 TS02	APPROVED 審批 TEL	
LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG TEL: (852) 2868 0980 FAX: (852) 2868 2203									

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Tree Assessment Schedule at
Proposed Residential Care for Home Elderly & Flat at Various Lots in D.d. 121 & D.D. 122, Ping Shan, Yuen Long

Prepared by Ted Lam (R.L.A. No. R-073) on 15 May 2021

To be read in conjunction with Tree Survey Plan, dwg. no. C2119-TS01 and C2119-TS02

Tree	Name		Original Location		Size			Form	Health	Amenity Value	Survival Rate after Transplantation	Proposed Treatment	Justification for felling	Remark
No.	Botancial Name	Chinese Name	(Within/ Outside Application Site Boundary)	Level at Root Collar	DBH (mm)	Height (m)	Spread (m)	(Good/Fair/Poor)	(Good/Fair/Poor)	(High/Med/Low)	(High/Med/Low)	(Retain/Fell/Transplant)		
T01	<i>Bombax ceiba</i>	木棉	Outside Application Site boundary	12.79	800	14	10	Poor	Poor	Med	Low	Retain	-	codominant trunk, asymmetrical form, bark detachment
T02	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	13.62	800	12	14	Fair	Fair	Med	Low	Retain	-	growing on earth berms
T03	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	12.97	800	12	14	Fair	Fair	Med	Low	Retain	-	growing on earth berms
T04	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	13.33	800	10	12	Fair	Fair	Med	Low	Retain	-	growing on earth berms
T05	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	13.42	950	8	14	Fair	Fair	Med	Low	Retain	-	growing on earth berms
T06	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	12.73	800	5	12	Fair	Fair	Med	Low	Retain	-	growing on earth berms
T07	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	13.28	1200	7	16	Fair	Fair	Med	Low	Retain	-	Potential Old and Valuable Tree (POVT), growing on earth berms
T08	<i>Macaranga tanarius</i>	血桐	Outside Application Site boundary	14.02	300	8	5	Poor	Fair	Low	Low	Retain	-	asymmetrical form and leaning form
T09	<i>Ficus microcarpa</i>	細葉榕	Outside Application Site boundary	14.55	1800	12	16	Fair	Fair	Med	Low	Retain	-	Potential Old and Valuable Tree (POVT), exposed root, growing on earth berms
T10	<i>Melaleuca leucadendron</i>	白千層	Outside Application Site boundary	14.03	300	11	5	Poor	Poor	Low	Low	Retain	-	slight leaning, root restricted by manhole
T11	<i>Eucalyptus robusta</i>	桉樹	Within Application Site Boundary	12.96	500	14	7	Fair	Fair	Low	Low	Fell	1,2,6	asymmetrical form, root restricted by hard paving
T12	<i>Eucalyptus robusta</i>	桉樹	Within Application Site Boundary	12.84	500	14	7	Fair	Fair	Low	Low	Fell	1,2,6	root restricted by hard paving
T13	<i>Eucalyptus robusta</i>	桉樹	Within Application Site Boundary	12.86	500	14	7	Fair	Fair	Low	Low	Fell	1,2,6	root restricted by hard paving
T14	<i>Macaranga tanarius</i>	血桐	Within Application Site Boundary	12.46	400	6	5	Poor	Fair	Low	Low	Fell	1,2,4,6	codominant trunk, leaning form, root restricted by hard paving
T15	<i>Macaranga tanarius</i>	血桐	Within Application Site Boundary	12.51	350	6	6	Poor	Fair	Low	Low	Fell	1,2,4,6	bent at leader, root restricted by hard paving
T16	<i>Bombax ceiba</i>	木棉	Outside Application Site boundary	13.82	300	6	4	Poor	Fair	Med	Low	Fell	1,2,4	asymmetrical form, wilted branches, root restricted by hard paving
T17	<i>Broussonetia papyrifera</i>	構樹	Outside Application Site boundary	13.70	500	6	10	Poor	Fair	Low	Low	Fell	1,2,3,4,6	bent at leader, root restricted by planter
T18	<i>Celtis sinensis</i>	朴樹	Outside Application Site boundary	13.76	250	5	4	Poor	Poor	Low	Low	Retain	-	leaning form, broken trunk and branches, sparse foliage
T19	<i>Celtis sinensis</i>	朴樹	Outside Application Site boundary	14.61	700	12	10	Good	Fair	High	Low	Retain	-	root restricted by planter
T20	<i>Celtis sinensis</i>	朴樹	Outside Application Site boundary	14.54	300	8	4	Good	Fair	High	Low	Retain	-	root restricted by planter
T21	<i>Cinnamomum camphora</i>	樟樹	Outside Application Site boundary	14.71	450	12	7	Good	Fair	High	Low	Retain	-	root restricted by planter
T22	<i>Bischofia javanica</i>	秋楓	Outside Application Site boundary	14.68	450	11	6	Good	Fair	High	Low	Retain	-	root restricted by planter
T23	<i>Bombax ceiba</i>	木棉	Outside Application Site boundary	14.77	700	13	12	Good	Fair	High	Low	Retain	-	root restricted by planter
T24	<i>Melaleuca leucadendron</i>	白千層	Within Application Site Boundary	14.38	500	11	7	Fair	Fair	Med	Low	Fell	1,2	root embeded by concrete
T25	<i>Melaleuca leucadendron</i>	白千層	Within Application Site Boundary	14.60	800	12	9	Fair	Fair	Med	Low	Fell	1,2	root embeded by concrete

*Justification for Tree felling:

1. Tree is in direct conflict with the proposed works.
2. Preparation of intact and sufficient-sized root ball not practical due to the topography (e.g. on rock, steep slope, shallow substratum, structures).
3. Weedy species without special ecological significance or species creating maintenance problem.
4. Tree with poor health and/or form for transplantation.
5. Lack of access for transplantation machinery or vehicle.
6. Species of low post-transplantation survival rate.
7. Tree has structural problem and may create hazard to public during root ball preparation and/or after transplantation, while auxiliary support will not be sufficient / practical.

Summary of Treatment of Existing Trees	
Total Nos. of Trees	25
Trees to be Retained	16
Trees to be Transplanted	0
Trees to be Felled	9
Aggregate Loss of DBH	4.35m
Nos. of Compensatory Trees	143
DBH Compensation	11.44m



T01 (R)



T01 (R)



T02 (R)



T02 (R)



T03 (R)



T03 (R)



T04 (R)



T04 (R)

LEGEND:
 (R) - Retain
 (F) - Fell
 (T) - Transplant



T05 (R)



T05 (R)



T06 (R)



T06 (R)



T07 (R)



T07 (R)



T08 (R)



T08 (R)

LEGEND:
 (R) - Retain
 (F) - Fell
 (T) - Transplant



T09 (R)



T09 (R)



T10 (R)



T10 (R)



T11 (F)



T11 (F)



T12 (F)



T12 (F)

LEGEND:
 (R) - Retain
 (F) - Fell
 (T) - Transplant



T13 (F)



T13 (F)



T14 (F)



T14 (F)



T15 (F)



T15 (F)



T16 (F)



T16 (F)

LEGEND:
 (R) - Retain
 (F) - Fell
 (T) - Transplant



T17 (F)



T17 (F)



T18 (R)



T18 (R)



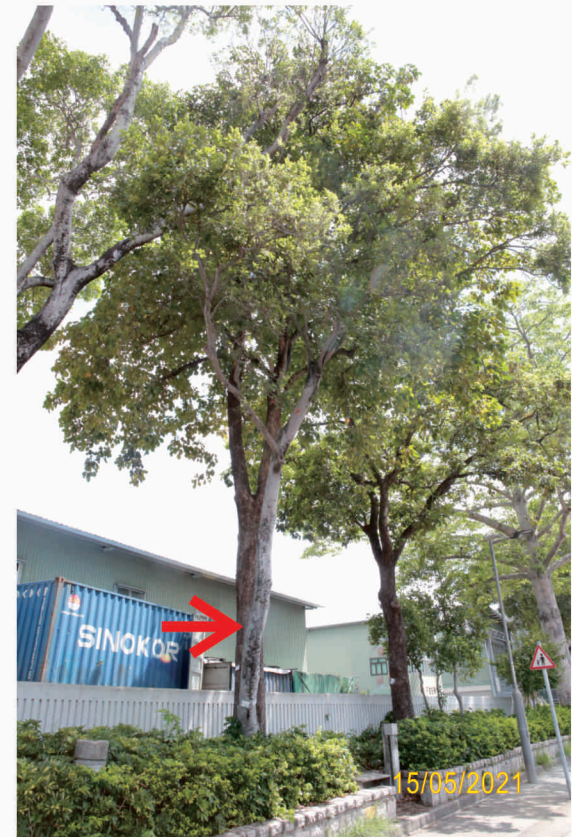
T19 (R)



T19 (R)



T20 (R)



T20 (R)

LEGEND:
 (R) - Retain
 (F) - Fell
 (T) - Transplant



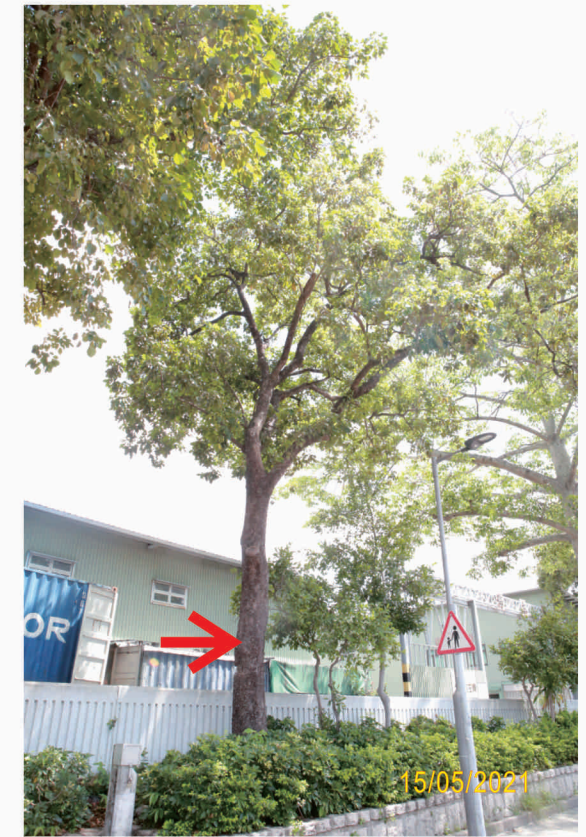
T21 (R)



T21 (R)



T22 (R)



T22 (R)



T23 (R)



T23 (R)



T24 (F)



T24 (F)

LEGEND:
(R) - Retain
(F) - Fell
(T) - Transplant



T25 (F)



T25 (F)

- LEGEND:
- (R) - Retain
 - (F) - Fell
 - (T) - Transplant

Appendix B

Landscape Master Plan

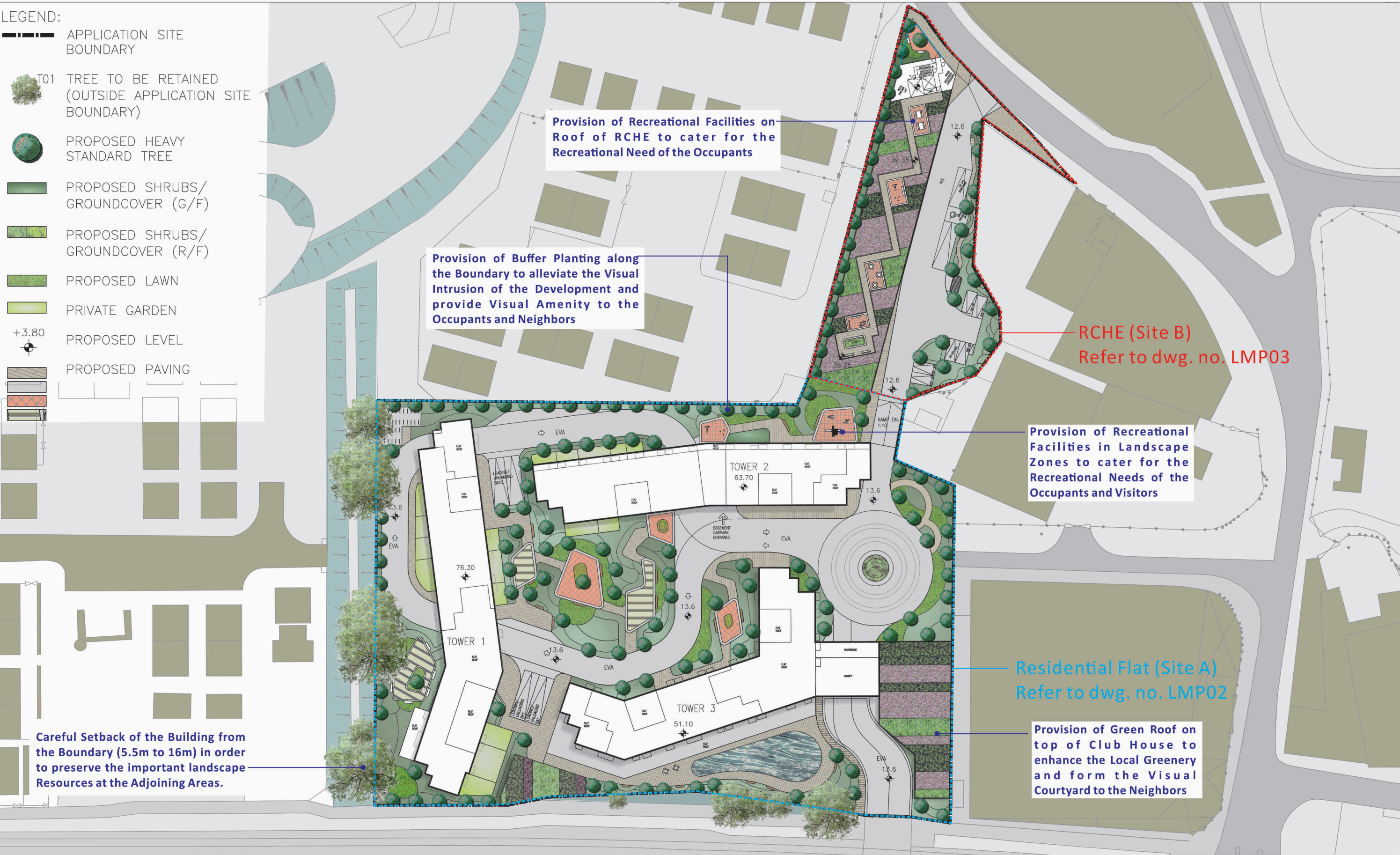
And

Landscape Details

LEGEND:

- APPLICATION SITE BOUNDARY
- T01 TREE TO BE RETAINED (OUTSIDE APPLICATION SITE BOUNDARY)
- PROPOSED HEAVY STANDARD TREE
- PROPOSED SHRUBS/ GROUND COVER (G/F)
- PROPOSED SHRUBS/ GROUND COVER (R/F)
- PROPOSED LAWN
- PRIVATE GARDEN
- +3.80 PROPOSED LEVEL
- PROPOSED PAVING

Careful Setback of the Building from the Boundary (5.5m to 16m) in order to preserve the important landscape Resources at the Adjoining Areas.



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						DRAWING TITLE 圖紙名稱 LANDSCAPE MASTER PLAN	DATE 日期 APR 2021	DRAWN 繪圖 CAD	
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							DRAWING NUMBER 圖號 LMP01	APPROVED 審批 TEL	
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LanDes

LEGEND:

- APPLICATION SITE BOUNDARY
- TREE TO BE RETAINED (OUTSIDE APPLICATION SITE BOUNDARY)
- PROPOSED HEAVY STANDARD TREE
- PROPOSED SHRUBS/ GROUND COVER (G/F)
- PROPOSED SHRUBS/ GROUND COVER (R/F)
- PROPOSED LAWN
- PRIVATE GARDEN
- +3.80 PROPOSED LEVEL
- PROPOSED PAVING

LEGEND:

- 1 Vehicular Entrance
- 2 Basement Carpark Entrance
- 3 Swimming Pool
- 4 Meandering Path
- 5 Gathering Courtyard
- 6 Seat Bench
- 7 Fitness Equipment
- 8 Children Playground
- 9 Yoga Place
- 10 Bicycle Parking
- 11 Green Roof on Clubhouse
- 12 Green Roof on Retail



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						DRAWING TITLE 圖紙名稱 LANDSCAPE MASTER PLAN	DATE 日期 APR 2021	DRAWN 繪圖 CAD	
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LanDes

LEGEND:

- APPLICATION SITE BOUNDARY
- TREE TO BE RETAINED (OUTSIDE APPLICATION SITE BOUNDARY)
- PROPOSED HEAVY STANDARD TREE
- PROPOSED SHRUBS/ GROUND COVER (G/F)
- PROPOSED SHRUBS/ GROUND COVER (R/F)
- PROPOSED LAWN
- PRIVATE GARDEN
- +3.80 PROPOSED LEVEL
- PROPOSED PAVING

LEGEND:

- ① Vehicular Entrance
- ② Meandering Path
- ③ Gathering Courtyard
- ④ Front Garden
- ⑤ Fitness Equipment for the Elderly
- ⑥ Outdoor Dining Area
- ⑦ Chess Garden
- ⑧ Green Roof on RCHE
- ⑨ Peripheral Tree Planting



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Appendix C

Planting Plans

■■■■ APPLICATION SITE
BOUNDARY

T01 TREE TO BE RETAINED
(OUTSIDE APPLICATION SITE
BOUNDARY)



PROPOSED HEAVY
STANDARD TREE

 PROPOSED SHRUBS/
GROUND COVER (G/F)

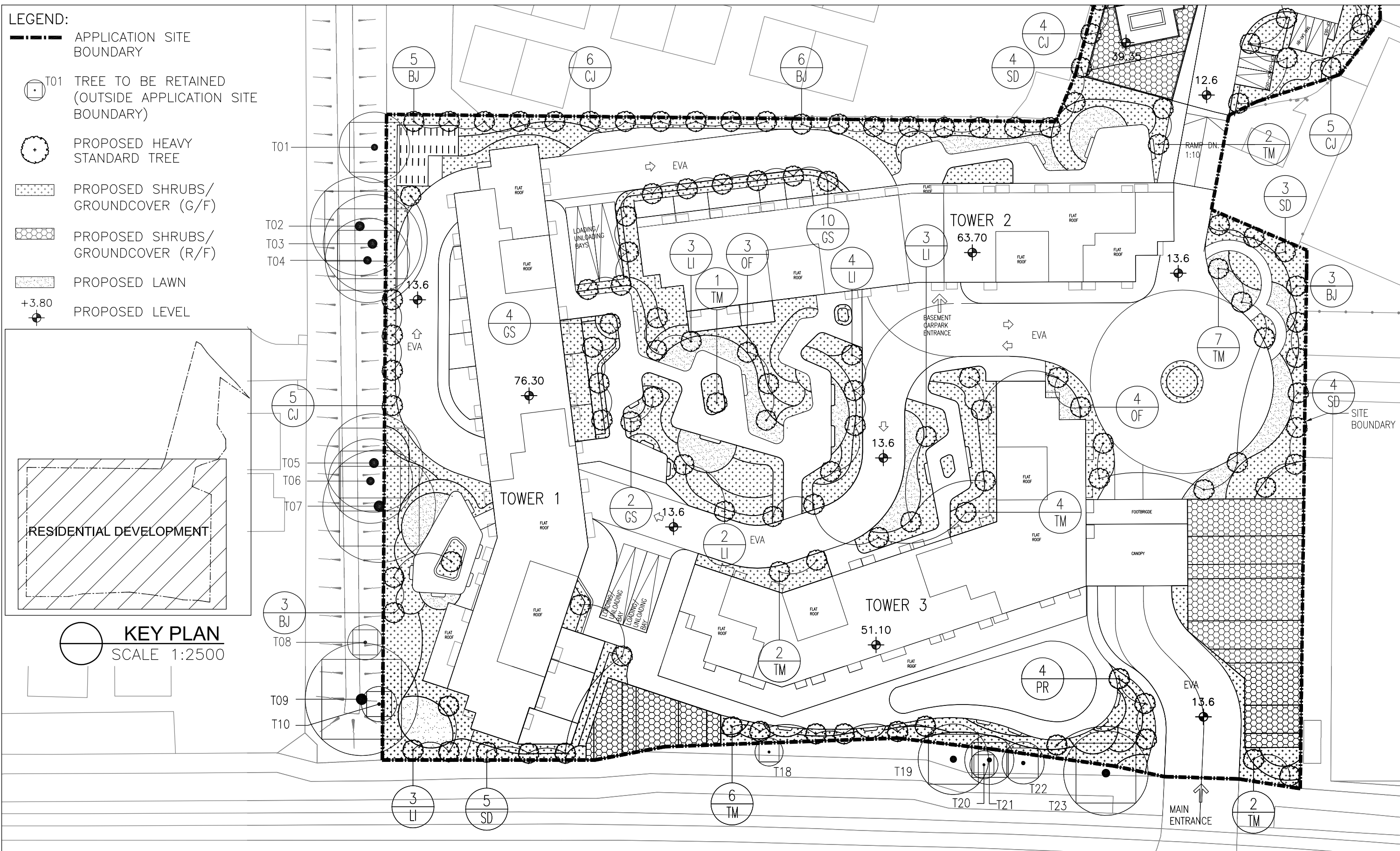
 PROPOSED SHRUBS/
GROUNDCOVER (R/F) PROPOSED LAWN


+3.80
PROPOSED LEVEL

~~RESIDENTIAL DEVELOPMENT~~

KEY PLAN

SCALE 1:2500



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						LANDSCAPE LIMITED 景觀設計有限公司 LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION 景觀規劃及設計, 景觀建築 FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG 香港灣仔源臣道5-11號信邦商業大廈17樓A室 TELEPHONE 2868 0980 FACSIMILE 2868 2203 電話:(八五二) 二八六八 零九八零 傳真:(八五二) 二八六八 二二零三	CAD FILENAME : C2119-PT0

■■■■ APPLICATION SITE
BOUNDARY

T01 TREE TO BE RETAINED
(OUTSIDE APPLICATION SITE
BOUNDARY)



PROPOSED HEAVY
STANDARD TREE

PROPOSED SHRUBS/
GROUND COVER (G/F)

PROPOSED SHRUBS/
GROUNDCOVER (R/F)

 PROPOSED LAWN

+3.80
 PROPOSED LEVEL

 **KEY PLAN**
SCALE 1:2500



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Appendix D

Site Coverage of Greenery

And

Communal Open Space Provision

LEGEND:

- APPLICATION SITE BOUNDARY
- UNCOVERED COMMON GREENERY AREA AT PRIMARY ZONE
- UNCOVERED COMMON GREENERY AT OTHERS AREA
- PROPOSED LEVEL

KEY PLAN
SCALE 1:3000

SITE AREA: 14,080.0 SQ.M.

REQUIRED GREENERY

TOTAL: REQUIRED GREENERY = 14,080.0 X 20% = 2,816.0 SQ.M.

REQUIRED GREENERY AT PRIMARY ZONE: = 14,080.0 X 10% = 1,408.0 SQ.M.

ALLOWED GREEN FEATURE: = 2,816.0X30% = 844.80 SQ.M.

PROVIDED GREENERY

UNCOVERED GREENERY AT PRIMARY ZONE: = 3,275.90 SQ.M.

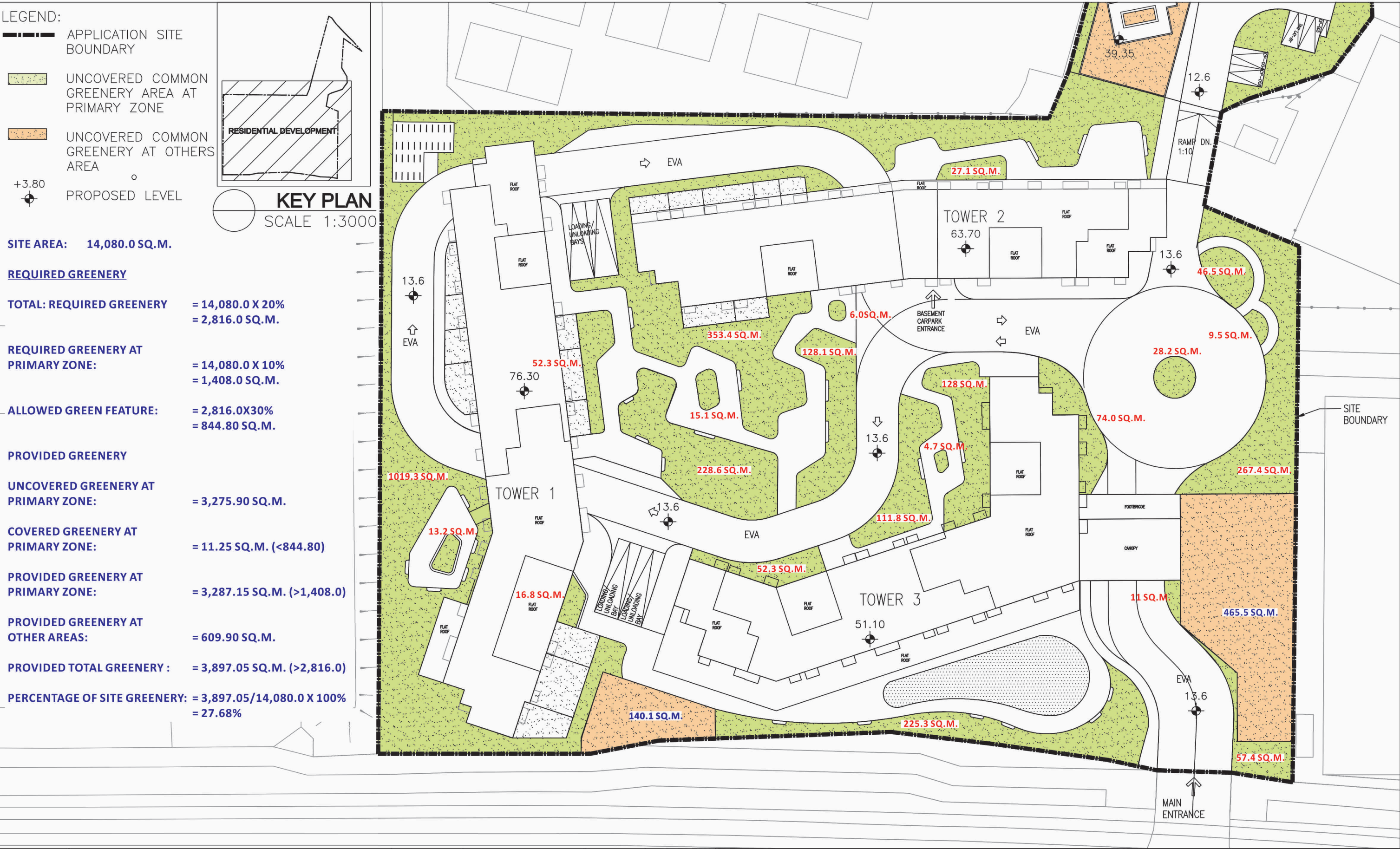
COVERED GREENERY AT PRIMARY ZONE: = 11.25 SQ.M. (<844.80)

PROVIDED GREENERY AT PRIMARY ZONE: = 3,287.15 SQ.M. (>1,408.0)

PROVIDED GREENERY AT OTHER AREAS: = 609.90 SQ.M.

PROVIDED TOTAL GREENERY : = 3,897.05 SQ.M. (>2,816.0)

PERCENTAGE OF SITE GREENERY: = 3,897.05/14,080.0 X 100% = 27.68%



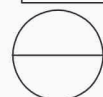
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						DRAWING TITLE 圖紙名稱 GREENERY CALCULATION (RESIDENTIAL DEVELOPMENT)	DATE 日期 APR 2021	DRAWN 繪圖 CAD	
						REVISION 校訂		CHECKED 審核 TEL	
						DRAWING NUMBER 圖號 GC01		APPROVED 審批 TEL	
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■■■■ APPLICATION SITE
BOUNDARY




COVERED COMMON
GREENERY AREA AT
PRIMARY ZONE
(MEASURED FROM 45°
PROJECTED LINE TAKEN
FROM THE EDGE OF
BUILDING)

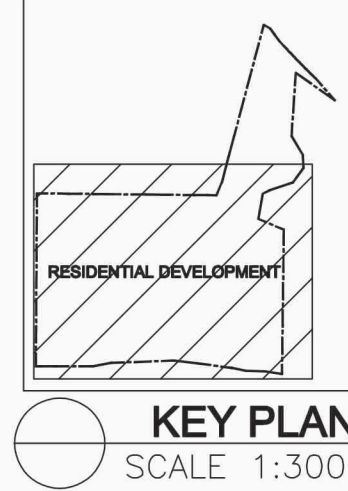
+3.80
 PROPOSED LEVEL

 **KEY PLAN**
SCALE 1:3000

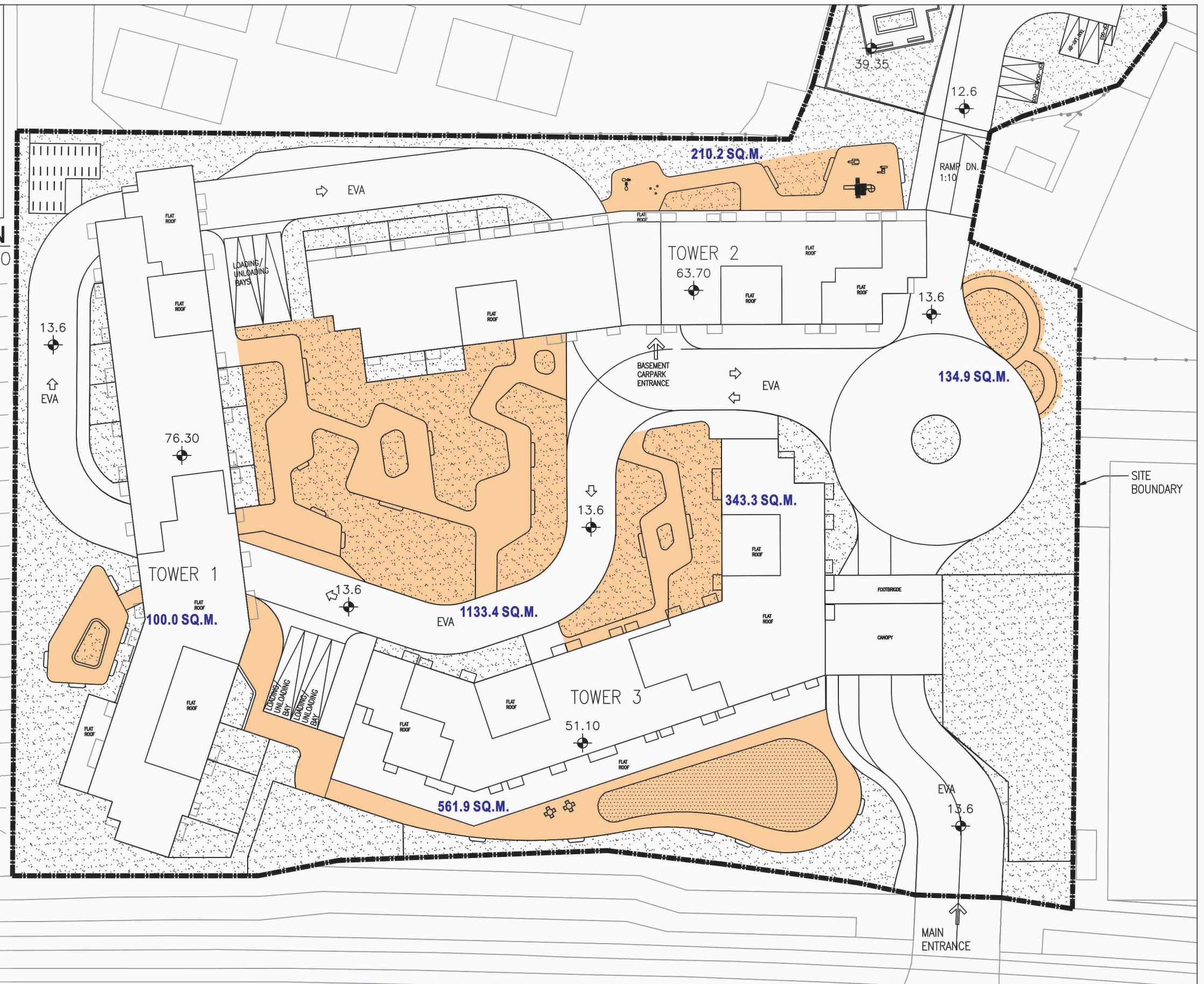
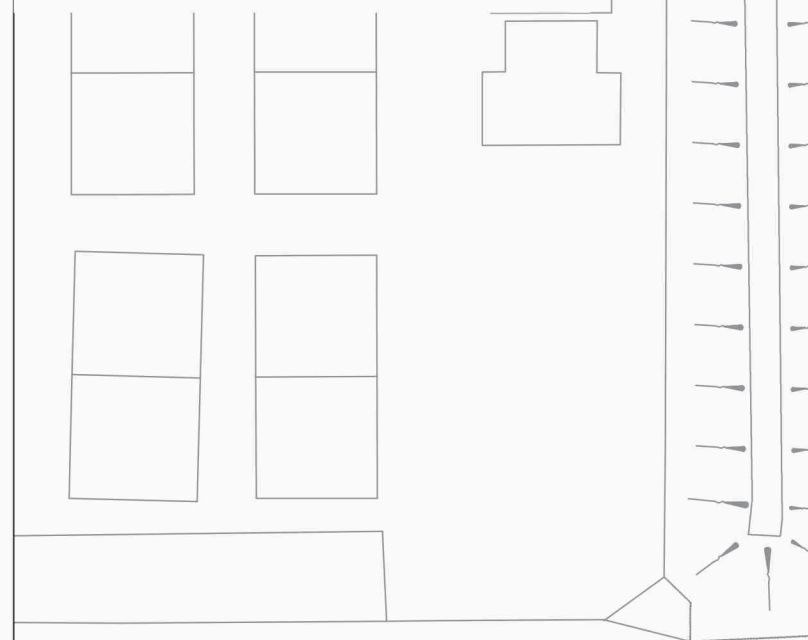


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						<div><div>PROJECT 工程項目 PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG</div><div>SCALE 比例 1:500</div><div>DESIGNED 設計 TEL</div></div> <div><div>DATE 日期 APR 2021</div><div>DRAWN 繪圖 CAD</div></div> <div><div>DRAWING TITLE 圖紙名稱 GREENERY CALCULATION (RCHE)</div><div>REVISION 校訂 —</div><div>CHECKED 審核 TEL</div></div> <div><div>DRAWING NUMBER 圖號 GC02</div><div>APPROVED 審批 TEL</div></div>	
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 APPLICATION SITE BOUNDARY
 COMMUNAL OPEN SPACE
 +3.80 PROPOSED LEVEL



AREA OF COMMUNAL OPEN SPACE:
2,834.9 m.sq. (>2,814m.sq.)

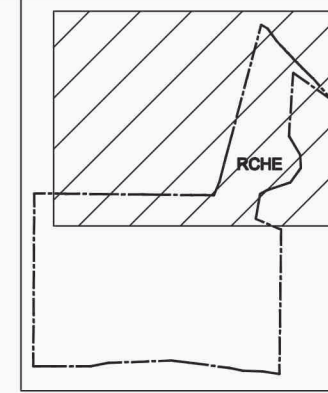


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						DATE 日期 APR 2021	DRAWN 繪圖 CAD	CHECKED 審核 TEL		
						DRAWING TITLE 圖紙名稱 COMMUNAL OPEN SPACE PROVISION (RESIDENTIAL DEVELOPMENT)	REVISION 校訂 —	CHECKED 審核 TEL		
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■■■■ APPLICATION SITE
BOUNDARY

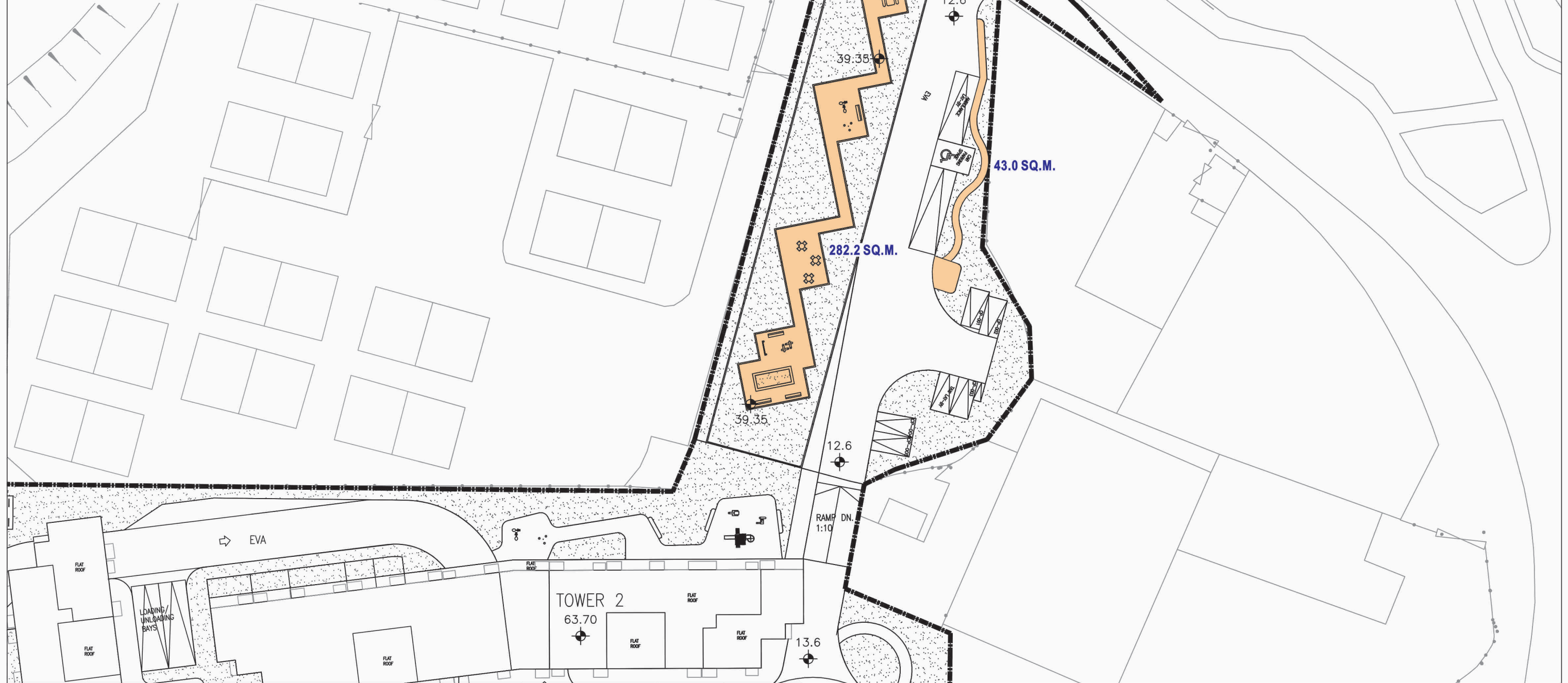
COMMUNAL OPEN SPACE

+3.80
PROPOSED LEVEL



KEY PLAN

SCALE 1:3000



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						CAD FILENAME : C2119-OS02			

A p p e n d i x I V
Traffic Impact Assessment

**Proposed Residential Care Home for the Elderly
and Flat at Various Lots in D.D. 121 and D.D. 122,
Ping Shan, Yuen Long**

Traffic Impact Assessment

**Final Report
December 2021**

Prepared by: CKM Asia Limited

Prepared for: On Billion International Limited

**Proposed Residential Care Home for the
Elderly and Flat at Various Lots in D.D. 121
and D.D. 122, Ping Shan, Yuen Long**

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**Proposed Residential Care Home for the
Elderly and Flat at Various Lots in D.D. 121
and D.D. 122, Ping Shan, Yuen Long**

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**Proposed Residential Care Home for the
Elderly and Flat at Various Lots in D.D. 121
and D.D. 122, Ping Shan, Yuen Long**

FIGURES

NUMBER

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1.0 INTRODUCTION

Background

- 1.1 The subject site comprises of various lots in D.D. 121 and D.D. 122 in Ping Shan, and it is currently zoned “*Village Type Development*” and “*Comprehensive Development Area*” in the Ping Shan Outline Zoning Plan. The location of the subject site is shown in Figure 1.1.
- 1.2 The Developer has the intention to rezone the subject site to “*Residential (Group B) 2*” in order to construct a 840-flat private housing development with a 140m² retail shop (the “Private Housing”) and a 294-bed residential care home for the elderly (the “Proposed RCHE”), which are together known in this Report as the “Proposed Development”.
- 1.3 CKM Asia Limited, a traffic and transportation planning consultancy firm, was commissioned to carry out a Traffic Impact Assessment (the “TIA”) in support of the Proposed Development. This report describes the traffic impact study undertaken.

Scope of Study

- 1.4 The main objectives of this study are as follows:
 - To assess the existing traffic issues in the vicinity of the subject site;
 - To provide adequate internal transport facilities for the Proposed Development;
 - To quantify the amount of traffic generated by the Proposed Development; and
 - To examine the traffic impact of the Proposed Development to the local road network.

Contents of the Report

- 1.5 After this introduction, the remaining chapters contain the following:
 - chapter two – describes the existing situation;
 - chapter three – presents the Proposed Development;
 - chapter four – describes the traffic impact analysis; and
 - chapter five – gives the overall conclusion.

2.0 EXISTING SITUATION

The Subject Site

- 2.1 The subject site is bounded by Castle Peak Road – Ping Shan to the south, Ping Ha Road to the north, a factory building known as Century Centre to the east and village houses to the west.

Existing Road Network

- 2.2 The section of Castle Peak Road – Ping Shan near the subject site is a dual carriageway 2 to 3-lane running in east-west direction. It is classified as rural trunk road and connects Tuen Mun and Hung Shui Kiu to the west and Yuen Long to the east.
- 2.3 Ping Ha Road is a single carriageway 2-lane rural road connecting Castle Peak Road – Ping Shan and Tin Shui Wai. This road serves the subject site and local villages and developments nearby.

Traffic Surveys

- 2.4 Manual classified counts were conducted on a weekday AM and PM peak periods at junctions which are located in the vicinity of the subject site in order to establish the peak hour traffic flows. The surveyed junctions included the following:

- J1 – Castle Peak Road – Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road
- J2 – Castle Peak Road – Ping Shan / Site Access Road
- J3 – Castle Peak Road – Ping Shan / Ping Kwai Road / San Hi Tsuen Street
- J4 – Castle Peak Road – Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange
- J5 – Shui Pin Wai Interchange

- 2.5 The traffic counts were classified by vehicle type to enable traffic flows in passenger car units (pcu) to be calculated. The locations and layouts of the surveyed junctions are shown in Figure 2.1 and Figures 2.2 – 2.6 respectively.
- 2.6 The AM and PM peak hour traffic flows were found to occur at 0745 – 0845 and 1700 – 1800 hours respectively, and the peak hour traffic flows are illustrated in Figure 2.7.

Operational Performance of the Surveyed Junctions

- 2.7 The existing operational performance of the surveyed junctions was calculated based on the observed traffic counts and the analysis method found in the Transport Planning and Design Manual (the “TPDM”). The analysis results are summarised in Table 2.1 and detailed calculations are found in Appendix A.

TABLE 2.1 EXISTING JUNCTION OPERATIONAL PERFORMANCE

Ref.	Signal Junction	Reserve Capacity	
		AM Peak	PM Peak
J1	Castle Peak Road – Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road ⁽¹⁾	76%	60%
J2	Castle Peak Road – Ping Shan / Site Access Road ⁽¹⁾	> 100%	> 100%
J3	Castle Peak Road – Ping Shan / Ping Kwai Road / San Hi Tsuen Street ⁽¹⁾	> 100%	> 100%
J4	Castle Peak Road – Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange ⁽¹⁾	88%	> 100%
J5	Shui Pin Wai Interchange	62%	83%

Note: ⁽¹⁾ actual lost times adopted from site measurements to reflect the effect of Light Rail

- 2.8 The above results indicate that the analysed junctions currently operate with capacities during the AM and PM peak hours.

Public Transport Facilities

- 2.9 Access to road-based and rail-based public transport services from the subject site is convenient. The Light Rail Ping Shan Station is located within 300m, or equivalent to around 5 minutes' walk from the subject site to the east.
- 2.10 Franchised bus and green minibuses operate along Castle Peak Road – Ping Shan and Tong Yan San Tsuen Road, within 500 metres or about 10 minutes walk away. Details of the road-based public transport services operating close to the subject site are presented in Table 2.2.

TABLE 2.2 PUBLIC TRANSPORT SERVICES OPERATING CLOSE TO THE SUBJECT SITE

Route No.	Routing	Frequency (min)
KMB 53	MTR Tsuen Wan West Station – Yuen Long (East)	25 – 35
KMB 68A	Long Ping Estate – MTR Tsing Yi Station	8 – 25
KMB 68X	Mong Kok (Park Avenue) – Hung Shui Kiu (Hung Fuk Estate)	9 – 25
KMB 268X	Hung Shui Kiu (Hung Fuk Estate) – Jordan (To Wah Road)	7 – 35
KMB 276	Tin Tsz – Sheung Shui	15 – 25
KMB 276P	Tin Shui Wai Station – Sheung Shui	15 – 25
KMB 296D	Tin Fu – Lek Yuen	5 – 25
NLB B2	MTR Yuen Long Station – Shenzhen Bay Port	10 – 20
MTR K65	Lau Fau Shan – Yuen Long (East)	10 – 16
CTB N969	Causeway Bay (Moreton Terrace) – Tin Shui Wai Town Centre	overnight
GMB 31	Yuen Long (Hong Keung Street) – Tong Yan San Tsuen (circular)	7 – 15
GMB 31A	Tong Yan San Tsuen – Yuen Long Plaza (circular)	AM peak
GMB 32	Yuen Long Station (North) – Tan Kwei Tsuen	10 – 15
GMB 34	Yuen Long (Tai Fung Street) – Lau Fau Shan	20
GMB 622	Hung Shui Kiu (Hung Yuen Road) – Long Ping Station (circular)	15 – 30

Note: KMB – Kowloon Motor Bus NLB – New Lantao Bus
CTB – CityBus MTR – MTR Feeder Bus
GMB – Green Minibus

3.0 THE PROPOSED DEVELOPMENT

Development Schedule

- 3.1 The Proposed Development comprises of the Private Housing which is located at the southern portion of the subject site, and the Proposed RCHE is at the northern portion. The development schedule is given in Table 3.1.

TABLE 3.1 DEVELOPMENT SCHEDULE

Use	GFA (Approx.)	Item		Parameters
Private Housing	42,039m ²	No. of Flat (in GFA)	≤ 40m ²	435
			40 – 70m ²	400
			70 – 100m ²	0
			100 – 130m ²	5
			130 – 160m ²	0
			> 160m ²	0
			Total	840
		No. of Housing Block		3
		Domestic Plot Ratio		3
Residential Care Home for the Elderly (RCHE)	5,400m ²	Average Flat Size (GFA)		50m ²
		Retail Shop (GFA)		140m ²
		No. of Beds for Elderly		294

Internal Transport Facilities

(A) Private Housing

- 3.2 The internal transport facilities for Private Housing are calculated based on the Hong Kong Planning Standards and Guidelines (HKPSG) and are presented in Table 3.2.

TABLE 3.2 INTERNAL TRANSPORT FACILITIES FOR PRIVATE HOUSING

Item	Type	HKPSG Recommendations	Proposed Provision
Car Parking Space	Residential	Requirement = $GPS \times R1 \times R2 \times R3$ GPS = 1 space per 4 – 7 flats R1 = 0.5 for flat size ≤ 40m ² (435 flats) = 1.2 for flat size 40 – 70m ² (400 flats) = 4.1 for flat size 100 – 130m ² (5 flats) R2 = 1 for development outside 500m of rail station R3 = 1 for domestic plot ratio 2 – 5 Min = $(435 \times 0.5 + 400 \times 1.2 + 5 \times 4.1) \div 7 \times 1$ = 103 nos. Max = $(435 \times 0.5 + 400 \times 1.2 + 5 \times 4.1) \div 4 \times 1$ = 180 nos.	180 nos. ⁽¹⁾
	Visitor	5 visitor car parking spaces for developments with more than 75 units per block No. = 3×5 = 15 nos.	15 nos. ⁽¹⁾
	Retail	1 space per 150 – 300m ² GFA Min = $140 \div 300$ = 1 no. Max = $140 \div 150$ = 1 no.	1 no. ⁽¹⁾
	Total	Min = 103 + 15 + 1 = 119 nos. Max = 180 + 15 + 1 = 196 nos.	196 nos.

TABLE 3.2 INTERNAL TRANSPORT FACILITIES FOR PRIVATE HOUSING
(CONT'D)

Item	Type	HKPSG Recommendations	Proposed Provision
Motorcycle Parking Space	Residential	1 space per 100 – 150 flats Min = $840 \div 150$ = 6 nos. Max = $840 \div 100$ = 9 nos.	9 nos.
	Retail	5 – 10% of total provision for car parking space Min = $1 \times 5\%$ = 1 no. Max = $1 \times 10\%$ = 1 no.	1 no.
	Total	Min = 6 + 1 = 7 nos. Max = 9 + 1 = 10 nos.	10 nos.
Loading / Unloading Bay	Residential	Minimum 1 bay for every 800 flats or part thereof, subject to minimum 1 bay for each block	3 nos. HGV
	Retail	1 bay for goods vehicle for every 800 – 1,200m ² , or part thereof, GFA Min = $140 \div 1,200$ = 1 no. Max = $140 \div 800$ = 1 no.	1 no. HGV
	Total	No. = 3 + 1 = 4 nos.	4 nos. HGV
Bicycle Parking Space		1 space for every 7.5 flats No. = $(435 + 400) \div 7.5$ = 112 nos.	112 nos.

Note: ⁽¹⁾ include 1 car parking space for persons with disabilities

Dimensions:	Car parking space	– 5m(L) × 2.5m(W) × 2.4m(H)
	Car parking space for persons with disabilities	– 5m(L) × 3.5m(W) × 2.4m(H)
	HGV loading / unloading bay	– 11m(L) × 3.5m(W) × 4.7m(H)
	Motorcycle parking space	– 2.4m(L) × 1m(W) × 2.4m(H)
	Bicycle parking space	– 1.8m(L) × 1m(W) × 2.4m(H)

3.3 Table 3.2 shows that the internal transport facilities for Private Housing comply with the **maximum recommendations of HKPSG**.

(B) Proposed RCHE

3.4 The HKPSG has no recommendation on the provision of internal transport facilities for RCHE. Therefore, internal transport facilities are provided based on the operational needs and taking into consideration the nature, scale and location of the Proposed RCHE. The internal transport facilities for the Proposed RCHE is summarised in Table 3.3.

TABLE 3.3 INTERNAL TRANSPORT FACILITIES FOR THE PROPOSED RCHE

Item	Proposed Provision	Dimensions
Car Parking Space	5 nos.	5m (L) × 2.5m (W) × 2.4m (H)
	1 no.	5m (L) × 3.5m (W) × 2.4m (H) – for persons with disabilities
Motorcycle Parking Space	1 no.	2.4m (L) × 1m (W) × 2.4m (H)
Taxi / Private Car Lay-by	1 no.	5m (L) × 2.5m (W) × 2.4m (H)
Loading / Unloading Bay	1 no. HGV	11m (L) × 3.5m (W) × 4.7m (H)
Mini Coach / Ambulance Lay-by	1	9m (L) × 3m (W) × 4m (H)

(C) Overall Provision

3.5 The overall provision of internal transport facilities for the Proposed Development is summarised in Table 3.4.

TABLE 3.4 INTERNAL TRANSPORT FACILITIES FOR THE PROPOSED DEVELOPMENT

Item	Proposed Development			
	Private Housing		RCHE	Overall
	Residential	Retail		
Car Parking Space	195, including: • 180 (for residents) ⁽¹⁾ • 15 (for visitors) ⁽¹⁾	1 ⁽¹⁾	5 ⁽¹⁾	201
Motorcycle Parking Space	9	1	1	11
Taxi / Private Car Lay-by	–	–	1	1
HGV Loading / Unloading Bay	3	1	1	5
Mini Coach / Ambulance Lay-by	–	–	1	1
Bicycle Parking Space	112	–	–	112
RCV Loading / Unloading Bay	1			1

Note: ⁽¹⁾ include 1 car parking space for persons with disabilities

Internal Transport Layout

- 3.6 The ground and basement floor plans showing the internal transport facilities are presented in Figures 3.1 and 3.2.
- 3.7 The existing site access road leading from Castle Peak Road – Ping Shan will be maintained as the run-in / out for the Private Housing. To facilitate the operation of the Proposed RCHE, the run-in / out is proposed at Ping Ha Road.
- 3.8 The traffic routings to and from the Proposed Development are presented in Figures 3.3 and 3.4 respectively.

4.0 TRAFFIC IMPACT

Design Year

- 4.1 The Proposed Development is expected to be completed in 2027. Thus, the design year adopted for the capacity analysis is 2030, i.e. "3 years after the planned completion of the development".

Traffic Generation

(A) Private Housing

- 4.2 To estimate traffic generation of the Private Housing, trip generation rates for residential and retail found in Volume 1 of the TPDM are adopted. Since the average size of the residential flats is around 50m², trip generation rates for private housing with average flat size of 60m², which is the smallest in the TPDM, is adopted. The adopted trip generation rates are presented in Table 4.1.

TABLE 4.1 TRIP GENERATION RATES FOR PRIVATE HOUSING

Use	Unit	Trip Generation Rates (from TPDM)			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Residential	pcu/hour/flat	0.0425	0.0718	0.0370	0.0286
Retail Shop	pcu/hour/100m ²	0.2434	0.2296	0.3563	0.3100

- 4.3 The trip generation rates presented in Table 4.1 are used to calculate the traffic generated associated with the Private Housing, and the calculated traffic generation is presented in Table 4.2.

TABLE 4.2 PRIVATE HOUSING TRAFFIC GENERATION

Use	Quantity	Traffic Generation (pcu/hour)			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Residential	840 flats	36	61	32	25
Retail Shop	140m ² GFA	1	1	1	1
Total		<u>37</u>	<u>62</u>	<u>33</u>	<u>26</u>

(B) Proposed RCHE

- 4.4 In view that TPDM does not provide trip generation rates for RCHE, traffic generation associated with the Proposed RCHE is estimated based on traffic generation surveys conducted at similar RCHEs located in Tuen Mun. The survey results and the adopted trip generation rates for the Proposed RCHE are presented in Table 4.3.

TABLE 4.3 TRIP GENERATION RATES OF SIMILAR RCHEs

RCHE	No. of Beds	Traffic Generation (pcu/hour)				Trip Generation Rate (pcu/hour/bed)			
		AM Peak		PM Peak		AM Peak		PM Peak	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT
Pok Oi Hospital Tuen Mun Nursing Home ⁽¹⁾	216	4	8	4	2	0.0185	0.0370	0.0185	0.0093
Caritas Li Ka Shing Care and Attention Home ⁽²⁾	260	10	9	6	4	0.0385	0.0346	0.0231	0.0154
Adopted Trip Generation Rate (maximum)						0.0385	0.0370	0.0231	0.0154

Note: ⁽¹⁾ located at 2 Siu Lun Street in Tuen Mun

⁽²⁾ located at 16 Wah Fat Street in Tuen Mun

- 4.5 The adopted trip generation rates presented in Table 4.3 are used to calculate the traffic generated associated with the Proposed RCHE, and the calculated traffic generation is presented in Table 4.4.

TABLE 4.4 TRAFFIC GENERATION OF THE PROPOSED RCHE

Proposed RCHE (with 294 beds)	Unit	AM Peak		PM Peak	
		IN	OUT	IN	OUT
Trip Generation Rate (from Table 4.2)	pcu/hour/bed	0.0385	0.0370	0.0231	0.0154
Traffic Generation	pcu/hour	12	11	7	5

(C) Overall Traffic Generation

- 4.6 The results presented in Tables 4.2 and 4.4 are used to calculate the overall traffic generated associated with the Proposed Development, and the calculated traffic generation is presented in Table 4.5.

TABLE 4.5 PROPOSED DEVELOPMENT TRAFFIC GENERATION

Type of Use	Quantity	Traffic Generation (pcu/hour)			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Private Housing	840 flats	36	61	32	25
	140m ² Retail GFA	1	1	1	1
Proposed RCHE	294 beds	12	11	7	5
Total		49	73	40	31

- 4.7 The net difference in traffic flows associated to the Proposed Development is presented in Figure 4.1.

Traffic Forecast

- 4.8 The 2030 design traffic flows for capacity analysis are derived with reference to (i) the NTW1 BDTM updated with planned developments and road network located in the vicinity; and (ii) expected traffic generation associated with the Proposed Development.

Major Planned Developments

- 4.9 The major planned developments in the vicinity of the Proposed Development are summarised in Table 4.6.

TABLE 4.6 DETAILS OF MAJOR PLANNED DEVELOPMENTS

Ref.	Location	Use	Development Parameters (Approx.)
A	Hung Shui Kiu / Ha Tsuen New Development Area	New Town	with around 61,500 flats and over 600 hectares floor area for commercial and industrial uses
B	Yuen Long South Development	Extension of Yuen Long New Town	with around 32,850 flats and around 73 hectares floor area for commercial and industrial uses
C	Public Housing Development at Tan Kwai Tsuen	Public Housing	around 7,400 flats, commercial GFA of around 6,600m ² and community facilities
D	Public Housing Development at Long Bin	Public Housing	around 11,940 flats, commercial GFA of around 10,380m ² and community facilities

- 4.10 The major planned developments listed in Table 4.6 have been included in the traffic forecast.

2030 Junction Capacity Analysis

- 4.11 The 2030 peak hour traffic flows without and with the Proposed Development are shown in Figures 4.2 and 4.3 respectively.
- 4.12 The 2030 junction capacity analysis for the cases without and with the Proposed Development are summarised in Table 4.7, and detailed calculations are found in Appendix A.

TABLE 4.7 2030 JUNCTION OPERATIONAL PERFORMANCE

Ref.	Signal Junction	Reserve Capacity			
		Without Proposed Development		With Proposed Development	
		AM Peak	PM Peak	AM Peak	PM Peak
J1	Castle Peak Road – Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road ⁽¹⁾	-3%	-5%	-5%	-7%
J2	Castle Peak Road – Ping Shan / Site Access Road ⁽¹⁾	> 100%	> 100%	> 100%	> 100%
J3	Castle Peak Road – Ping Shan / Ping Kwai Road / San Hi Tsuen Street ⁽¹⁾	49%	53%	48%	53%
J4	Castle Peak Road – Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange ⁽¹⁾	57%	54%	55%	53%
J5	Shui Pin Wai Interchange	19%	37%	18%	37%

Note: ⁽¹⁾ actual lost times adopted from site measurements to reflect the effect of Light Rail

- 4.13 The above results indicate that the analysed junctions, except J1, are expected to operate with capacities during the peak hours in 2030. Junctions J2 – J5 have sufficient capacity to accommodate the (i) expected traffic growth; and (ii) traffic generated by the Proposed Development.

J1 : Castle Peak Road – Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

- 4.14 Reference is made to Paper 7c/2021 and minutes of “Working Group on Traffic and Pedestrian Congestion in Yuen Long” meeting on 9th February 2021 under the Traffic and Transport Committee of Yuen Long District Council: 「運輸署早前已策劃為橫跨唐人新村路行人過路處加裝『綠色人像』交通燈，並加建由青山公路－屏山段左轉往唐人新村路的行車線。」
- 4.15 It is noted that signalised pedestrian crossings across Tong Yan San Tsuen Road were completed by Transport Department in August 2021, and the additional left turning lane from Castle Peak Road – Ping Shan to Tong Yan San Tsuen Road is pending for implementation. The conceptual layout of J1 with the additional left turning lane is presented in Figure 4.4.
- 4.16 Based on the above, junction capacity analysis is re-conducted for J1 for the case with the proposed left turning lane, and the results are shown in Table 4.8.

TABLE 4.8 2030 JUNCTION OPERATIONAL PERFORMANCE (WITH MODIFICATION TO J1)

Ref.	Scenario	Reserve Capacity ⁽¹⁾			
		Without Proposed Development		With Proposed Development	
		AM Peak	PM Peak	AM Peak	PM Peak
J1	existing condition	-3%	-5%	-5%	-7%
	with proposed left turning lane	24%	21%	21%	19%

Note: ⁽¹⁾ actual lost times adopted from site measurements to reflect the effect of Light Rail

- 4.17 With the proposed left turning lane, J1 is expected to operate within capacities during the AM and PM peak hours in 2030. In addition, the traffic generated by the Proposed Development is expected to have minimal impact to the capacity of the analysed junctions. Hence, it can be concluded that the Proposed Development is acceptable from traffic engineering terms.

Sensitivity Test for Remaining Portions of the CDA Site

- 4.18 The subject site falls within the CDA site located at the southeast of Tong Fong Tsuen and west of Ping Ha Road, and the remaining portions (“remaining portions”) of this CDA site include (i) Lot No. 1694 RP & Exts Thereto in D.D. 122; and (ii) Lot No. 1702 RP in D.D. 122.
- 4.19 To ascertain the traffic impact associated to the whole CDA site, a sensitivity test is conducted for the whole CDA, and assuming that the remaining portions are redeveloped as residential use with plot ratio 3 and similar average flat size as the Proposed Development. The indicative development parameters and traffic generation for the remaining portions are presented in Table 4.9.

TABLE 4.9 INDICATIVE TRAFFIC GENERATION OF REMAINING PORTION OF CDA SITE

D.D. 122	No. of Flat ⁽¹⁾	Traffic Generation (pcu/hour) ⁽²⁾			
		AM Peak		PM Peak	
		IN	OUT	IN	OUT
Lot No. 1694 RP & Exts Thereto	263	12	19	10	8
Lot No. 1702 RP	198	9	15	8	6
Total	461	21	34	18	14

Note: ⁽¹⁾ assuming plot ratio of 3 and average flat size of 50m²

⁽²⁾ calculated based on trip generation rates in Table 4.1

- 4.20 The 2030 peak hour traffic flows for the sensitivity test are shown in Figure 4.5, and the corresponding junction capacity analysis is summarised in Table 4.10. Detailed calculations are found in Appendix A.

TABLE 4.10 2030 JUNCTION OPERATIONAL PERFORMANCE (SENSITIVITY TEST)

Ref.	Signal Junction	Reserve Capacity			
		With Proposed Development ⁽²⁾		Sensitivity Test – Redevelopment of Whole CDA Site	
		AM Peak	PM Peak	AM Peak	PM Peak
J1	Castle Peak Road – Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road ⁽¹⁾⁽³⁾	21%	19%	17%	17%
J2	Castle Peak Road – Ping Shan / Site Access Road ⁽¹⁾	> 100%	> 100%	> 100%	> 100%
J3	Castle Peak Road – Ping Shan / Ping Kwai Road / San Hi Tsuen Street ⁽¹⁾	48%	53%	48%	53%
J4	Castle Peak Road – Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange ⁽¹⁾	55%	53%	55%	52%
J5	Shui Pin Wai Interchange	18%	37%	18%	37%

Note: ⁽¹⁾ actual lost times adopted from site measurements to reflect the effect of Light Rail

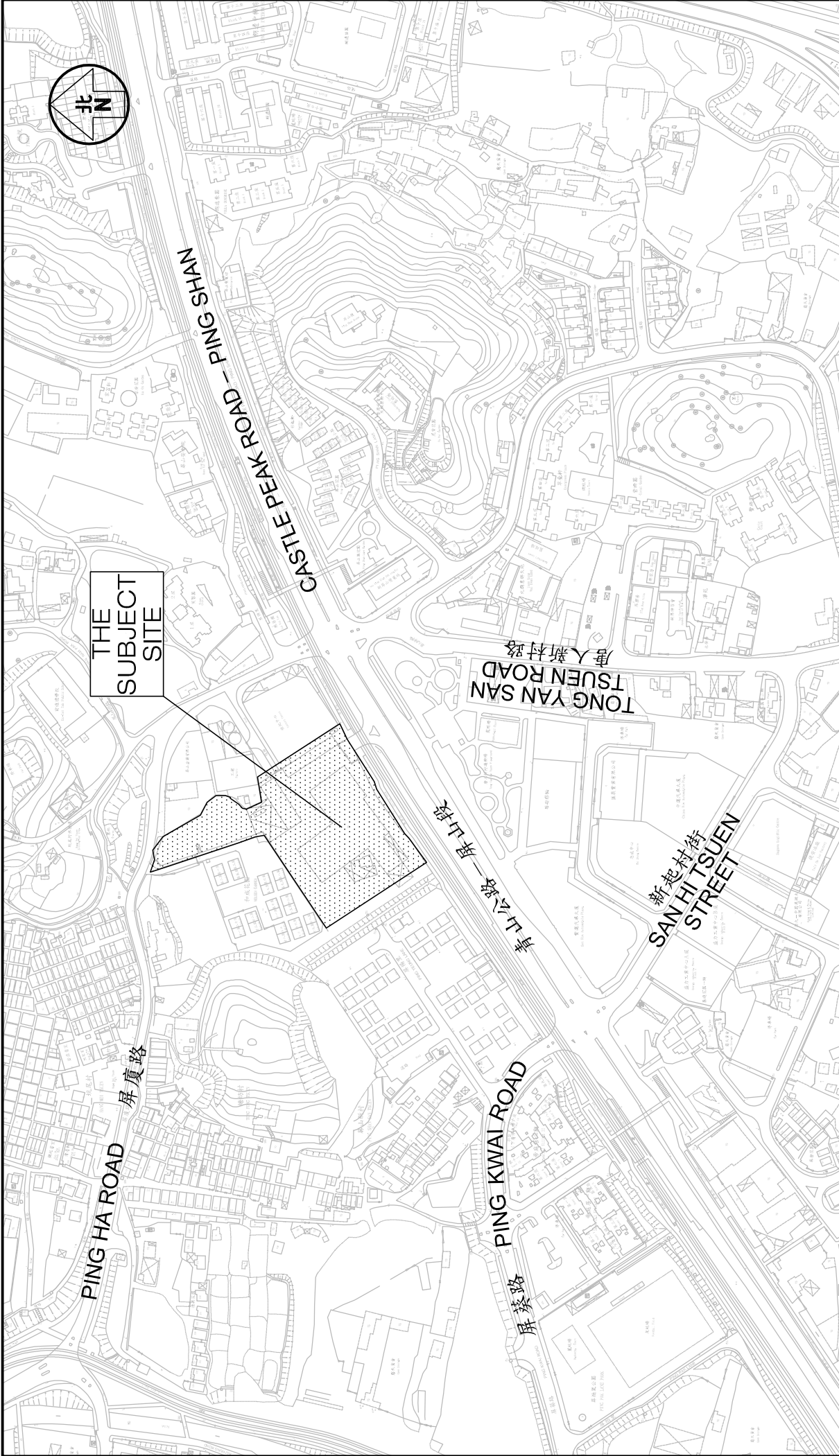
⁽²⁾ from Table 4.7

⁽³⁾ with proposed left turning lane planned by Transport Department

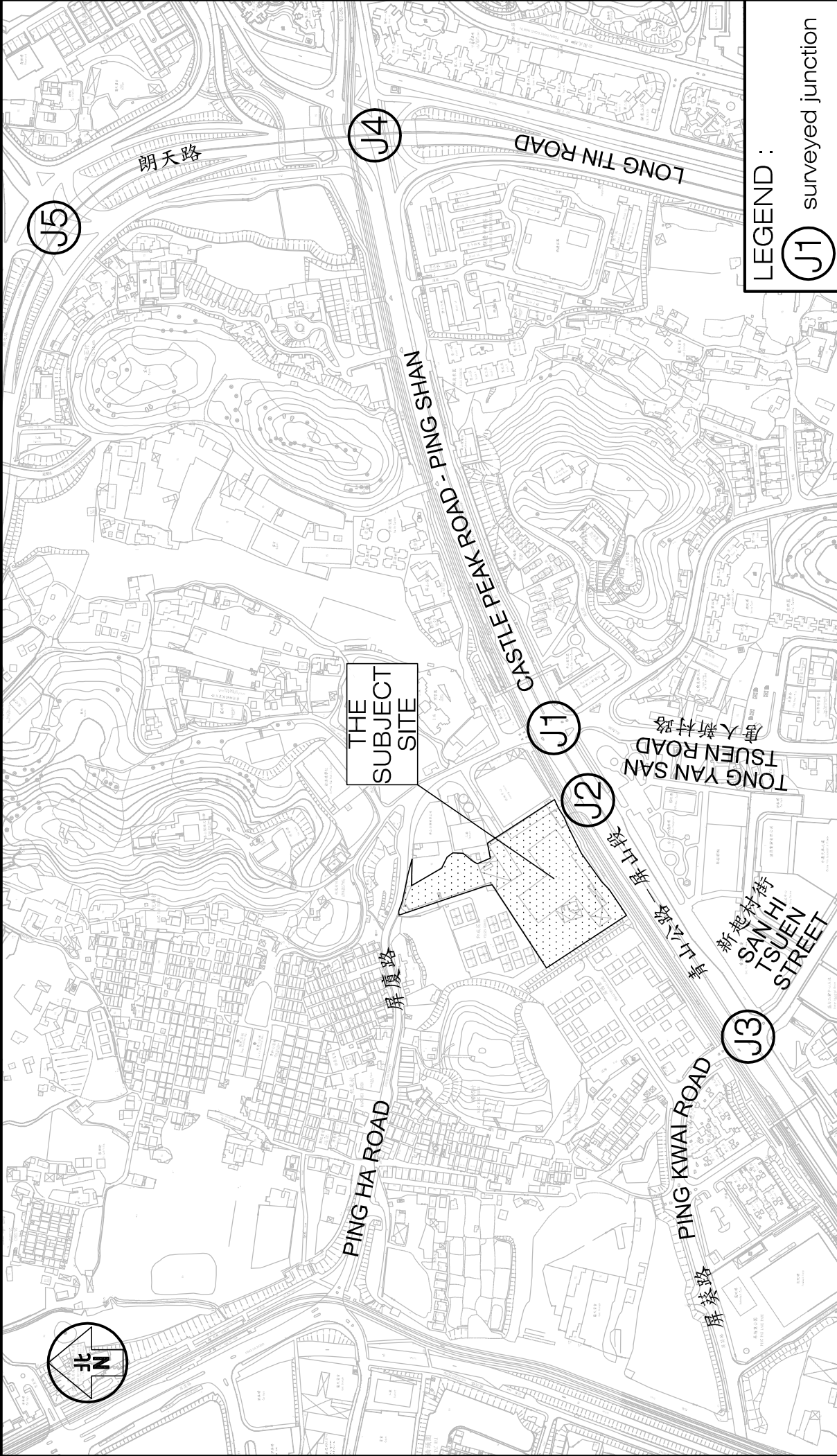
- 4.21 The sensitivity test indicates that the analysed junctions are expected to operate with capacities during the peak hours in 2030. It can be concluded that the redevelopment of whole CDA site will result in no adverse traffic impact to the surrounding road network.

5.0 CONCLUSION

- 5.1 The subject site comprises of various lots in D.D. 121 and D.D. 122 in Ping Shan. The Applicant has the intention to construct within the subject site (i) a private housing comprising of 840 flats with average flat size of around 50m² and retail shop with 140m² GFA; and (ii) a RCHE with 294 beds.
- 5.2 The internal transport facilities provided for the Private Housing comply with the **maximum recommendations of HKPSG** while the internal transport facilities for the Proposed RCHE are provided to meet the operational needs.
- 5.3 Manual classified counts were conducted at key junctions during the AM and PM peak hours. The 2030 design traffic flows are derived with reference to the BDTM and updated with the planned developments in the vicinity.
- 5.4 The 2030 junction capacity analysis was undertaken for the cases with and without the Proposed Development. **Taking into consideration the planned improvement for J1 by Transport Department,** the junctions analysed have sufficient capacity to accommodate the expected traffic volume in 2030 and the additional traffic generated by the Proposed Development and remaining portions of the CDA site.
- 5.5 The TIA concluded that the Proposed Development will result in **no** adverse traffic impact to the surrounding road network. From traffic engineering grounds, the Proposed Development is acceptable.

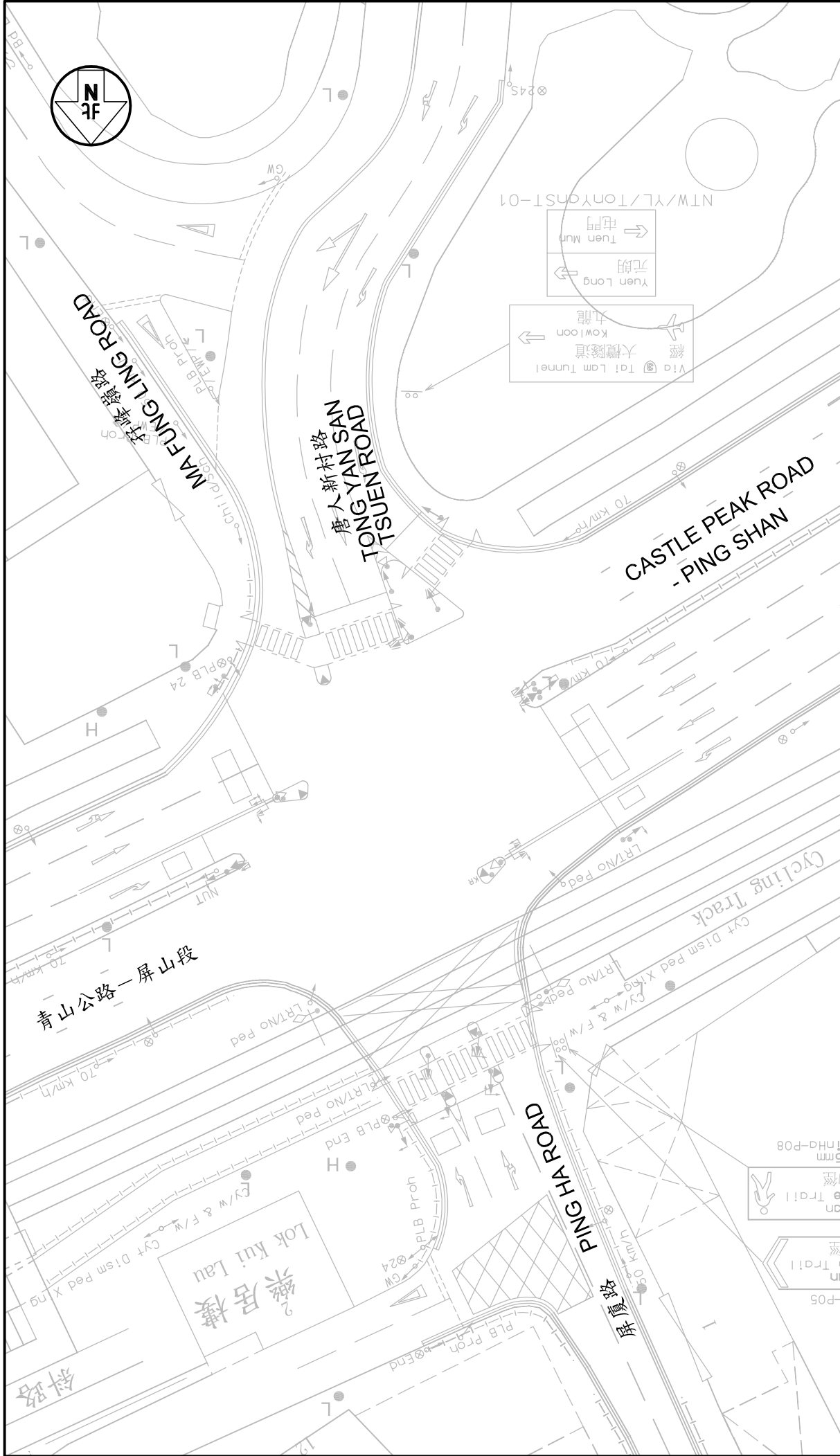


Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN										Figure No.	1.1			Revision	R3A			CKM Asia Limited			
Figure Title	LOCATION OF THE SUBJECT SITE										Designed by			Drawn by			Checked by			21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk		
											T H C			C C L			K C					
											Scale in A4			Date								
											1 : 4,000			31 DEC 2021								

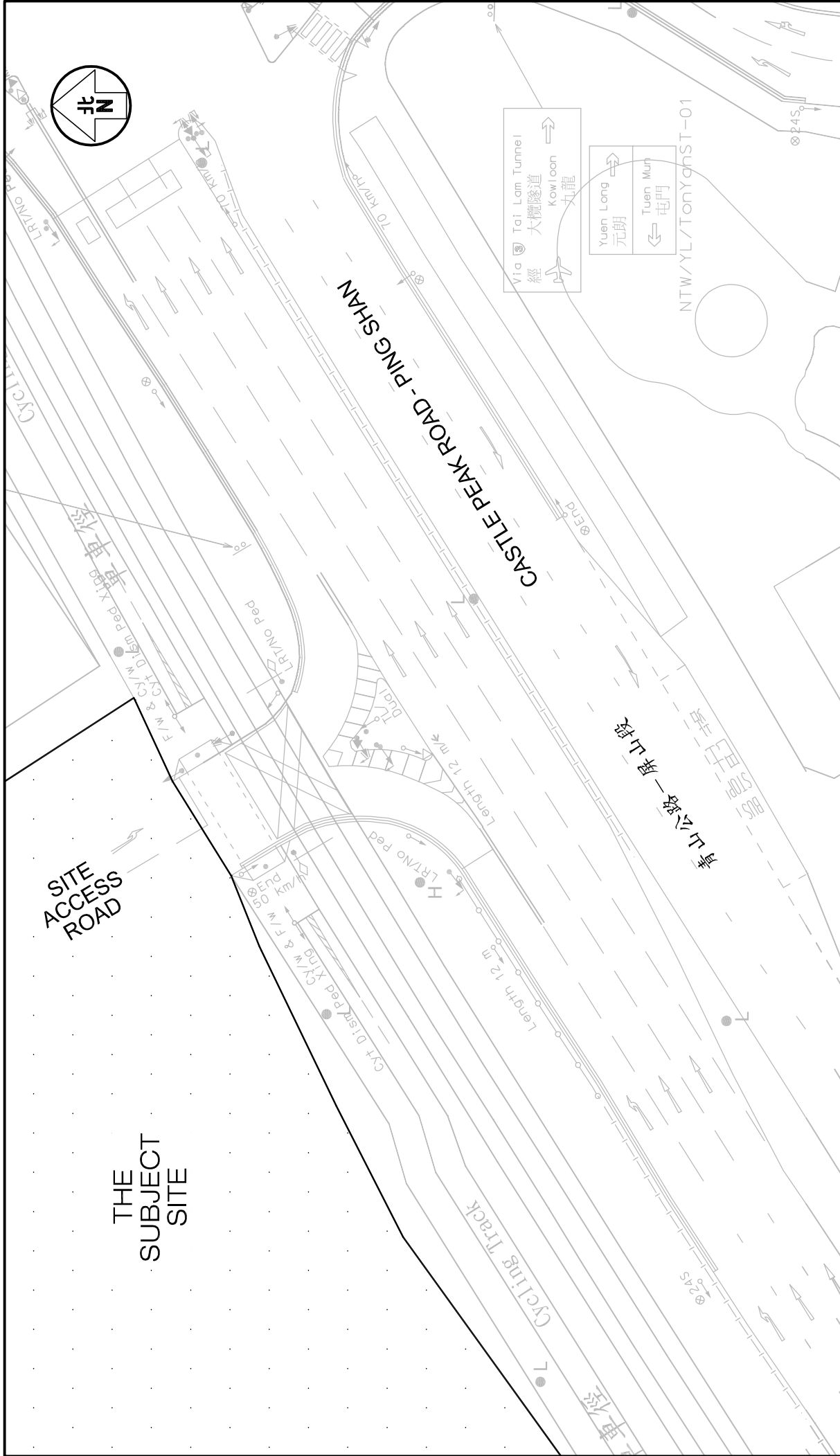


LEGEND :
J1 surveyed junction

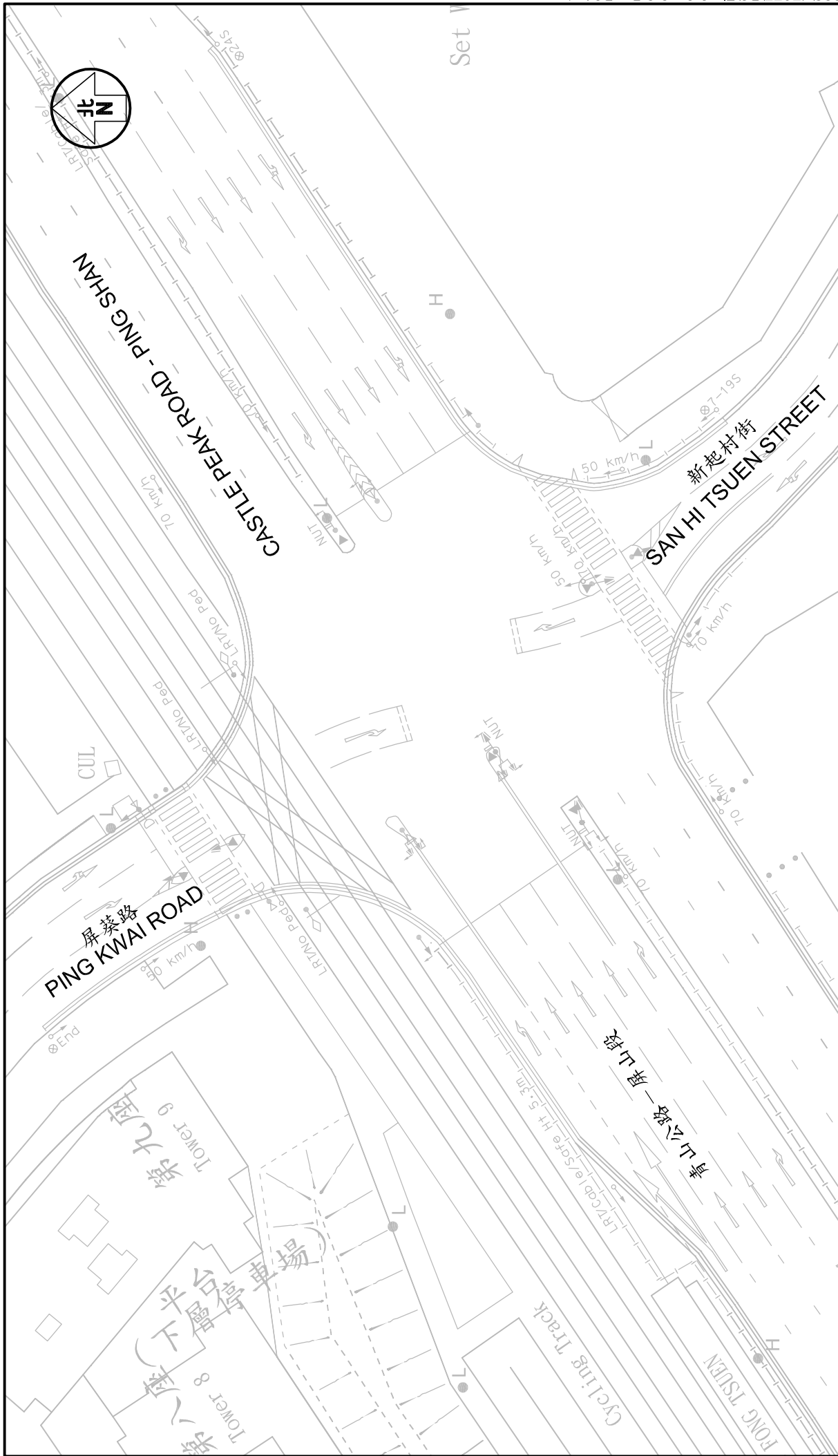
Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN				Figure No.	2.1		Revision	R3A			
Figure Title	SURVEYED JUNCTIONS				Designed by	T	H	C	Checked by	K	C	
						C	C	L		K	C	
					Scale in A4		Date					
					1 : 5,000		31 DEC 2021					
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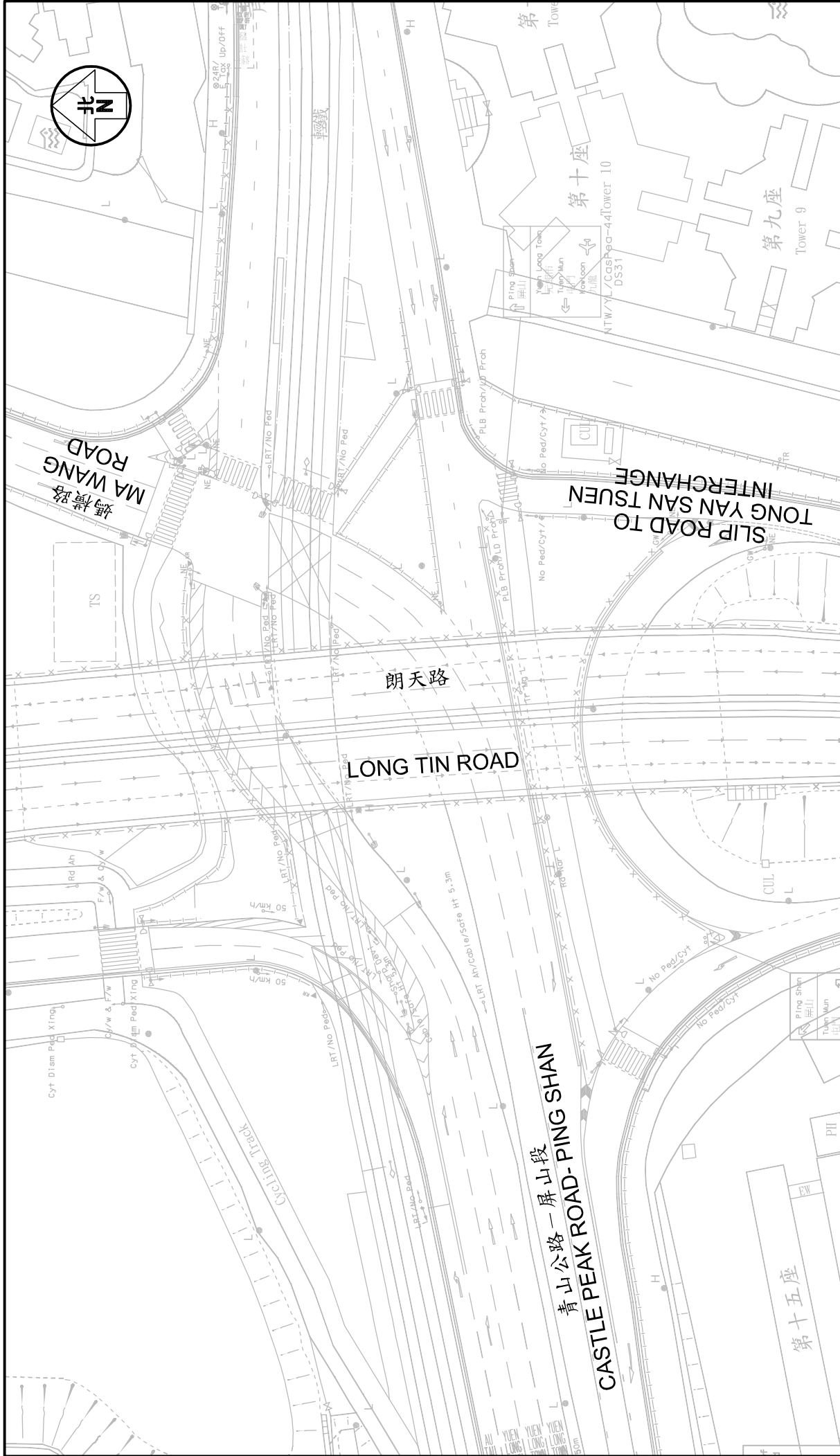
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Email : mail@ckmasia.com.hk



Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN										Figure No.	2.3			Revision	R3A			CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title	JUNCTION OF CASTLE PEAK ROAD – PING SHAN / SITE ACCESS ROAD (J2)										Designed by T H C	Drawn by C C L	Checked by K C	Date 31 DEC 2021					
Scale in A4											1 : 500								

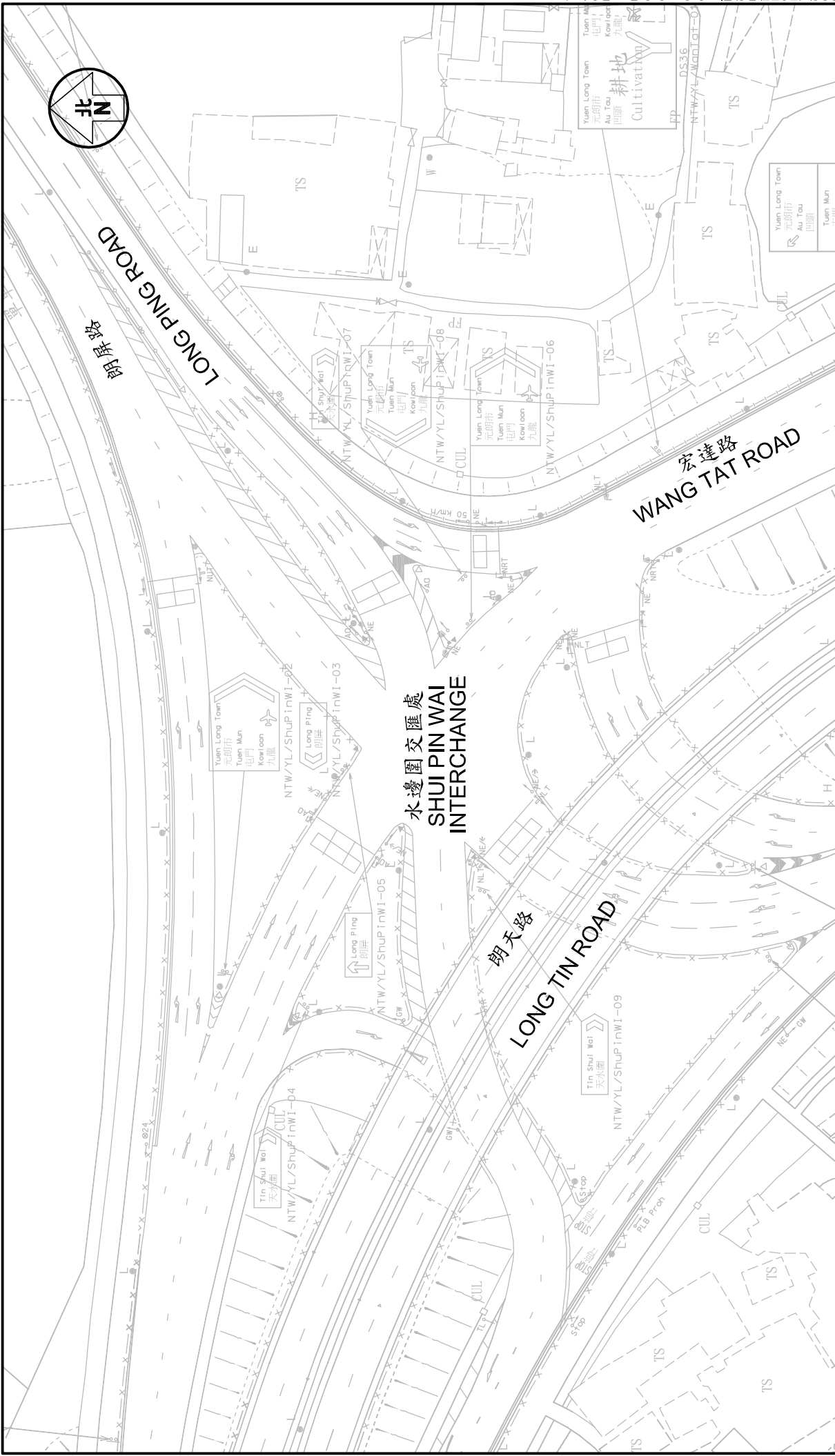


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Figure Title	JUNCTION OF CASTLE PEAK ROAD – PING SHAN / PING KWAI ROAD / SAN HI TSUEN STREET (J3)				Designed by	T H C		Drawn by	C C L			Checked by	K C	
					Scale in A4				1 : 500			Date		31 DEC 2021



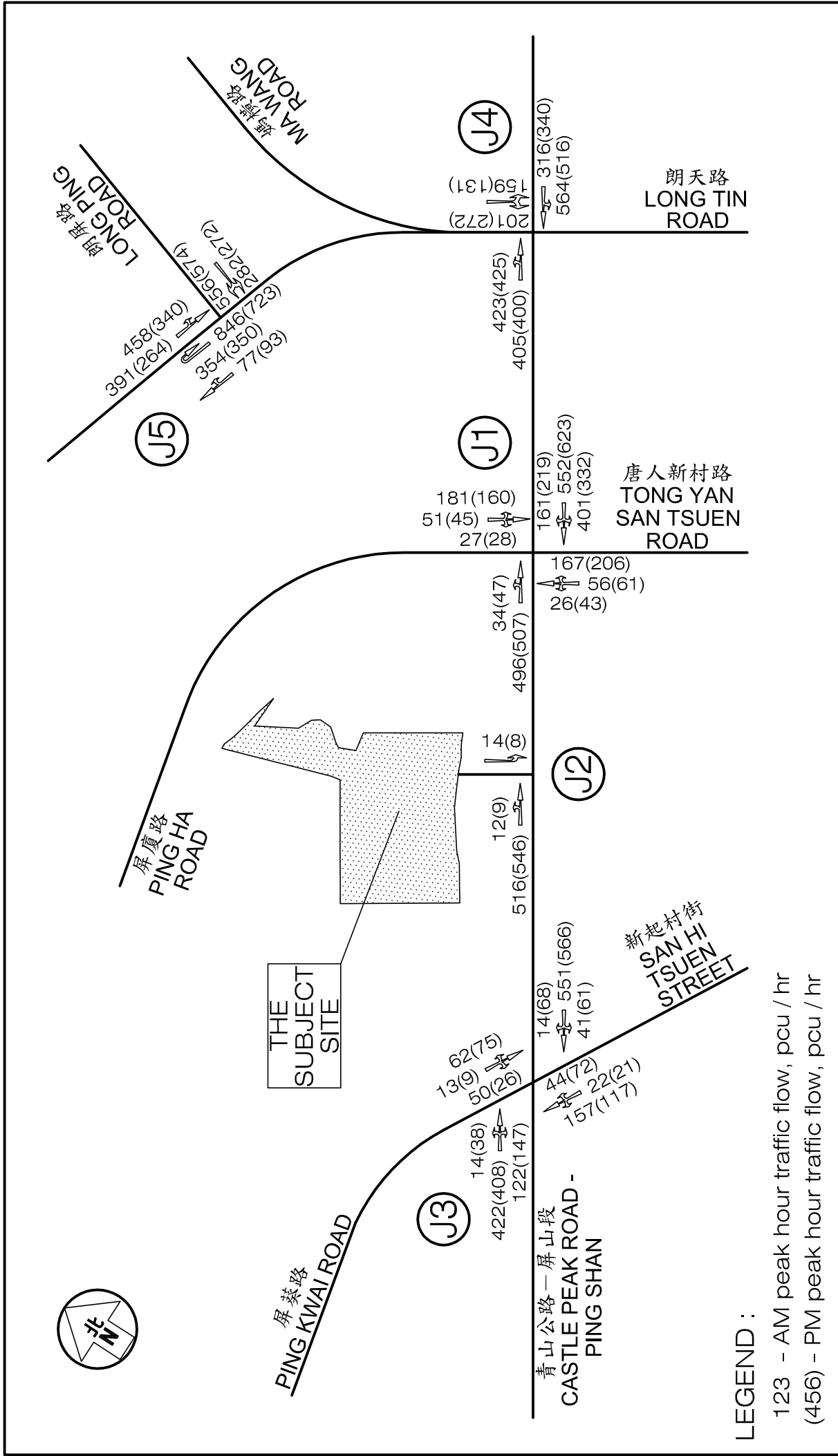
Project Title		PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN		Figure No.	2.5	Revision	R3A
Figure Title		JUNCTION OF CASTLE PEAK ROAD – PING SHAN / MA WANG ROAD / SLIP ROAD TO TONG YAN SAN TSUEN INTERCHANGE (J4)		Designed by	T H C	Checked by	K C
				Drawn by	C C L	Checked by	K C
				Scale in A4	1 : 800	Date	31 DEC 2021

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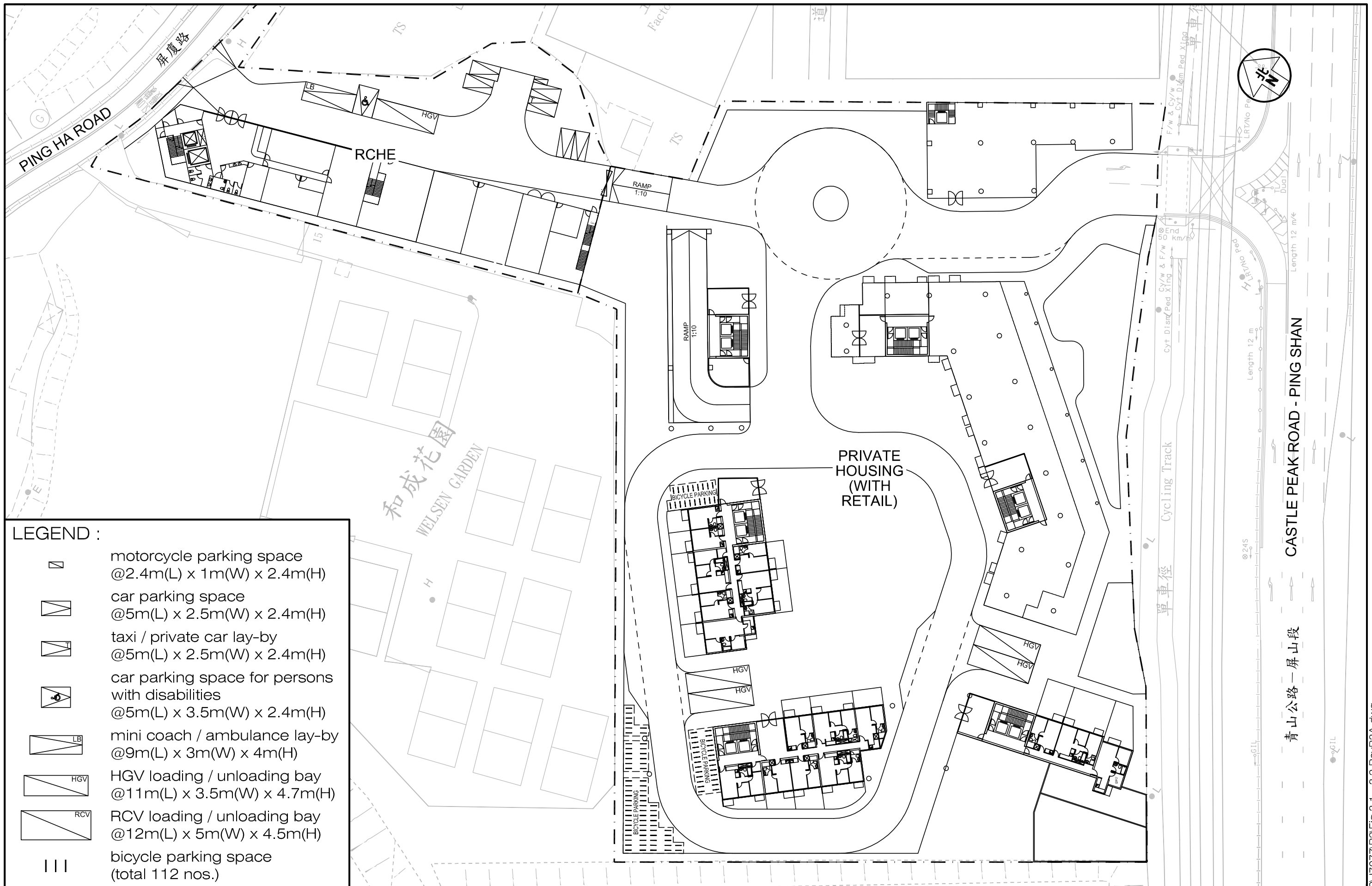


Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN	Figure No.	2.6	Revision	R3A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk		
Figure Title	SHUI PIN WAI INTERCHANGE (J5)	Designed by	T H C	Drawn by	C C L		Checked by	K C
		Scale in A4			Date			
		1 : 800			31 DEC 2021			

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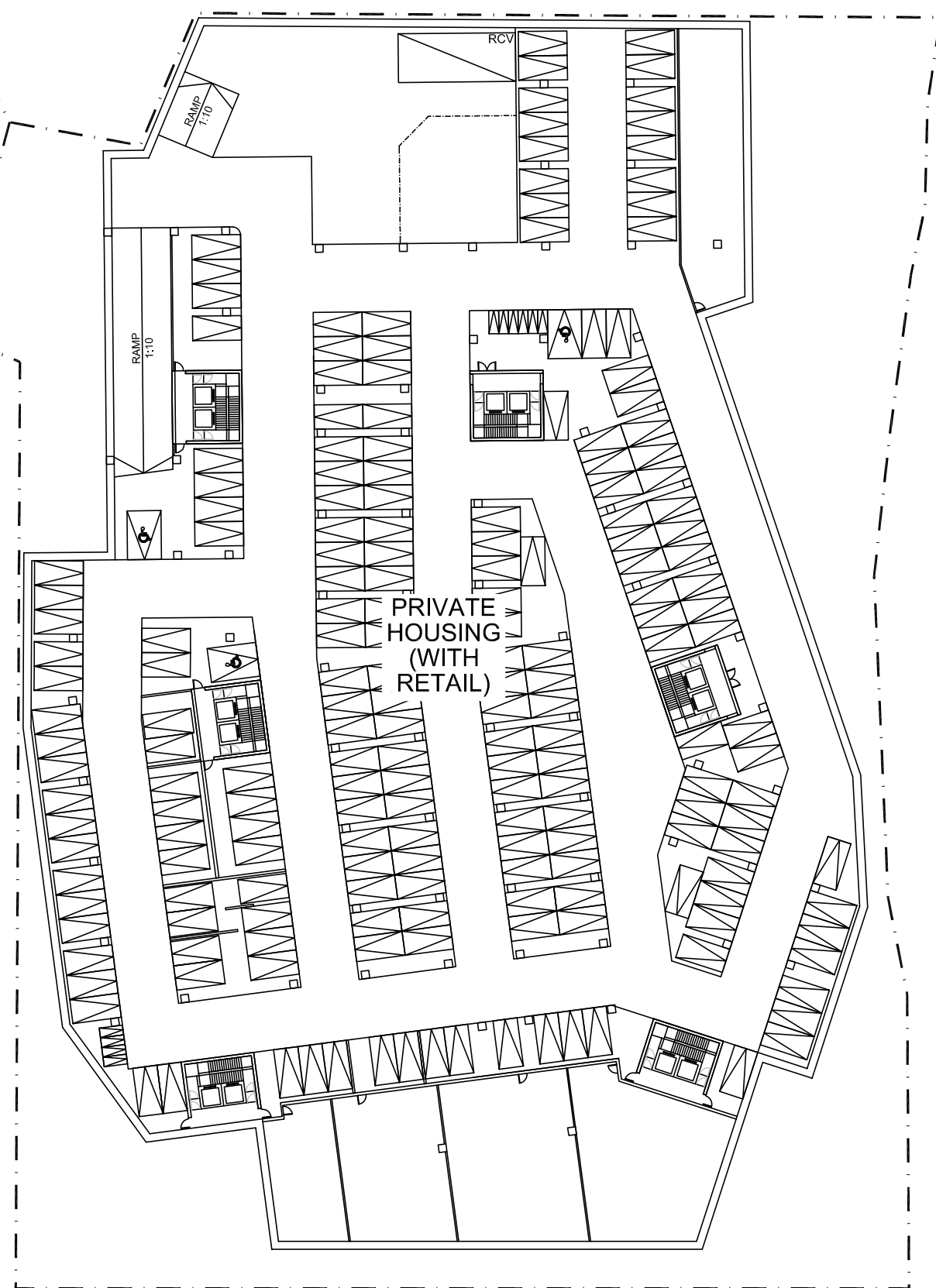
Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					J7077	Figure No.	2.7	Revision	R3A		
Figure Title	EXISTING PEAK HOUR TRAFFIC FLOWS						Designed by	T H C	Drawn by	C C L	Checked by	K C
							Scale in A4	N.T.S.	Date	31 DEC 2021		
							CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk					



Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					J7077	Figure No. 3.1	Revision R3A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title	GROUND FLOOR PLAN					Designed by T H C	Drawn by C C L	Checked by K C	
						Scale in A3 1 : 600	Date 31 DEC 2021		



RCHE
(UNEXCAVATED)

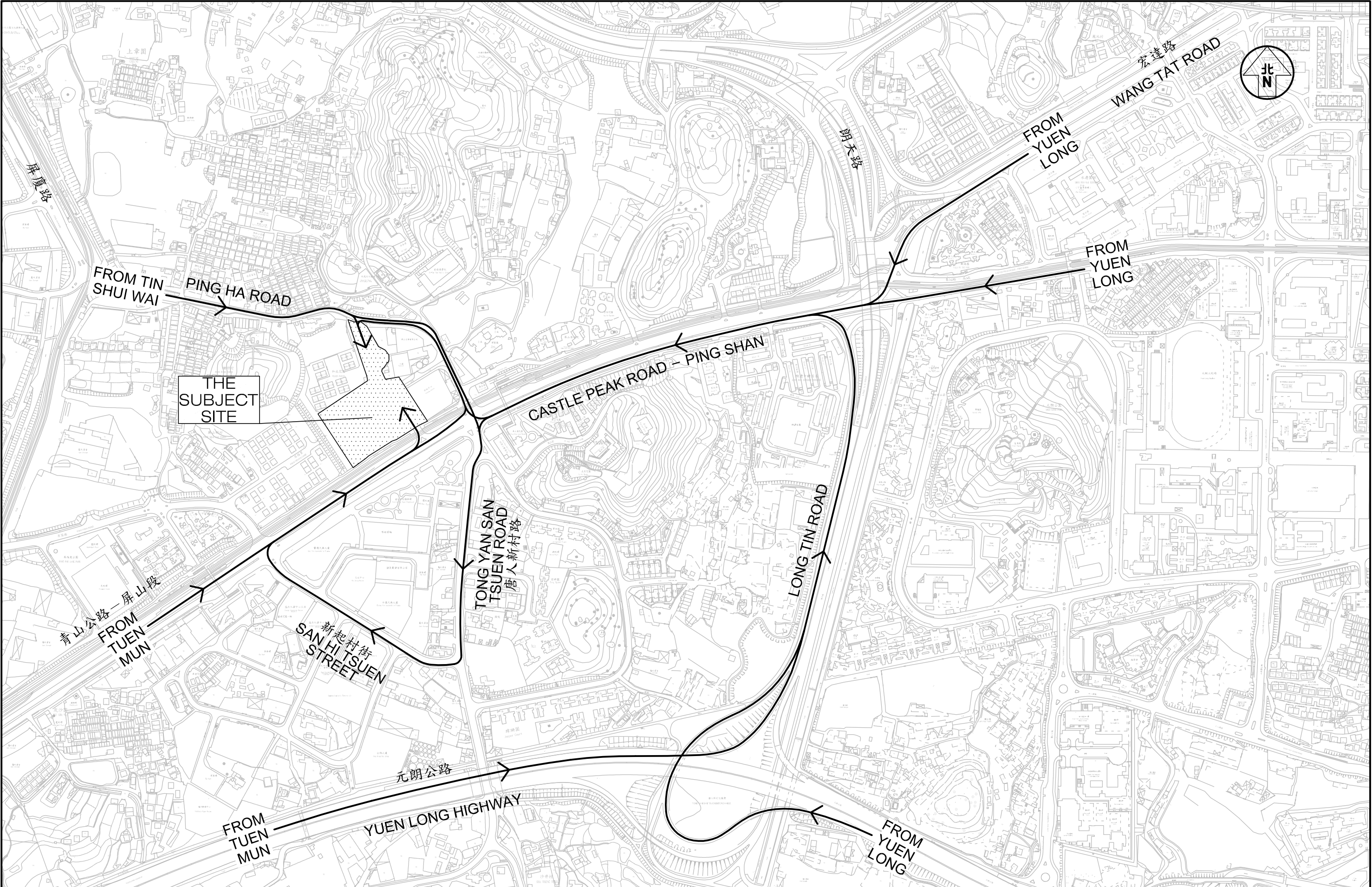


LEGEND :

	motorcycle parking space @2.4m(L) x 1m(W) x 2.4m(H)
	car parking space @5m(L) x 2.5m(W) x 2.4m(H)
	taxi / private car lay-by @5m(L) x 2.5m(W) x 2.4m(H)
	car parking space for persons with disabilities @5m(L) x 3.5m(W) x 2.4m(H)
	mini coach / ambulance lay-by @9m(L) x 3m(W) x 4m(H)
	HGV loading / unloading bay @11m(L) x 3.5m(W) x 4.7m(H)
	RCV loading / unloading bay @12m(L) x 5m(W) x 4.5m(H)
	bicycle parking space (total 112 nos.)

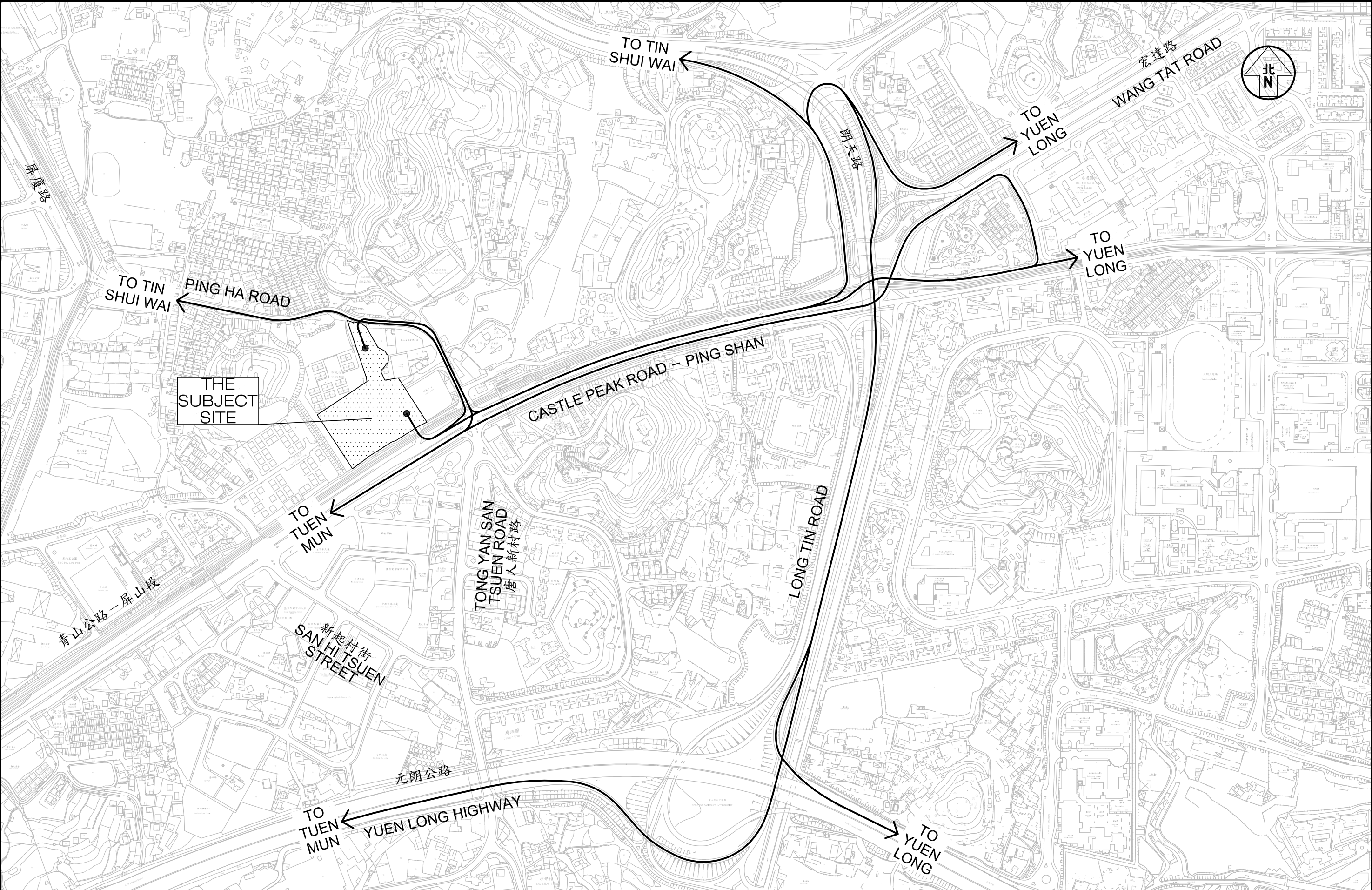
Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					J7077	Figure No. 3.2		Revision R3A		CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk	
Figure Title	BASEMENT FLOOR PLAN					Designed by T H C		Drawn by C C L		Checked by K C		
						Scale in A3 1 : 600		Date 31 DEC 2021				

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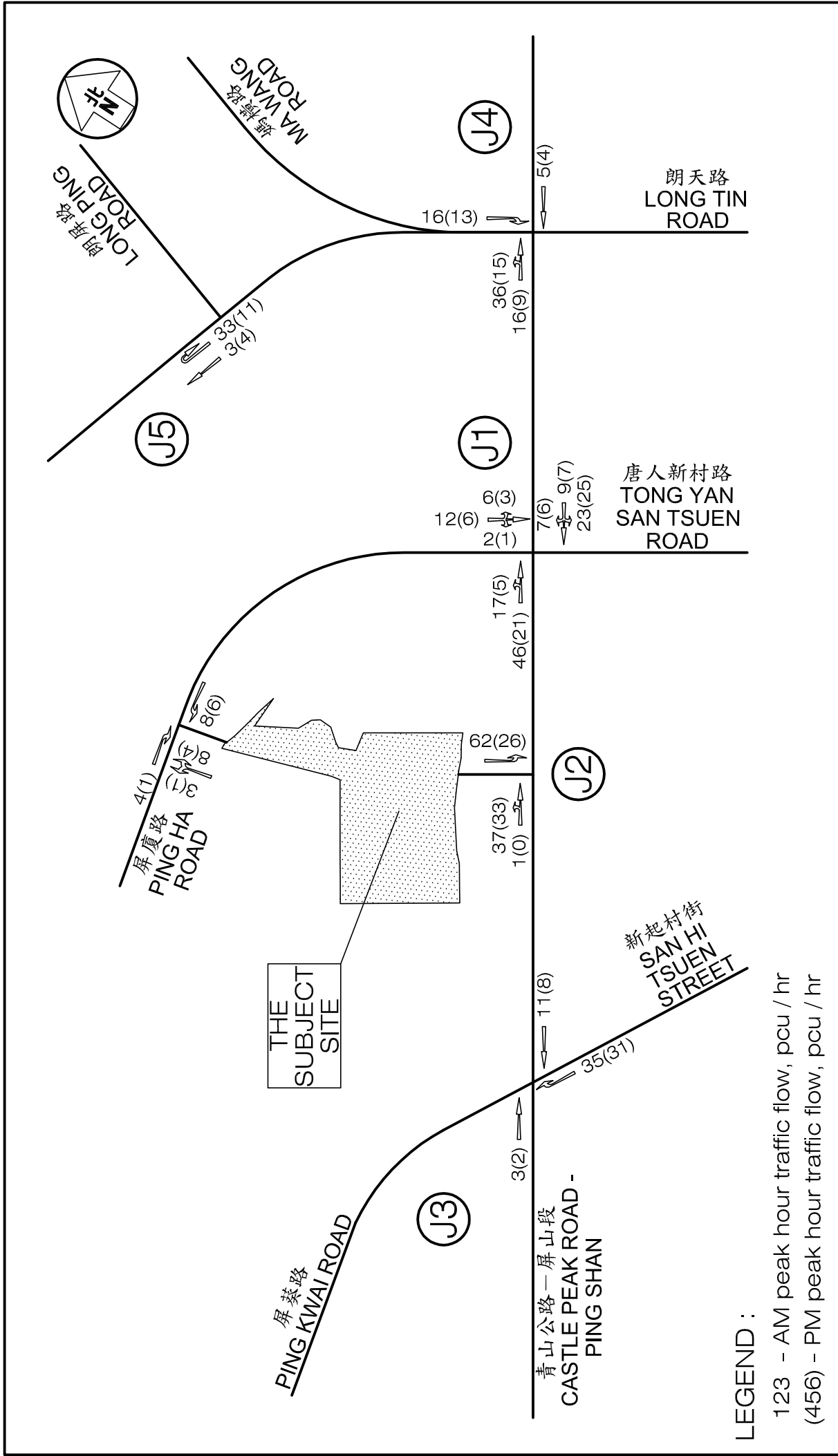
Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN			Figure No.	3.3	Revision	R3A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title	MAJOR TRAFFIC ROUTINGS TO THE PROPOSED DEVELOPMENT			Designed by	T H C	Drawn by	C C L	
				Scale in A3	N.T.S.	Date	31 DEC 2021	

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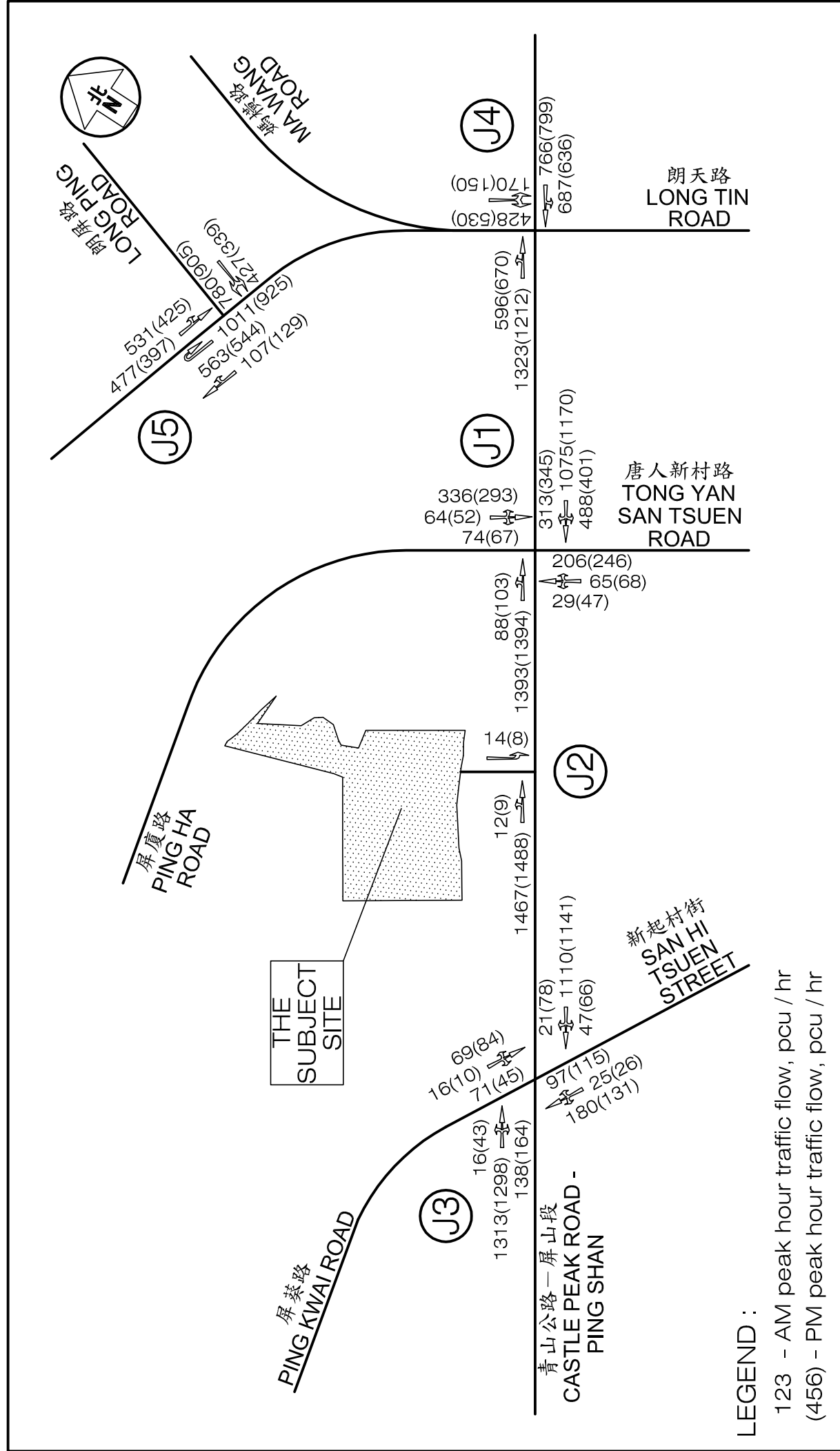


Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN			Figure No.	3.4	Revision	R3A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title	MAJOR TRAFFIC ROUTINGS FROM THE PROPOSED DEVELOPMENT			Designed by	T H C	Drawn by	C C L	
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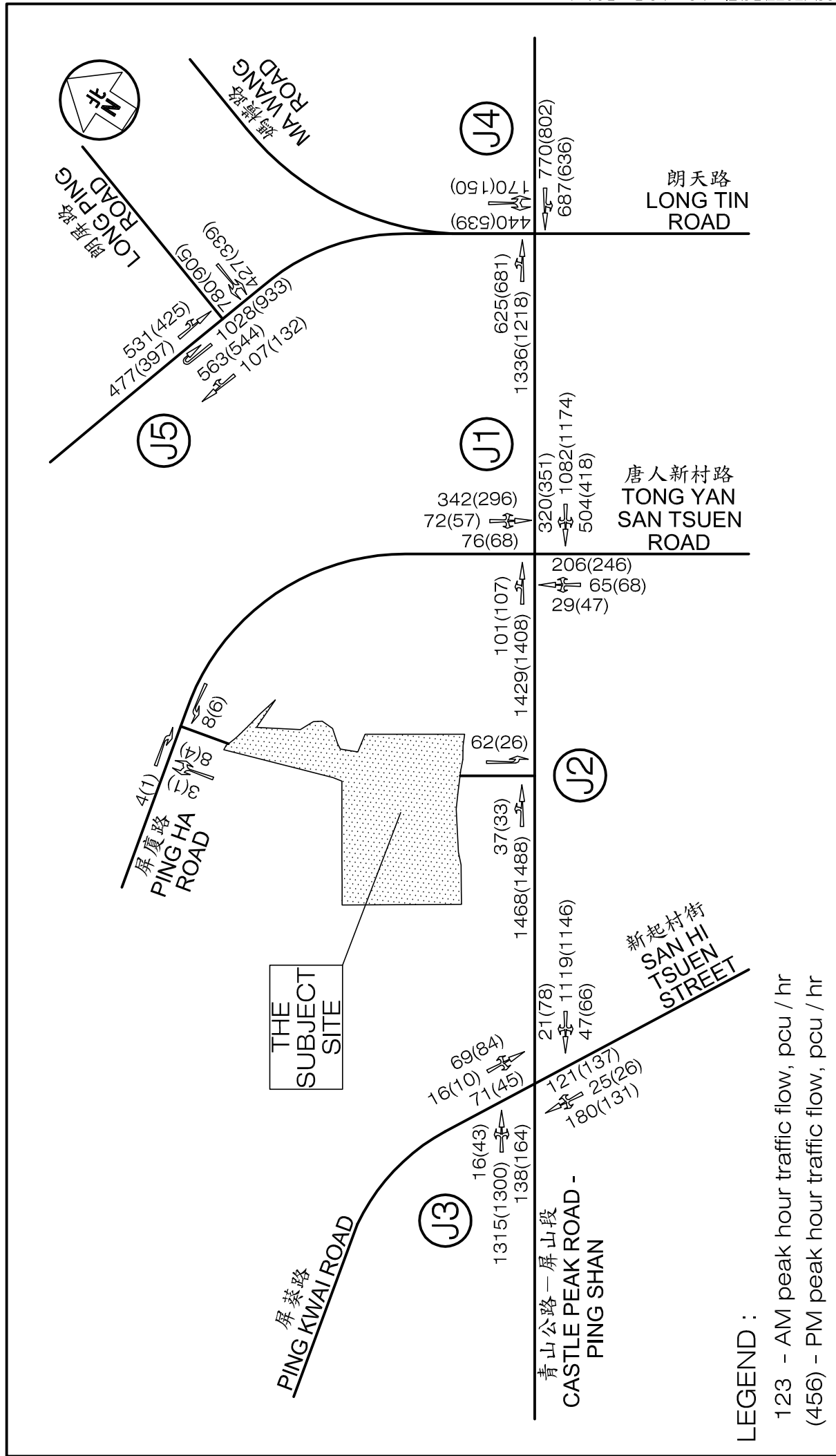
Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					J7077
Figure Title	TRAFFIC GENERATION OF THE PROPOSED DEVELOPMENT					
Figure No.		4.1		Revision		
Designed by		Drawn by		Checked by		
T H C		C C L		K C		
Scale in A4		Date		31 DEC 2021		
N.T.S.						
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LEGEND :

123 - AM peak hour traffic flow, pcu / hr
 (456) - PM peak hour traffic flow, pcu / hr

Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					J7077	Figure No.	4.2		Revision	R3A								
Figure Title	2030 PEAK HOUR TRAFFIC FLOWS WITHOUT PROPOSED DEVELOPMENT										Designed by	T H C		Drawn by	C C L		Checked by	K C	
											Scale in A4	N.T.S.		Date	31 DEC 2021				
											CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk								



LEGEND :

- 123 - AM peak hour traffic flow, pcu / hr
- (456) - PM peak hour traffic flow, pcu / hr

Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN										Figure No.	4.3		Revision	R3A		CKM Asia Limited											
Figure Title	2030 PEAK HOUR TRAFFIC FLOWS WITH PROPOSED DEVELOPMENT										Designed by	T H C		Drawn by	C C L		Checked by	K C										
												Scale in A4			Date			31 DEC 2021										
																					N.T.S.							
																											21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk	

The layout of additional traffic lane is conceptual and is subject to final design by Transport Department.



Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN				Figure No.	4.4		Revision	R3A	
Figure Title	CONCEPTUAL LAYOUT OF ADDITIONAL LEFT TURNING LANE AT J1				Designed by	T H C	Drawn by	C C L	Checked by	K C
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					1 : 500					

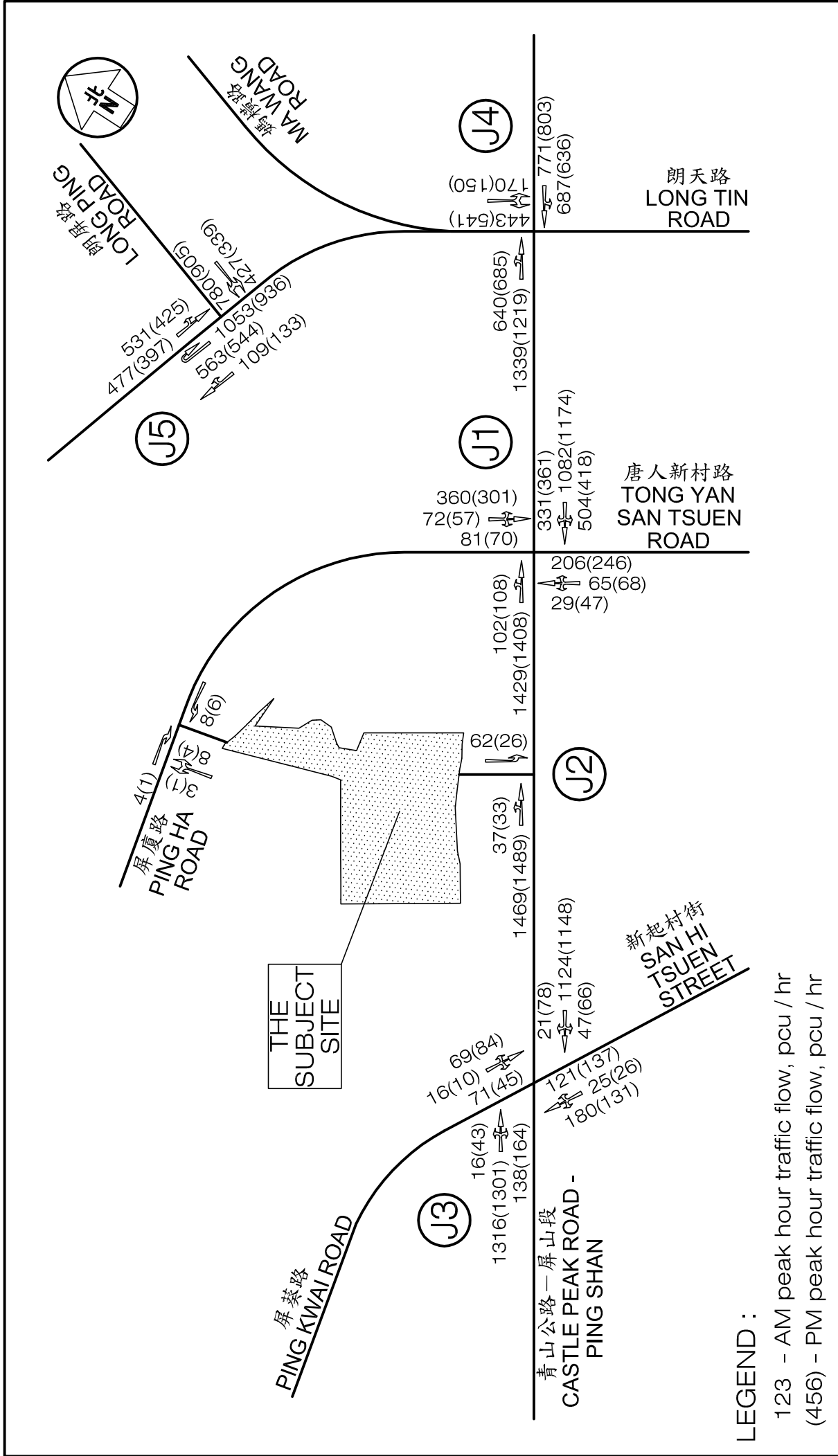
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Project Title	PROPOSED DEVELOPMENT AT VARIOUS LOTS IN D.D. 121, PING SHAN					Figure No.	4.5		Revision	R3B	
Figure Title	2030 PEAK HOUR TRAFFIC FLOWS FOR SENSITIVITY TEST					Designed by	T H C		Drawn by	C C L	
						Checked by	K C				
						Scale in A4	N.T.S.		Date	18 FEB 2022	
<div>CKM Asia Limited</div> <div>Traffic and Transportation Planning Consultants</div> <div>21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong</div> <div>Tel : (852) 2520 5990 Fax : (852) 2528 6343</div> <div>Email : mail@ckmasia.com.hk</div>											

Appendix A – Junction Capacity Analysis

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

Job Number: J7077

Scenario: existing condition

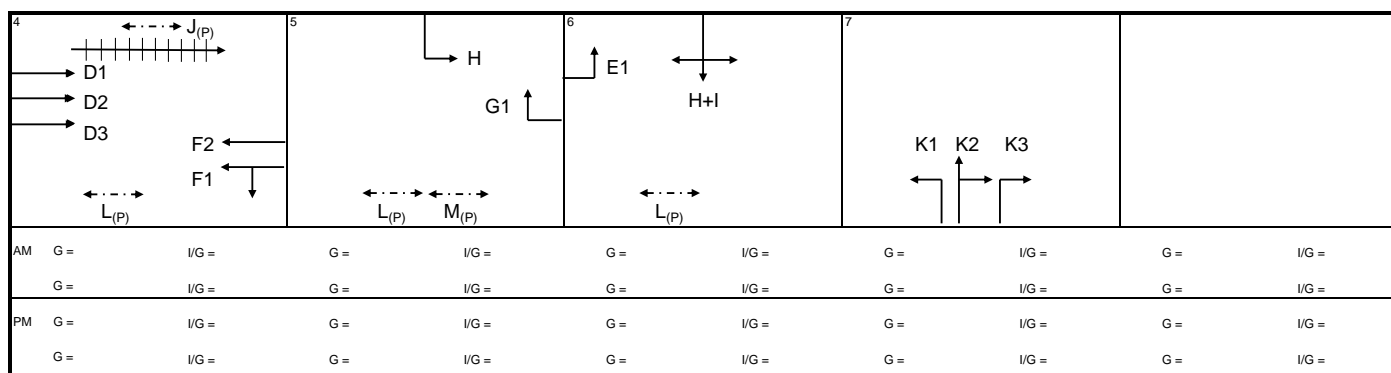
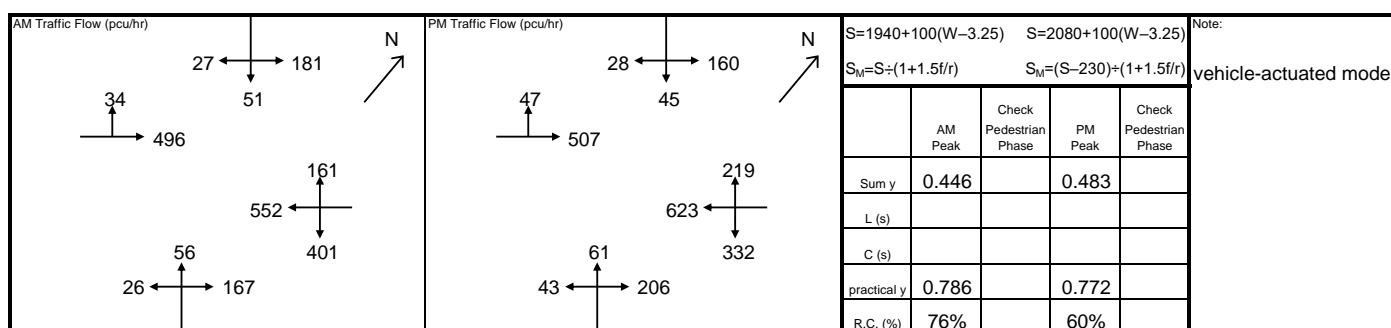
R3 / P.1-1

Design Year: 2020

Designed By:

Checked By:

Date: 31 December 2021

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Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road Job Number: J7077
 Scenario: without proposed development R3A / P.1-2
 Design Year: 2030 Designed By: _____ Checked By: _____ Date: 14 February 2022

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road -	LT	E1	6	3.50	12.0		100	1747	88	0.050		100	1747	103	0.059
Ping Shan EB	SA	D1	4	3.50				2105	464	0.220			2105	465	0.221
	SA	D2	4	3.50				2105	464	0.220			2105	465	0.221
	SA	D3	4	3.50				2105	464	0.220			2105	465	0.221
Tong Yan San Tsuen	LT	K1	7	5.00	15.0		100	1923	29	0.015		100	1923	47	0.024
Road NB	SA+RT	K2	7	3.60	16.0		54	2013	140	0.070	0.070	58	2013	162	0.080
	RT	K3	7	3.60	13.0		100	1896	131	0.069		100	1896	152	0.080
Castle Peak Road -	SA+LT	F1	4	3.50	15.0		67	1842	729	0.396	0.396	54	1864	738	0.396
Ping Shan WB	SA	F2	4	3.50				2105	834	0.396			2105	833	0.396
	RT	G1	5	3.00	20.0		100	1912	313	0.164	0.164	100	1912	345	0.180
Ping Ha Road SB	LT	H	5	4.00	10.0		100	1752	143	0.082		100	1752	125	0.071
	LT+SA+RT	H+I	6	4.00	10.0		81	1837	331	0.180	0.180	82	1828	287	0.157
pedestrian phase	J _(P)	4						min crossing time = 7		sec GM + 8			sec GM + 15		sec
	L _(P)	4,5,6						min crossing time = 5		sec GM + 6			sec GM + 11		sec
	M _(P)	5						min crossing time = 7		sec GM + 9			sec GM + 16		sec

AM Traffic Flow (pcu/hr)	PM Traffic Flow (pcu/hr)	<div><div><div>$S=1940+100(W-3.25)$</div><div>$S_M=S+(1+1.5f/r)$</div></div><div><div>$S=2080+100(W-3.25)$</div><div>$S_M=(S-230)/(1+1.5f/r)$</div></div></div> <div>Note: vehicle-actuated mode</div>																														
		<table><tr><th></th><th>AM Peak</th><th>Check Pedestrian Phase</th><th>PM Peak</th><th>Check Pedestrian Phase</th></tr><tr><td>Sum y</td><td>0.809</td><td></td><td>0.814</td><td></td></tr><tr><td>L (s)</td><td></td><td></td><td></td><td></td></tr><tr><td>C (s)</td><td></td><td></td><td></td><td></td></tr><tr><td>practical y</td><td>0.786</td><td></td><td>0.772</td><td></td></tr><tr><td>R.C. (%)</td><td>-3%</td><td></td><td>-5%</td><td></td></tr></table>		AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase	Sum y	0.809		0.814		L (s)					C (s)					practical y	0.786		0.772		R.C. (%)	-3%		-5%	
	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase																												
Sum y	0.809		0.814																													
L (s)																																
C (s)																																
practical y	0.786		0.772																													
R.C. (%)	-3%		-5%																													

AM G = I/G = G = I/G = G = I/G = G = I/G = G = I/G =				
PM G = I/G = G = I/G = G = I/G = G = I/G = G = I/G =				

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

Job Number: J7077

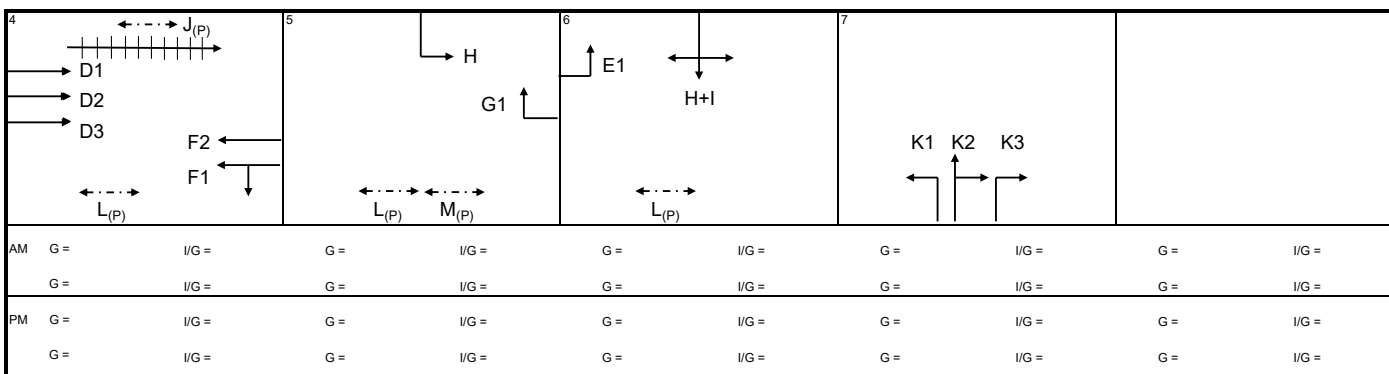
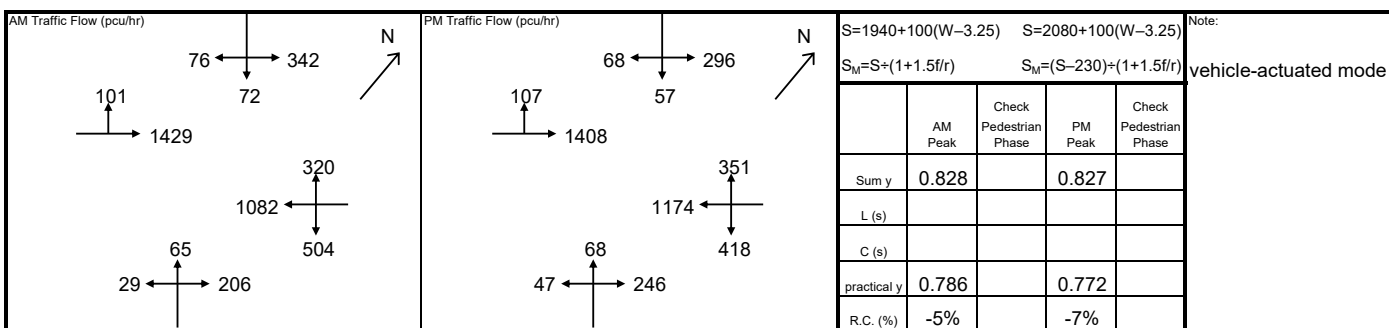
Scenario: with proposed development

R3A / P.1-3

Design Year: 2030 Designed By:

Checked By:

Date: 14 February 2022

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

Job Number: J7077

Scenario: without proposed development (based on Figure 4.4)

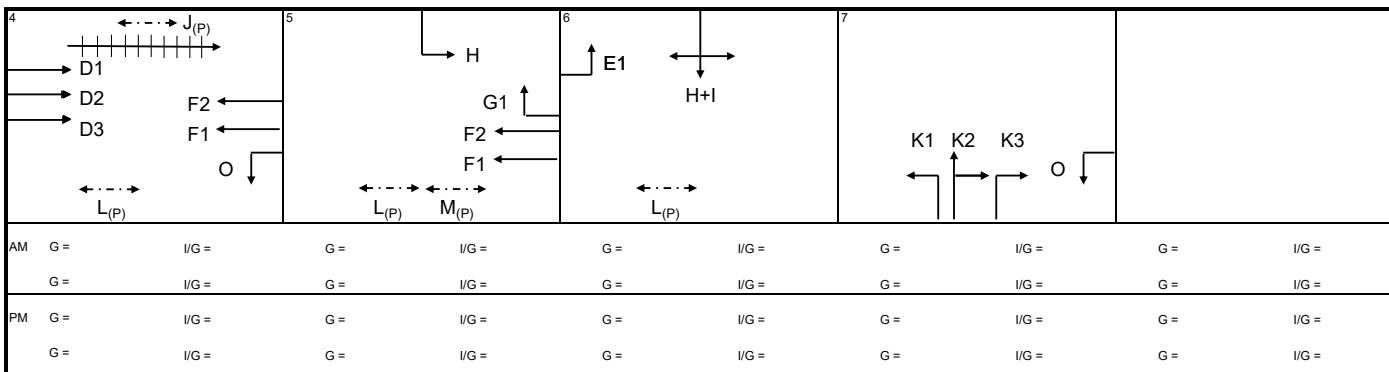
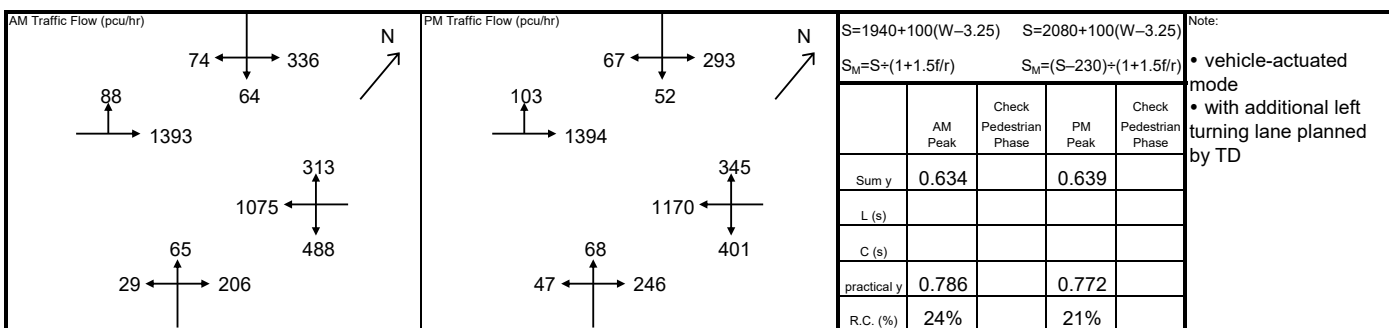
R3A / P.1-4

Design Year: 2030

Designed By:

Checked By:

Date: 14 February 2022

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

Job Number: J7077

Scenario: with proposed development (based on Figure 4.4)

R3A / P.1-5

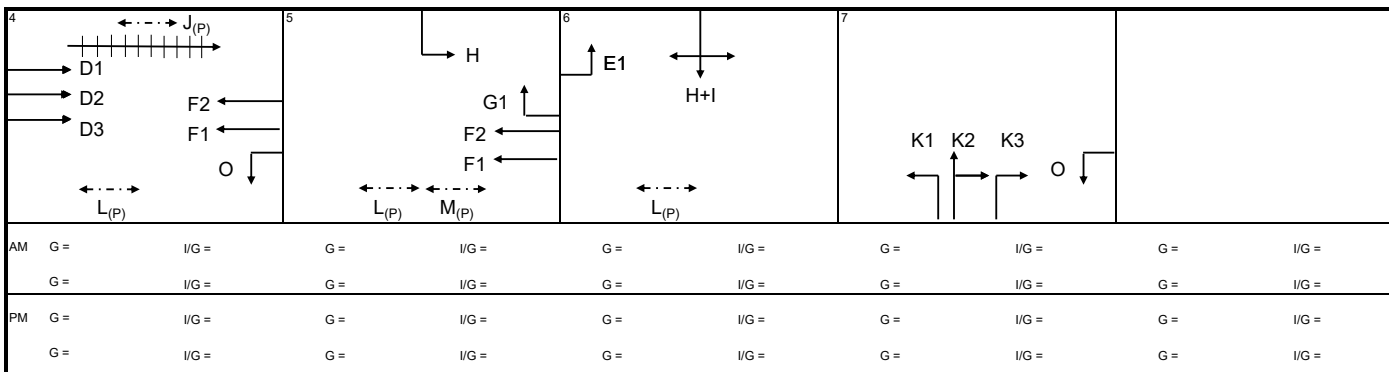
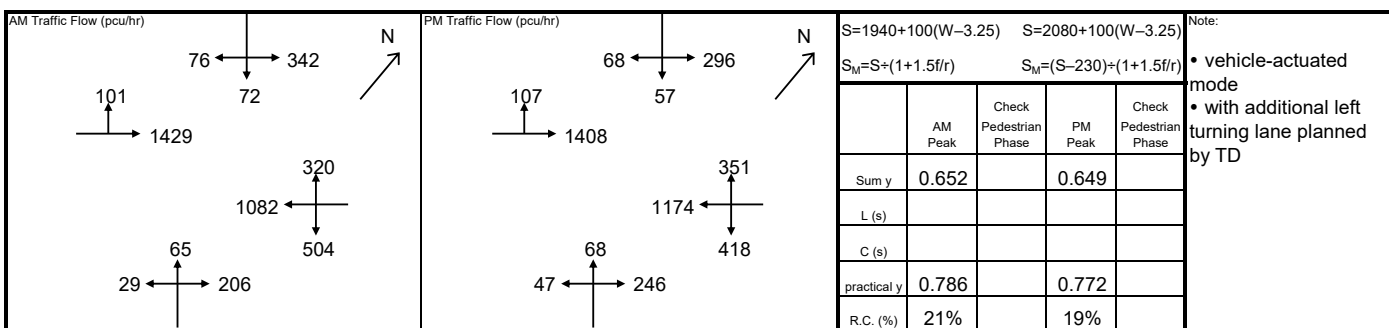
Design Year: 2030

Designed By:

Checked By:

Date: 14 February 2022

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
							Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road -	LT	E1	6	3.50	12.0		100	1747	101	0.058		100	1747	107	0.061	
Ping Shan EB	SA	D1	4	3.50				2105	476	0.226			2105	469	0.223	
	SA	D2	4	3.50				2105	476	0.226			2105	469	0.223	
	SA	D3	4	3.50				2105	476	0.226	0.226		2105	469	0.223	0.223
Tong Yan San Tsuen	LT	K1	7	5.00	15.0		100	1923	29	0.015		100	1923	47	0.024	
Road NB	SA+RT	K2	7	3.60	16.0		54	2013	140	0.070	0.070	58	2013	162	0.080	0.080
	RT	K3	7	3.60	13.0		100	1896	131	0.069		100	1896	152	0.080	
Castle Peak Road -	LT	O	4,7	4.00	15.0		100	1832	504	0.275		100	1832	418	0.228	
Ping Shan WB	SA	F1	4,5	4.00				2155	541	0.251			2155	587	0.272	
	SA	F2	4,5	4.00				2155	541	0.251			2155	587	0.272	
	RT	G1	5	3.00	20.0		100	1912	320	0.167	0.167	100	1912	351	0.184	0.184
Ping Ha Road SB	LT	H	5	4.00	10.0		100	1752	143	0.082		100	1752	125	0.071	
	LT+SA+RT	H+I	6	4.00	10.0		79	1842	347	0.188	0.188	81	1831	296	0.162	0.162
pedestrian phase	J _(P)	4			min crossing time =			7	sec GM +		8	sec GM +		15	sec	
	L _(P)	4,5,6			min crossing time =			5	sec GM +		6	sec GM +		11	sec	
	M _(P)	4,5			min crossing time =			7	sec GM +		9	sec GM +		16	sec	



Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Ha Road / Tong Yan San Tsuen Road

Job Number: J7077

Scenario: Sensitivity Test - redevelopment of whole CDA site (based on Figure 4.4)

R3A / P.1-6

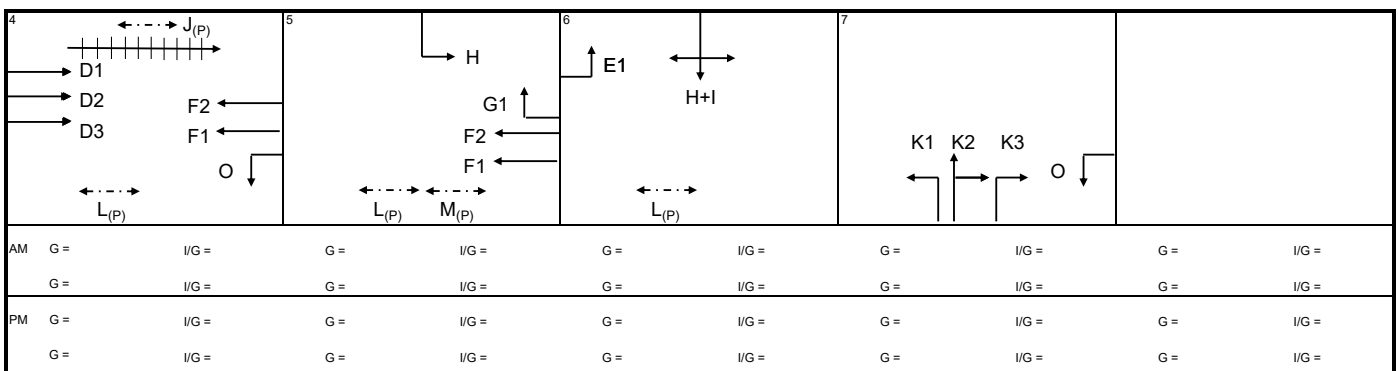
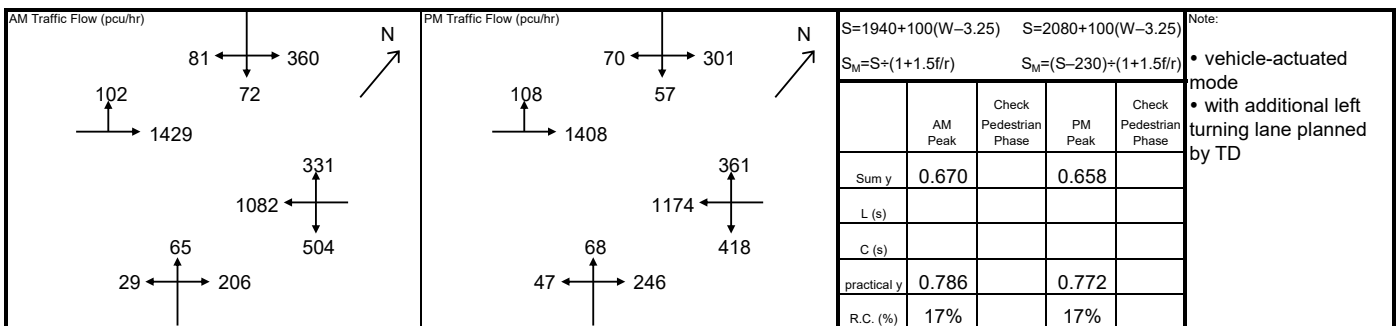
Design Year: 2030

Designed By:

Checked By:

Date: 14 February 2022

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road -	LT	E1	6	3.50	12.0		100	1747	102	0.058		100	1747	108	0.062
Ping Shan EB	SA	D1	4	3.50				2105	476	0.226			2105	469	0.223
	SA	D2	4	3.50				2105	476	0.226			2105	469	0.223
	SA	D3	4	3.50				2105	476	0.226	0.226		2105	469	0.223 0.223
Tong Yan San Tsuen	LT	K1	7	5.00	15.0		100	1923	29	0.015		100	1923	47	0.024
Road NB	SA+RT	K2	7	3.60	16.0		54	2013	140	0.070	0.070	58	2013	162	0.080 0.080
	RT	K3	7	3.60	13.0		100	1896	131	0.069		100	1896	152	0.080
Castle Peak Road -	LT	O	4,7	4.00	15.0		100	1832	504	0.275		100	1832	418	0.228
Ping Shan WB	SA	F1	4,5	4.00				2155	541	0.251			2155	587	0.272
	SA	F2	4,5	4.00				2155	541	0.251			2155	587	0.272
	RT	G1	5	3.00	20.0		100	1912	331	0.173	0.173	100	1912	361	0.189 0.189
Ping Ha Road SB	LT	H	5	4.00	10.0		100	1752	143	0.082		100	1752	125	0.071
	LT+SA+RT	H+I	6	4.00	10.0		81	1837	370	0.201	0.201	81	1831	303	0.166 0.166
pedestrian phase	J _(P)	4		min crossing time =			7	sec GM +		8	sec GM +		15	sec	
	L _(P)	4,5,6		min crossing time =			5	sec GM +		6	sec GM +		11	sec	
	M _(P)	4,5		min crossing time =			7	sec GM +		9	sec GM +		16	sec	



Signal Junction Analysis

Junction: Castle Peak Road – Ping Shan / Site Access Road

Job Number: J7077

Scenario: existing condition

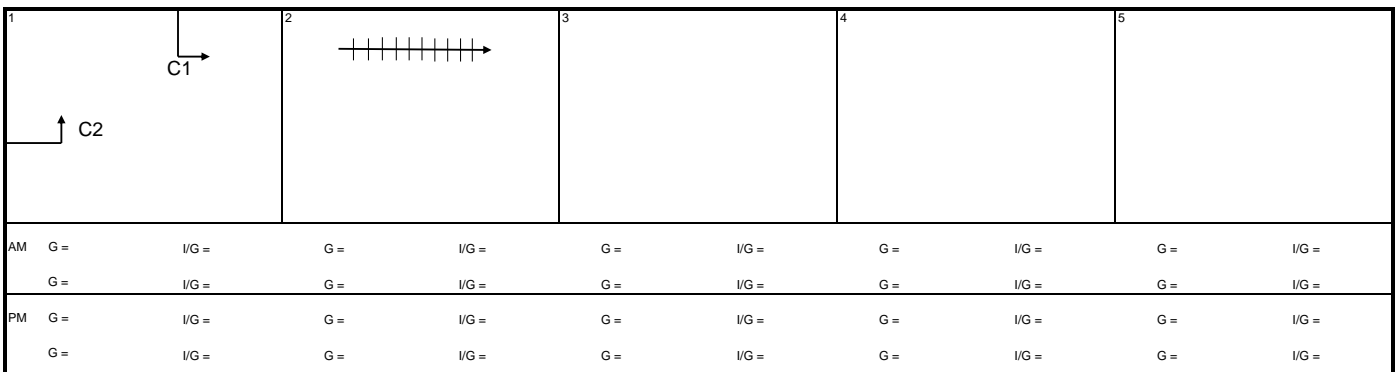
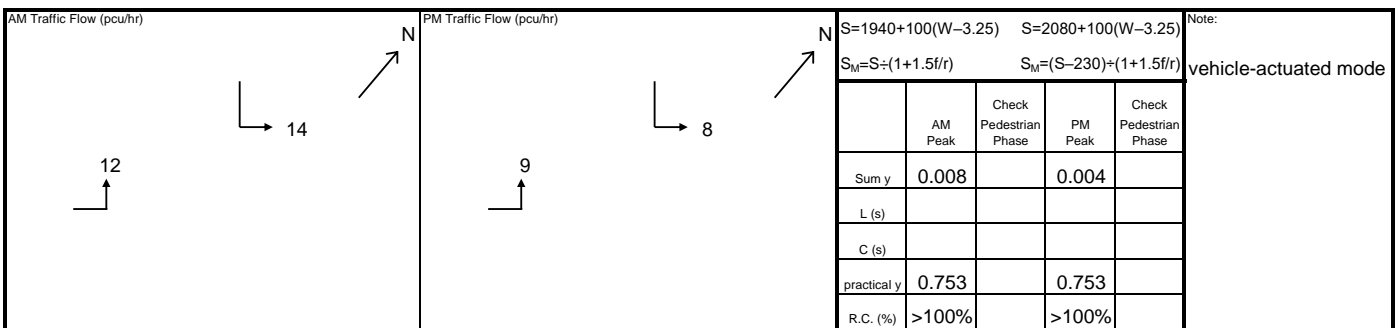
R3 / P.2-1

Design Year: 2020

Designed By: _____

Checked By: _____

Date: 31 December 2021

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road – Ping Shan / Site Access Road

Job Number: J7077

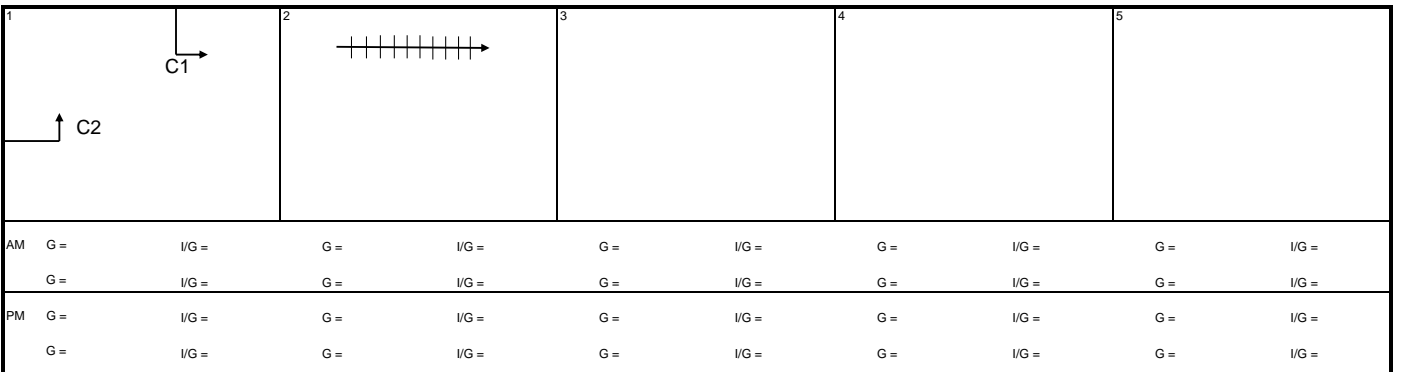
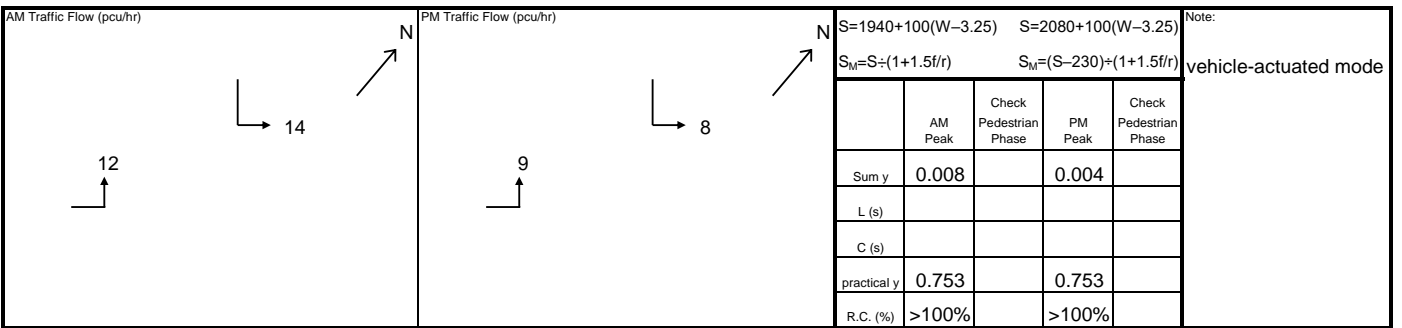
Scenario: without proposed development

R3 / P.2-2Design Year: 2030

Designed By: _____

Checked By: _____

Date: 31 December 2021

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road – Ping Shan / Site Access Road

Job Number: J7077

Scenario: with proposed development

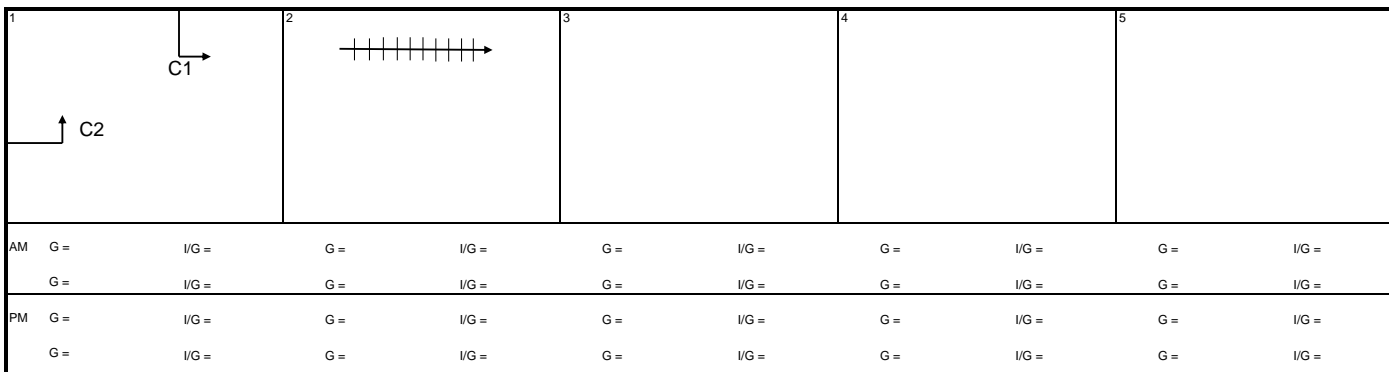
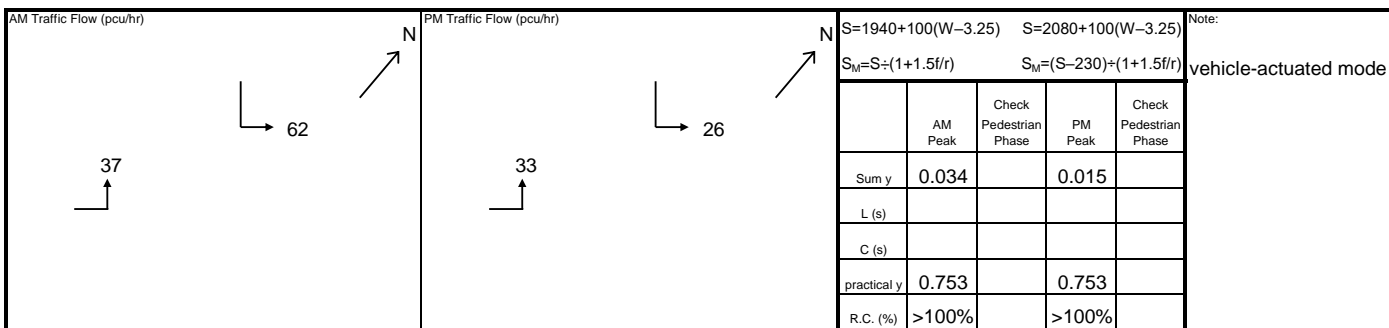
R3 / P.2-3

Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road – Ping Shan / Site Access Road

Job Number: J7077

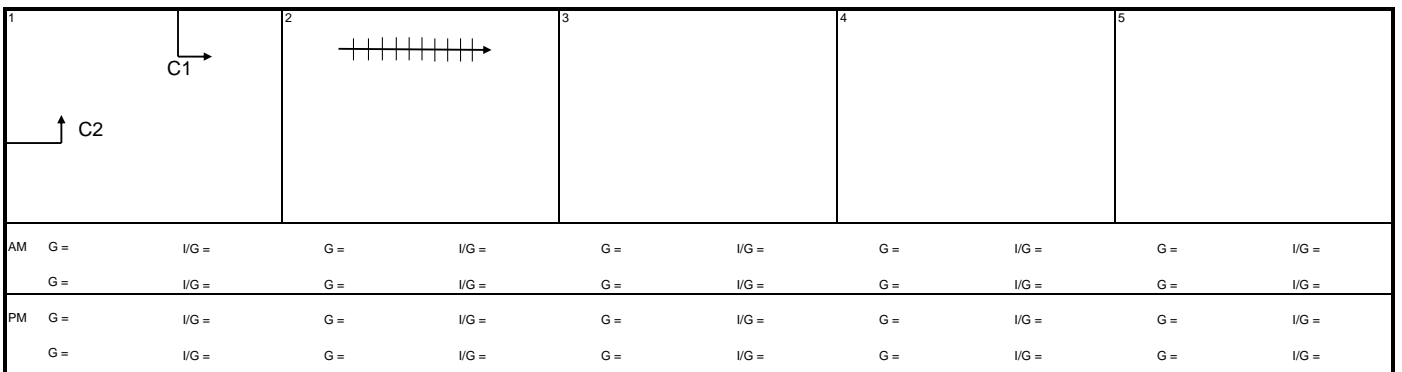
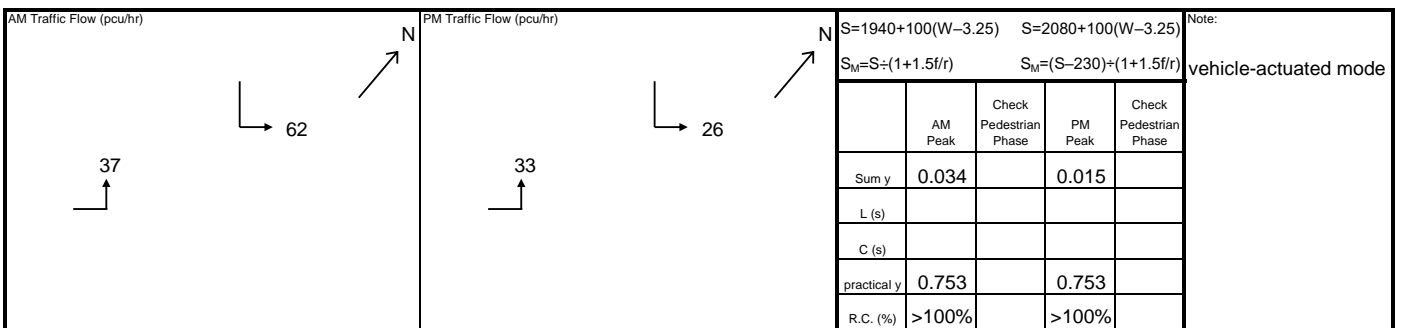
Scenario: Sensitivity Test - Redevelopment of Whole CDA Site

R3 / P.2-4Design Year: 2030

Designed By: _____

Checked By: _____

Date: 31 December 2021

[illegible]

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Kwai Road / San Hi Tsuen Street

Job Number: J7077

Scenario: without proposed development

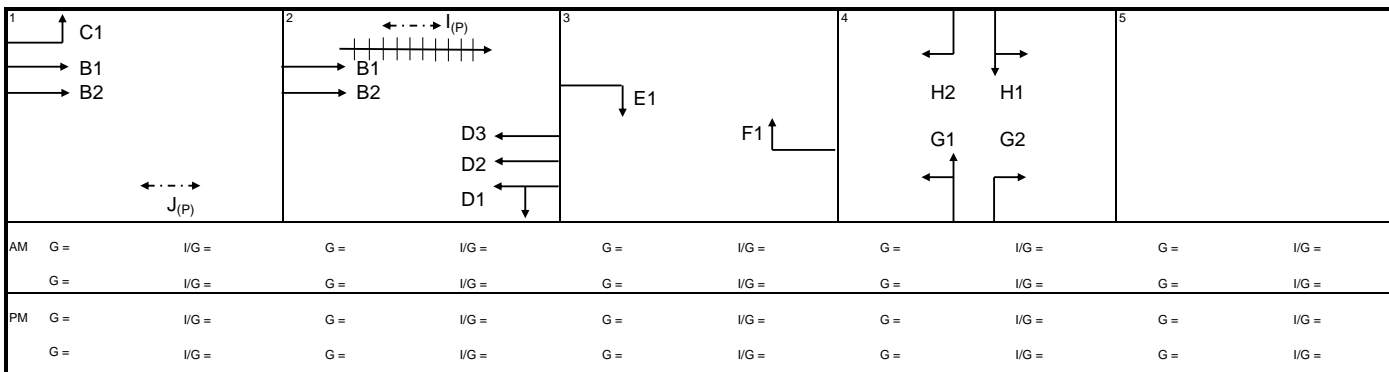
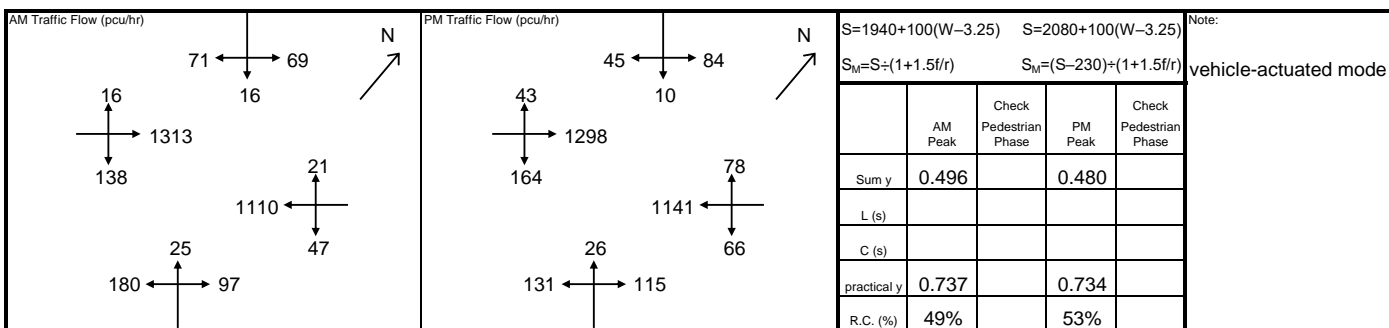
R3 / P.3-2

Design Year: 2030 Designed By:

Checked By:

Date: 31 December 2021

Approach		Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
							Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road - LT	C1	1	3.25	17.0			100	1783	16	0.009		100	1783	43	0.024	
Ping Shan EB	SA	B1	1,2	3.40				2095	657	0.314	0.314		2095	649	0.310	0.310
	SA	B2	1,2	3.40				2095	656	0.313			2095	649	0.310	
	RT	E1	3	3.00	20.0		100	1912	138	0.072	0.072	100	1912	164	0.086	0.086
San Hi Tsuen Street NB	SA+LT	G1	4	3.80	18.0		88	1859	205	0.110	0.110	83	1859	157	0.084	0.084
	RT	G2	4	3.80	21.0		100	1993	97	0.049		100	1993	115	0.058	
Castle Peak Road - SA+LT	D1	2	4.00	16.0			13	1991	373	0.187		17	1991	389	0.195	
Ping Shan WB	SA	D2	2	3.75				2130	399	0.187			2130	416	0.195	
	SA	D3	2	3.00				2055	385	0.187			2055	402	0.196	
	RT	F1	3	3.25	24.0		100	1958	21	0.011		100	1958	78	0.040	
Ping Kwai Road SB	SA+LT	H1	4	3.50	16.0		81	1826	85	0.047		89	1826	94	0.051	
	RT	H2	4	3.50	22.0		100	1971	71	0.036		100	1971	45	0.023	
pedestrian phase	I _(P)	2			min crossing time =		7	sec GM +		6	sec FGM =		13	sec		
	J _(P)	1			min crossing time =		12	sec GM +		11	sec FGM =		23	sec		



Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Kwai Road / San Hi Tsuen Street

Job Number: J7077

Scenario: with proposed development

R3 / P.3-3

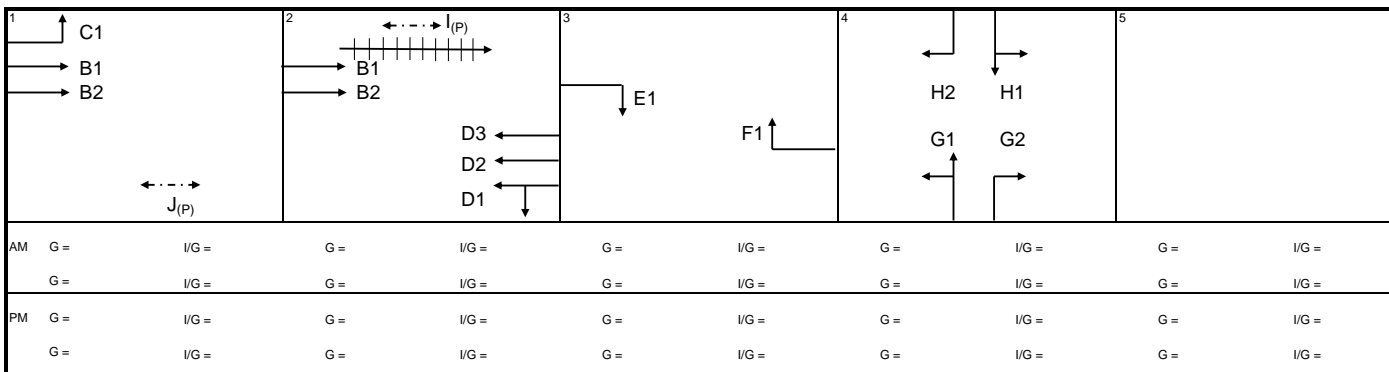
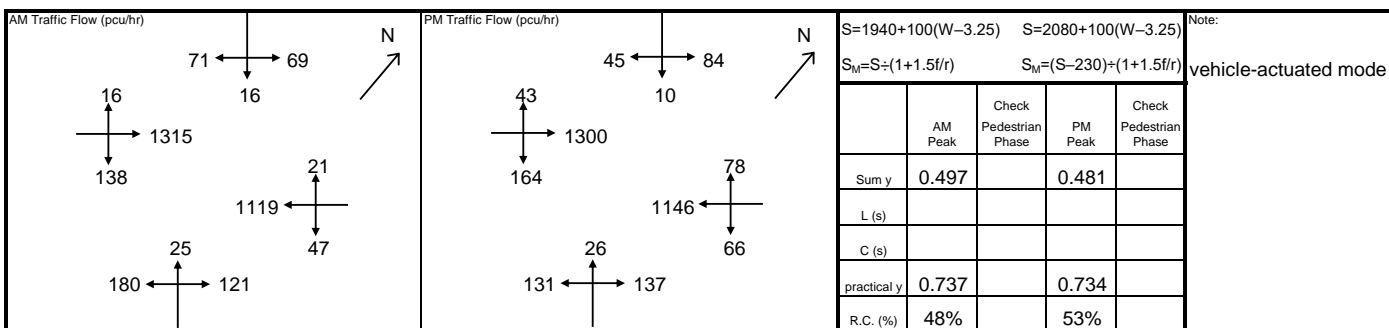
Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road - LT	C1	1	3.25	17.0		100	1783	16	0.009		100	1783	43	0.024	
Ping Shan EB	SA	B1	1,2	3.40			2095	658	0.314	0.314		2095	650	0.310	0.310
	SA	B2	1,2	3.40			2095	657	0.314			2095	650	0.310	
	RT	E1	3	3.00	20.0	100	1912	138	0.072	0.072	100	1912	164	0.086	0.086
San Hi Tsuen Street NB	SA+LT	G1	4	3.80	18.0	88	1859	205	0.110	0.110	83	1859	157	0.084	0.084
	RT	G2	4	3.80	21.0	100	1993	121	0.061		100	1993	137	0.069	
Castle Peak Road - SA+LT	D1	2	4.00	16.0		13	1991	376	0.189		17	1991	391	0.196	
Ping Shan WB	SA	D2	2	3.75			2130	402	0.189			2130	418	0.196	
	SA	D3	2	3.00			2055	388	0.189			2055	403	0.196	
	RT	F1	3	3.25	24.0	100	1958	21	0.011		100	1958	78	0.040	
Ping Kwai Road SB	SA+LT	H1	4	3.50	16.0	81	1826	85	0.047		89	1826	94	0.051	
	RT	H2	4	3.50	22.0	100	1971	71	0.036		100	1971	45	0.023	
pedestrian phase	I _(P)	2		min crossing time =			7	sec GM +		6	sec FGM =		13	sec	
	J _(P)	1		min crossing time =			12	sec GM +		11	sec FGM =		23	sec	



Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ping Kwai Road / San Hi Tsuen Street

Job Number: J7077

Scenario: Sensitivity Test - Redevelopment of Whole CDA Site

R3 / P.3-4

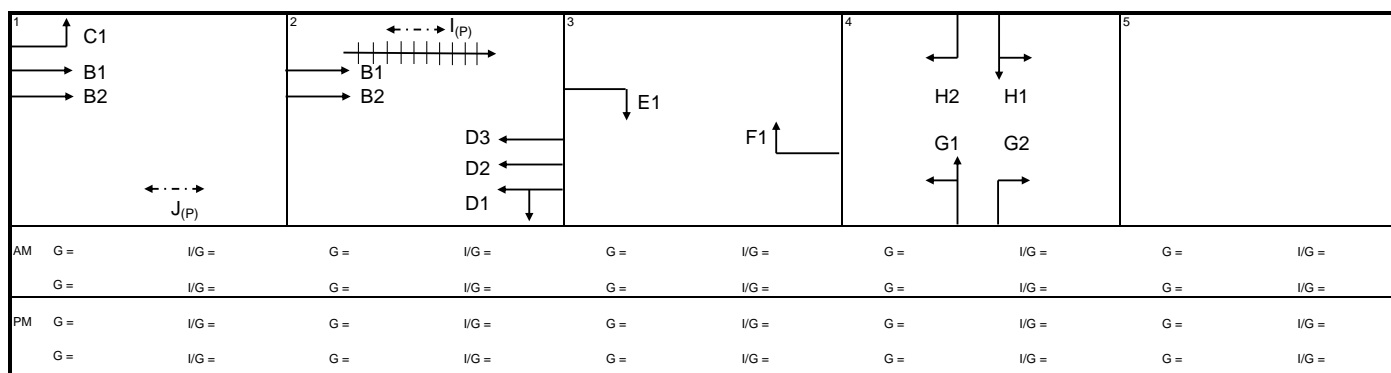
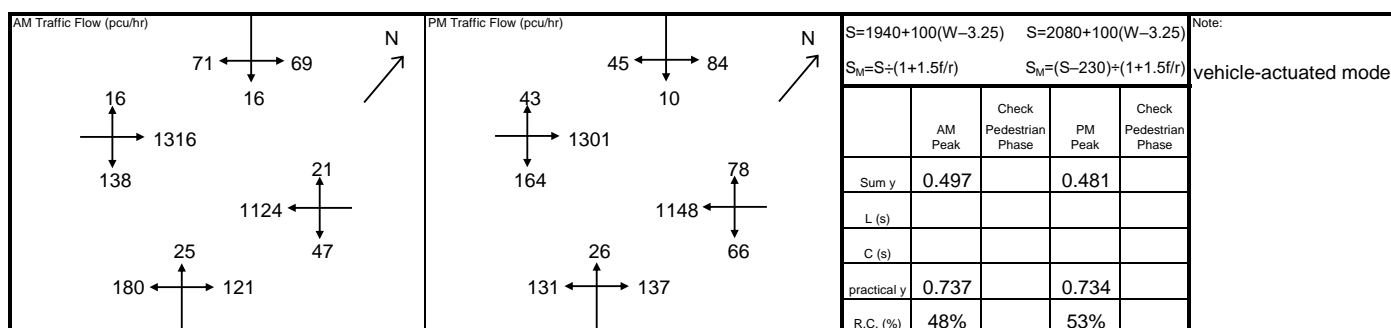
Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak				
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y
Castle Peak Road - LT	C1	1	3.25	17.0		100	1783	16	0.009		100	1783	43	0.024	
Ping Shan EB	SA	B1	1,2	3.40			2095	658	0.314	0.314		2095	651	0.311	0.311
	SA	B2	1,2	3.40			2095	658	0.314			2095	650	0.310	
	RT	E1	3	3.00	20.0	100	1912	138	0.072	0.072	100	1912	164	0.086	0.086
San Hi Tsuen Street NB	SA+LT	G1	4	3.80	18.0	88	1859	205	0.110	0.110	83	1859	157	0.084	0.084
	RT	G2	4	3.80	21.0	100	1993	121	0.061		100	1993	137	0.069	
Castle Peak Road -	SA+LT	D1	2	4.00	16.0	12	1993	378	0.190		17	1993	392	0.197	
Ping Shan WB	SA	D2	2	3.75			2130	404	0.190			2130	419	0.197	
	SA	D3	2	3.00			2055	389	0.189			2055	403	0.196	
	RT	F1	3	3.25	24.0	100	1958	21	0.011		100	1958	78	0.040	
Ping Kwai Road SB	SA+LT	H1	4	3.50	16.0	81	1826	85	0.047		89	1826	94	0.051	
	RT	H2	4	3.50	22.0	100	1971	71	0.036		100	1971	45	0.023	
pedestrian phase	I _(P)	2		min crossing time =			7	sec GM +		6	sec FGM =		13	sec	
	J _(P)	1		min crossing time =			12	sec GM +		11	sec FGM =		23	sec	



Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange

Job Number: J7077

Scenario: existing condition

R3 / P.4-1

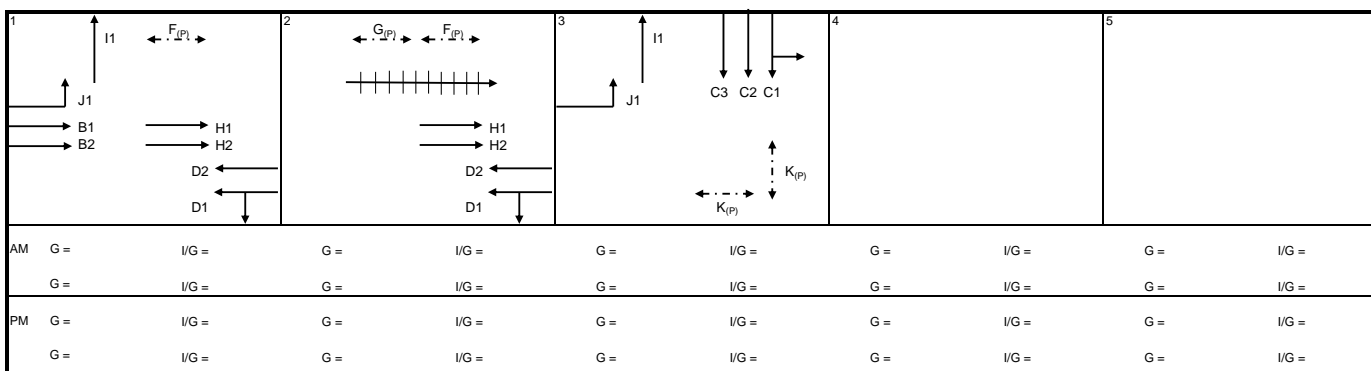
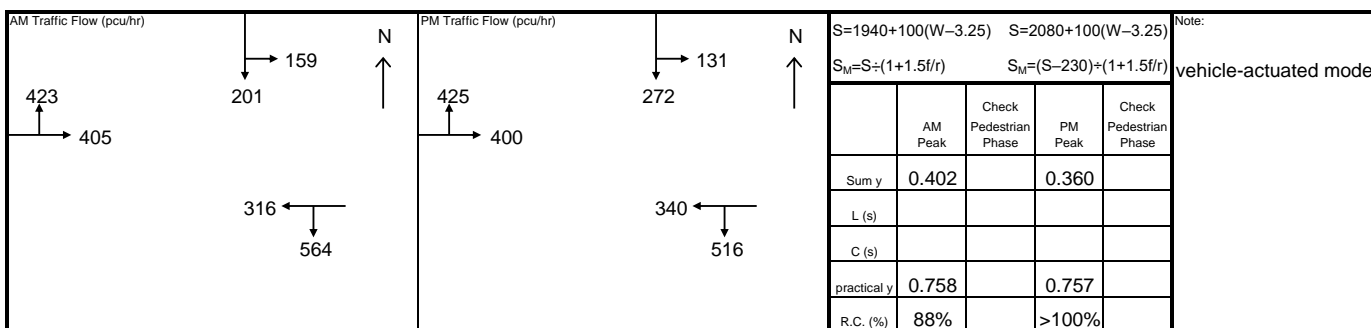
Design Year: 2020

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak						
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y		
Castle Peak Road -	LT	J1	1,3	3.20	30.0		100	1843	423	0.230		100	1843	425	0.231		
Ping Shan EB	SA	B1	1	3.20				2075	203	0.098			2075	200	0.096		
	SA	B2	1	3.20				2075	202	0.097			2075	200	0.096		
Ma Wang Road SB	LT+SA	C1	3	4.00	20.0		100	1874	159	0.085	0.085	100	1874	131	0.070	0.070	
	SA	C2	3	4.00				2155	101	0.047			2155	136	0.063		
	SA	C3	3	4.00				2155	100	0.046			2155	136	0.063		
Castle Peak Road -	LT+SA	D1	1,2	3.40	15.0		100	1777	564	0.317	0.317	100	1777	516	0.290	0.290	
Ping Shan WB	SA	D2	1,2	3.40				2095	316	0.151			2095	340	0.162		
pedestrian phase	E _(P)	3		min crossing time =			10	sec GM +			9	sec FGM =			19	sec	
	F _(P)	1,2		min crossing time =			5	sec GM +			10	sec FGM =			15	sec	
	G _(P)	2		min crossing time =			5	sec GM +			6	sec FGM =			11	sec	
	K _(P)	3		min crossing time =			5	sec GM +			9	sec FGM =			14	sec	



Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange

Job Number: J7077

Scenario: without proposed development

R3 / P.4-2

Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak						
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y		
Castle Peak Road -	LT	J1	1,3	3.20	30.0		100	1843	596	0.323		100	1843	670	0.364		
Ping Shan EB	SA	B1	1	3.20				2075	662	0.319			2075	606	0.292		
	SA	B2	1	3.20				2075	661	0.319			2075	606	0.292		
Ma Wang Road SB	LT+SA	C1	3	4.00	20.0		93	1884	182	0.097	0.097	100	1874	150	0.080		
	SA	C2	3	4.00				2155	208	0.097			2155	265	0.123	0.123	
	SA	C3	3	4.00				2155	208	0.097			2155	265	0.123		
Castle Peak Road -	LT+SA	D1	1,2	3.40	15.0		100	1777	687	0.387	0.387	96	1784	660	0.370	0.370	
Ping Shan WB	SA	D2	1,2	3.40				2095	766	0.366			2095	775	0.370		
pedestrian phase	E _(P)	3		min crossing time =			10	sec GM +			9	sec FGM =			19	sec	
	F _(P)	1,2		min crossing time =			5	sec GM +			10	sec FGM =			15	sec	
	G _(P)	2		min crossing time =			5	sec GM +			6	sec FGM =			11	sec	
	K _(P)	3		min crossing time =			5	sec GM +			9	sec FGM =			14	sec	

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

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PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

	1		2		3		4		5	
AM	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange

Job Number: J7077

Scenario: with proposed development

R3 / P.4-3

Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak					
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	
Castle Peak Road -	LT	J1	1,3	3.20	30.0		100	1843	625	0.339		100	1843	681	0.370	
Ping Shan EB	SA	B1	1	3.20				2075	668	0.322			2075	609	0.293	
	SA	B2	1	3.20				2075	668	0.322			2075	609	0.293	
Ma Wang Road SB	LT+SA	C1	3	4.00	20.0		100	1874	170	0.091		100	1874	150	0.080	
	SA	C2	3	4.00				2155	220	0.102			2155	270	0.125	0.125
	SA	C3	3	4.00				2155	220	0.102	0.102		2155	269	0.125	
Castle Peak Road -	LT+SA	D1	1,2	3.40	15.0		100	1777	687	0.387	0.387	96	1784	661	0.371	
Ping Shan WB	SA	D2	1,2	3.40				2095	770	0.368			2095	777	0.371	0.371
pedestrian phase	E _(P)	3		min crossing time =			10	sec GM +		9	sec FGM =		19	sec		
	F _(P)	1,2		min crossing time =			5	sec GM +		10	sec FGM =		15	sec		
	G _(P)	2		min crossing time =			5	sec GM +		6	sec FGM =		11	sec		
	K _(P)	3		min crossing time =			5	sec GM +		9	sec FGM =		14	sec		

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

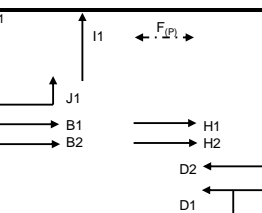
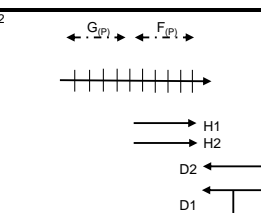
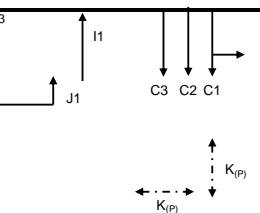


PM Traffic Flow (pcu/hr)

Note: $S = 1940 + 100(W - 3.25)$ $S = 2080 + 100(W - 3.25)$

$S_M = S - (1 + 1.5f/r)$ $S_M = (S - 230) - (1 + 1.5f/r)$

vehicle-actuated mode

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.489		0.496	
L (s)				
C (s)				
practical y	0.758		0.757	
R.C. (%)	55%		53%	

	1	2	3	4	5
					
AM	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>
PM	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>	<div><div>G =</div><div>I/G =</div></div>

Signal Junction Analysis

Junction: Castle Peak Road - Ping Shan / Ma Wang Road / Slip Road to Tong Yan San Tsuen Interchange

Job Number: J7077

Scenario: Sensitivity Test - Redevelopment of Whole CDA Site

R3 / P.4-4

Design Year: 2030

Designed By:

Checked By:

Date: 31 December 2021

Approach	Phase	Stage	Width (m)	Radius (m)	% Up-hill Gradient	AM Peak					PM Peak					
						Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	Turning %	Sat. Flow (pcu/hr)	Flow (pcu/hr)	y value	Critical y	
Castle Peak Road -	LT	J1	1,3	3.20	30.0		100	1843	640	0.347		100	1843	685	0.372	
Ping Shan EB	SA	B1	1	3.20				2075	670	0.323			2075	610	0.294	
	SA	B2	1	3.20				2075	669	0.322			2075	609	0.293	
Ma Wang Road SB	LT+SA	C1	3	4.00	20.0		100	1874	170	0.091		100	1874	150	0.080	
	SA	C2	3	4.00				2155	222	0.103	0.103		2155	271	0.126	0.126
	SA	C3	3	4.00				2155	221	0.103			2155	270	0.125	
Castle Peak Road -	LT+SA	D1	1,2	3.40	15.0		100	1777	687	0.387	0.387	96	1784	662	0.371	0.371
Ping Shan WB	SA	D2	1,2	3.40				2095	771	0.368			2095	777	0.371	
pedestrian phase	E _(P)	3		min crossing time =			10	sec GM +		9	sec FGM =		19	sec		
	F _(P)	1,2		min crossing time =			5	sec GM +		10	sec FGM =		15	sec		
	G _(P)	2		min crossing time =			5	sec GM +		6	sec FGM =		11	sec		
	K _(P)	3		min crossing time =			5	sec GM +		9	sec FGM =		14	sec		

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

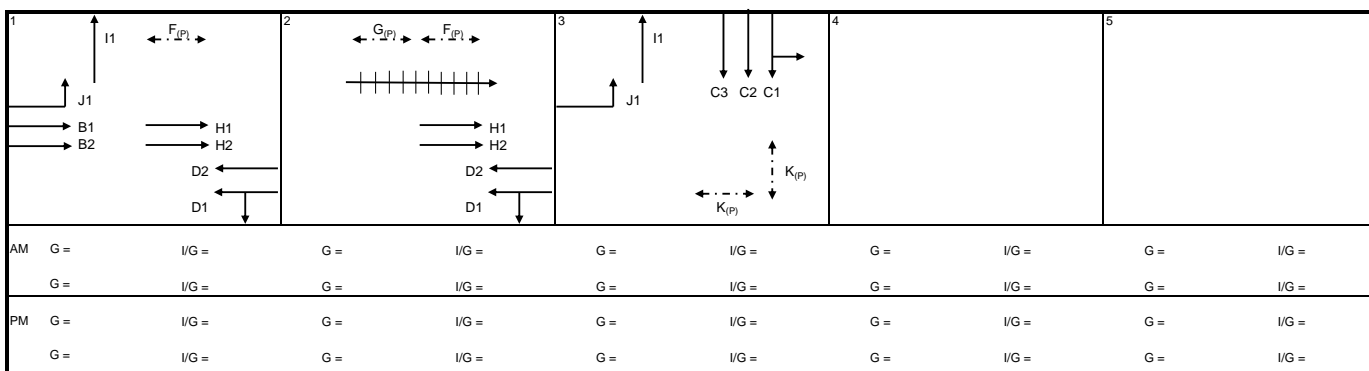
Note:

$S = 1940 + 100(W - 3.25)$ $S = 2080 + 100(W - 3.25)$

$S_M = S - (1 + 1.5f/r)$ $S_M = (S - 230) - (1 + 1.5f/r)$

vehicle-actuated mode

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.490		0.497	
L (s)				
C (s)				
practical y	0.758		0.757	
R.C. (%)	55%		52%	



Signal Junction Analysis

Junction: Shui Pin Wai Interchange

Job Number: J7077

Scenario: existing condition

R3 / P.5-1

Design Year: 2020

Designed By:

Checked By:

Date: 31 December 2021

[illegible]

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

Note:

$S = 1940 + 100(W - 3.25)$ $S = 2080 + 100(W - 3.25)$

$S_M = S \div (1 + 1.5f/r)$ $S_M = (S - 230) \div (1 + 1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.434		0.385	
L (s)	26		26	
C (s)	120		120	
practical y	0.705		0.705	
R.C. (%)	62%		83%	

1		2		3		4		5			
AM	G = G =	I/G = I/G =	7 12	G = G =	I/G = I/G =	12 6	G = G =	I/G = I/G =	5 5	G = G =	I/G = I/G =
PM	G = G =	I/G = I/G =	7 12	G = G =	I/G = I/G =	12 6	G = G =	I/G = I/G =	5 5	G = G =	I/G = I/G =

Signal Junction Analysis

Junction: Shui Pin Wai Interchange

Job Number: J7077

Scenario: without proposed development

R3 / P.5-2

Design Year: 2030 Designed By:

Checked By:

Date: 31 December 2021

[illegible]

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

Note:

$S = 1940 + 100(W - 3.25)$ $S = 2080 + 100(W - 3.25)$

$S_M = S \div (1 + 1.5f/r)$ $S_M = (S - 230) \div (1 + 1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.590		0.513	
L (s)	26		26	
C (s)	120		120	
practical y	0.705		0.705	
R.C. (%)	19%		37%	

	1		2		3		4		5	
AM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

Junction: Shui Pin Wai InterchangeJob Number: J7077

Scenario: with proposed development

R3 / P.5-3

Design Year: 2030 Designed By: _____

Checked By: _____

Date: 31 December 2021[illegible]

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

S=1940+100(W-3.25) S=2080+100(W-3.25)

$S_M=S \div (1+1.5f/r)$ $S_M=(S-230) \div (1+1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.598		0.516	
L (s)	26		26	
C (s)	120		120	
practical y	0.705		0.705	
R.C. (%)	18%		37%	

Note:

	1		2		3		4		5	
AM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Signal Junction Analysis

Junction: Shui Pin Wai Interchange

Job Number: J7077

Scenario: Sensitivity Test - Redevelopment of Whole CDA Site

R3 / P.5-4

Design Year: 2030 Designed By: Checked By: Date: 31 December 2021

[illegible]

AM Traffic Flow (pcu/hr)

PM Traffic Flow (pcu/hr)

Note:

$S = 1940 + 100(W - 3.25)$ $S = 2080 + 100(W - 3.25)$

$S_M = S \div (1 + 1.5f/r)$ $S_M = (S - 230) \div (1 + 1.5f/r)$

	AM Peak	Check Pedestrian Phase	PM Peak	Check Pedestrian Phase
Sum y	0.598		0.516	
L (s)	26		26	
C (s)	120		120	
practical y	0.705		0.705	
R.C. (%)	18%		37%	

	1		2		3		4		5	
AM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =
PM	G =	I/G = 7	G =	I/G = 12	G =	I/G = 6	G =	I/G = 5	G =	I/G =
	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =	G =	I/G =

Appendix V
Environmental Assessment



D01 Environmental Assessment

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong

Document Control

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File Location:	Z:\Jobs\7076822 - On Billion - S12A Ping Shan YL\08 Submission
Project Name:	Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Project Number:	7076822 D01/01
Revision Number:	3

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REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED BY
0.0	8 June 2021	Julie CHAN/Charls LIANG	Cleo YIP	Antony WONG
1	23 August 2021	Julie CHAN/Charls LIANG	Cleo YIP	Antony WONG
2	21 December 2021	Charls LIANG	Julie CHAN	Antony WONG
3	11 March 2022	Julie CHAN	Candice HO	Antony WONG

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1 INTRODUCTION

1.1 Project Background

- 1.1.1 With reference to the Policy Addresses in recent years including the latest one, Policy Address 2020, the key concerns include housing supply and elderly care service which is one of the improvements of people's livelihood. In order to address the aforementioned needs, it is planned to redevelop a land with an area of approximately 14,080m² comprising four lots in D.D.121 and D.D. 122, and the adjoining government land of about 1,925m², Ping Shan, Yuen Long, New Territories, into Residential Care Home for the Elderly ("RCHE") and Residential Development ("the Site" or "the Proposed Development").
- 1.1.2 The Site is currently zoned "Village" ("V") and "Comprehensive Development Area" ("CDA") under the Draft Ping Shan Outline Zoning Plan ("OZP") No. S/YL-PS/19. For the Proposed Development comprising RCHE and Residential Development with three residential blocks, a rezoning application under Section 12A of the *Town Planning Ordinance* ("TPO") is required to rezone the Site from "V" and "CDA" zones to "Residential (Group B)2" ("R(B)2") zone under Column 1.
- 1.1.3 SMEC Asia Ltd ("SMEC") has been commissioned to conduct this Environmental Assessment ("EA") to support the application.

1.2 Site Description

- 1.2.1 The Site is located in a developed area in Ping Shan, Yuen Long, which is an existing logistic plant mainly used for storage. Its northern part is used for open car park. As shown on **Figure 1-1**, Castle Peak Road (Ping Shan) section is located to the immediate south of the Site that runs along the east-west direction. Light Rail Transit ("LTR") is also located to south of the Site running along the Castle Peak Road (Ping Shan) section. Across the opposite site of Castle Peak Road (Ping Shan) Section, there are mainly residential blocks, playground and gardens. In addition, Ping Ha Road originates to the east of the Site and runs along south-north direction. It further turns around and is connected to the north of the Site. It subsequently runs along the east-west direction and connected to the Ping Shan Heritage Trail to the northwest of the Site. The Site is mainly surrounded by warehouse storages, factories, and scattered residential premises to the east and north, and to the west of the Site. An abandoned Former Tat Tak Public School is located to the northeast of the Site.

1.3 Project Description

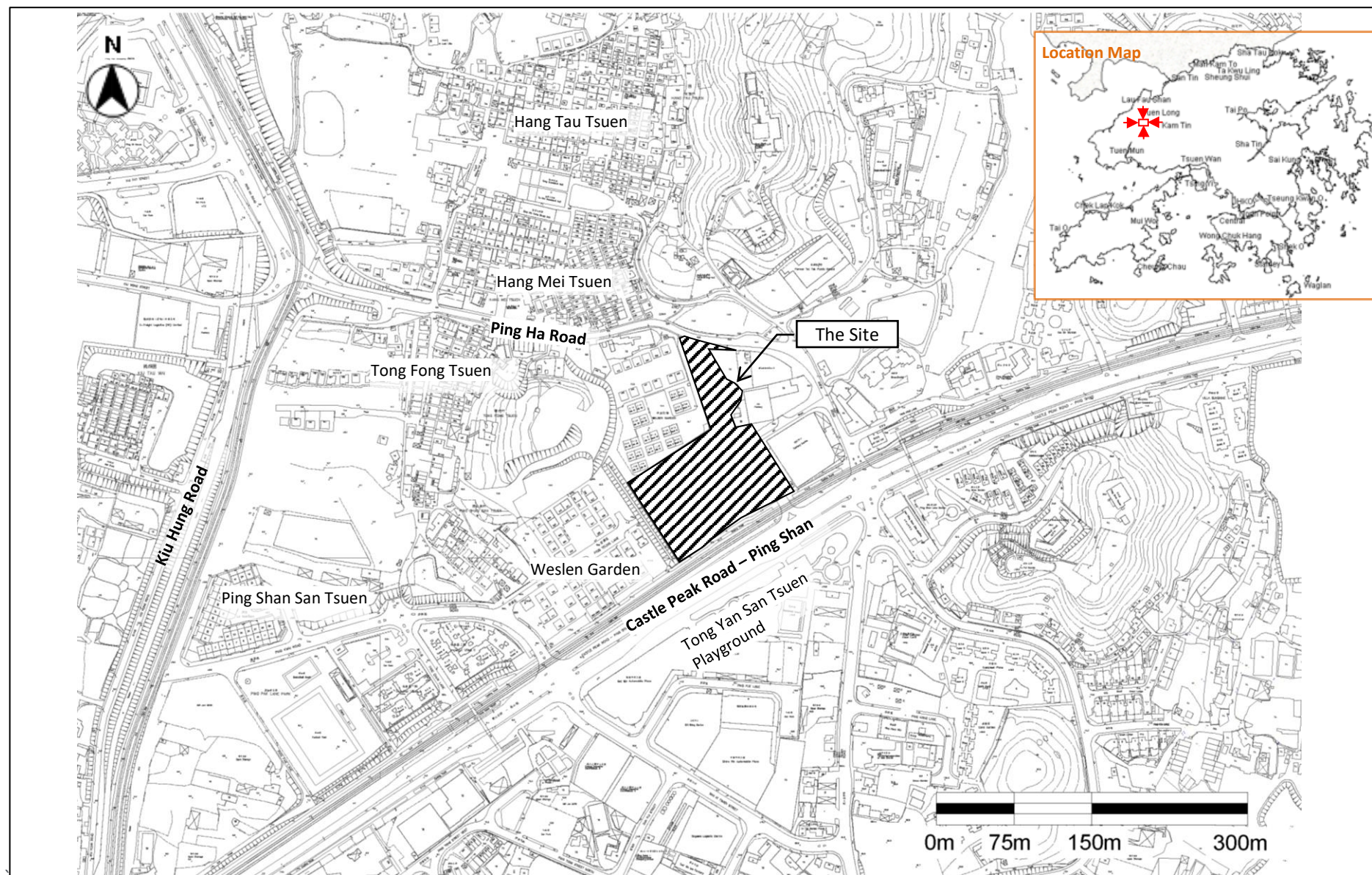
- 1.3.1 The Proposed Development will tentatively comprise a RCHE as a Social Welfare Facility and a residential development with the following components:
- Three Residential Buildings
 - One Club house
 - One Swimming Pool

1.4 Objective of the Report

- 1.4.1 The objectives of this EA are to:
- Identify and qualitatively assess potential environmental impacts arising from surrounding emissions to the Site, as well as that arising from the operation of the Project Site to the nearby sensitive uses, in terms of air quality, noise, water quality and waste management.

- Mitigation measures have been recommended, where appropriate, to alleviate any identified environmental impacts or constraints during the operation of the Project. Potential environmental impacts during construction phase, though transient, have also been reviewed and mitigation measures have been recommended to reduce any identified environmental impacts to acceptable levels.

Figure 1-1 Site Location and its Environs

**D01 ENVIRONMENTAL ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

2 AIR QUALITY REVIEW

2.1 Introduction

- 2.1.1 This section assesses the potential air quality impacts that will be generated by the Project during the construction and its operation. On the other hand, potential air pollution problem arising from the surrounding of the Site is also evaluated. Mitigation measures are recommended, where necessary, as part of the assessment.

2.2 Environmental Legislation and Standards

Air Quality Objectives

- 2.2.1 The Air Quality Objectives (“AQOs”) established under the *Air Pollution Control Ordinance* (“APCO”) Cap.3.11 are given in **Table 2.1**.

Table 2-1 Hong Kong Air Quality Objectives

POLLUTANT	AVERAGING TIME	PREVAILING AQOs	
		CONCENTRATION LIMIT [NOTE 1], $\mu\text{g}/\text{m}^3$	NO. OF EXCEEDANCE ALLOWED
Sulphur Dioxide ("SO ₂ ")	10-minutes	500	3
	24-hour	50	3
Respirable Suspended Particulates ("RSP" or "PM ₁₀ ")	24-hour	100	9
	Annual	50	N/A
Fine Suspended Particulates ("FSP" or "PM _{2.5} ")	24-hour	50	35
	Annual	25	N/A
Nitrogen Dioxide (NO ₂)	1-hour	200	18
	Annual	40	N/A
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	N/A

Notes:

1. 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.
2. RSP or PM₁₀ means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
3. FSP or PM_{2.5} means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.

Air Pollution Control (Construction Dust) Regulation

- 2.2.2 Enacted under Section 43 of the APCO, the *Air Pollution Control (Construction Dust) Regulation* defines notifiable and regulatory works for achieving the purpose of dust control for a number of activities.

- 2.2.3 The Regulation requires that any notifiable work ^[Ref. #1] shall give advance notice to the Environmental Protection Department (“EPD”), and the contractor shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation. Dust control and suppression measures are also provided in the Schedule.

Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations

- 2.2.4 Enacted under Section 43 of the APCO, the *Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations* stipulate that a prior approval from EPD will be required if the total fuel consumption capacity of any fuel-burning equipment or its chimney on premises to be installed or altered exceeds (a) 25 litres (“L”) of conventional liquid fuel per hour; or (b) 35 kilograms (kg) of conventional solid fuel per hour; or (c) 1,150 megajoules (“MJ”) of any gaseous fuel per hour.

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

- 2.2.5 This Regulation takes effect on 1 June 2015 and requires Non-road Mobile Machinery (“NRMM”), except those exempted, to comply with the prescribed emission standards. As from 1 September 2015, all regulated machines sold or leased for use in Hong Kong must be approved or exempted with a proper label in a prescribed format issued by EPD. Starting from 1 December 2015, only approved or exempted NRMMs with a proper label are allowed to be used in specified activities and locations including construction sites, container terminals and back up facilities, restricted areas of the airport, designated waste disposal facilities and specified processes.

Hong Kong Planning Standards and Guidelines (HKPSG)

- 2.2.6 The minimum buffer distances required between the relevant class of roads and active open spaces are recommended in Chapter 9 of the Environment of *Hong Kong Planning Standards and Guidelines* (“HKPSG”). The relevant buffer distances of HKPSG are summarised in **Table 2-2** for ease of reference.

Table 2-2 HKPSG Minimum Setback Distances

POLLUTANT	TYPE OF ROAD	BUFFER DISTANCE	PERMITTED USES
Road and Highways	Trunk Road and Primary Distributor	>20m	Active and passive recreation use
		3 – 20m	Passive recreational use
		<3m	Amenity areas
	District Distributor	>10m	Active and passive recreational use
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreational use
		<5m	Passive recreational use
	Under Flyovers	-	Passive recreational use

Source: Adapted from Table 3.1 of Chapter 9 Environment of HKPSG.

¹ Notifiable works include site formation, reclamation, demolition of a building, work carried out in any part of a tunnel that is within 100m of any exit to the open air, construction of the foundation of a building, construction of the superstructure of a building and road construction work.

2.3 Background Air Quality

- 2.3.1 The surrounding areas of the Site is generally located at a developed area in Yuen Long, which are surrounded by warehouses, factories, open storages, feed mill, some other industrial uses, and a number of residential blocks located to the west and northwest of the Site.
- 2.3.2 The major road networks at the surrounding of the Site include Castle Peak Road (Ping Shan) located to its south, Ping Ha Road runs along south-north, and then to the north of the Site. On the other hand, Ping Shan Heritage Trail is located to the northwest of the Site and connected to the north of the Site.

2.4 Assessment and Mitigation

Identification of Air Sensitive Receivers (“ASRs”)

- 2.4.1 Based on the Site visit conducted on 24 March 2021 and the information on the survey map, several representative ASRs within an Air Quality Study Area of 500m from the Site boundary are identified, which are listed in **Table 2-3** and shown on **Figure 2-1**.

Table 2-3 Representative ASRs

ASR NO.	DESCRIPTION	LAND USE	GROUND LEVEL (mPD)	APPROX. SHORTEST DISTANCE TO SITE BOUNDARY (m)
A1	Hang Mei Tsuen Sitting-out Area	Recreational	17.5	48
A2	No. 231 Hang Mei Tsuen	Residential	9	33
A3	No. 408 Tong Fong Tsuen	Residential	12.2	13
A4	Block 1, Weslen Garden	Residential	12.9	11
A5	Block 8, Weslen Garden	Residential	12.7	3
A6	No. 370 Ping Shan San Tsuen	Residential	11.4	30
A7	Century Centre	Industrial	13.4	4
A8	Green Orchid Tower 1	Residential	11.7	115
A9	Tong Yan San Tsuen Playground	Recreational	13.9	58
A10	Set Win Automobile Plaza	Industrial	11.8	64

Construction Phase

- 2.4.2 Fugitive dust is the major impact that will be generated during construction activities, such as excavation, stockpiling, earth moving, transferring or handling of dusty materials, site formation, foundation and superstructure of the proposed development. One storey underground carpark and plant rooms will be constructed. Therefore, excavation works and stockpiling are expected in construction stage. With the implementation of mitigation measures mentioned in **paragraph 2.4.3** and **2.4.4**, no adverse air quality including dust impact due to construction stage is anticipated.
- 2.4.3 With the implementation of mitigation measures that are recommended in the *Air Pollution Control (Construction Dust) Regulation*, dust generation can be controlled and significant fugitive dust impact is therefore not anticipated.
- 2.4.4 To avoid adverse dust impact on the air sensitive uses nearby, good practice and dust control measures to be implemented during the construction phase are as follows:

- Provide hard paving on open area, regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.
- The working area of any excavation or earth moving operation shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- Frequent watering for particularly dusty areas and areas close to ASRs.
- Any stockpile of dusty materials shall 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.
- Where possible, dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition.
- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.
- Vehicle washing facilities including a high-pressure water jet shall be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcore.
- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.
- Spray water on the surface of façade before and during grinding work.
- Equip vacuum cleaner on grinder for façade grinding work as far as practicable.
- Main haul road shall be sprayed with water so as to maintain the entire road surface wet. Imposition of speed controls for vehicles on site haul roads and confine haulage and delivery vehicles to designated roadways inside the site.
- The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit shall be kept clear of dusty materials.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.
- Every stock of more than 20 bags of cement or dry Pulverised Fuel Ash (“PFA”) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides.
- Plan the site layout to locate machinery and dust causing activities, including haul roads and stockpiling areas away from receptor as far as possible.
- Erect solid screens or barriers around dusty activities as far as practicable.
- Where possible, connect the construction plant and equipment to mains electricity supply and avoid use of diesel generator and diesel-powered equipment to minimize air quality impact arising from the equipment.

2.4.5 The construction contractors shall also provide regular maintenance of any plant and equipment so as to minimise gaseous emissions.

- 2.4.6 With proper dust control measures as described above, significant fugitive dust impacts during the construction phase are not anticipated.

Operation Phase

- 2.4.7 The potential air quality impacts may arise during the operation phase of the Proposed Development include vehicular emissions from off-site traffic and other existing industrial emissions within 500m Study Area.

Vehicular Emissions from Off-site Traffic

- 2.4.8 Castle Peak Road (Ping Shan), Ping Ha Road, Unnamed Road Ping Kwai Road, Ping Yeung Lane, Ping Shan Nam Pak Road and Ping Shan Shuk Lam Road shown on **Figure 2.2** are the public roads closest to the Site. With reference to *The Annual Traffic Census (ATC) 2020* published by the Transport Department (“TD”) in September 2021, Castle Peak Road (Ping Shan) is classified as Rural Trunk (“RT”) Road (Station No. 5252). Considering the characteristics of RT are the same as those of Urban Trunk Road in accordance with Section 3.2 Road Types of Volume 2 – Highway Design Characteristics of the *Transport Planning and Design Manual* (“TPDM”), a buffer distance of 20m for Trunk Road recommended by the HKPSG should be adopted for Castle Peak Road (Ping Shan).
- 2.4.9 For Ping Ha Road, it is classified as Rural Road (“RR”) according to the ATC 2020. Considering the characteristics of RR are similar to those of Local Distributor of Urban Road Types in accordance with Section 3.2 Road Types of Volume 2 – Highway Design Characteristics of the TPDM, a buffer distance of 5m recommended by the HKPSG should be adopted for Ping Ha Road.
- 2.4.10 For the other roads including the Unnamed Road to the east of the Site, Ping Kwai Road, Ping Yeung Lane, Ping Shan Nam Pak Road and Ping Shan Chuk Lam Road mentioned in **paragraph 2.4.8** and shown on **Figure 2.2**, the road types of these roads are not mentioned in ATC 2020. After reviewing the natures of the roads, it is considered that Ping Kwai Road and Ping Yeung Lane are RR while Ping Shan Chuk Lam Road, Ping Shan Nam Pak Road and the Unnamed Road are Feeder Road. The interpreted road types were received with no comment from the TD shown in **Appendix A**.
- 2.4.11 Similar to Ping Ha Road mentioned in **paragraph 2.4.9** above, Ping Kwai Road and Ping Yeung Lane are RR. Therefore, the buffer distance for Ping Kwai Road and Ping Yeung Lane should be 5m which is the same as that for Local Distributor mentioned in **Table 2-2**.
- 2.4.12 For the Unnamed Road, Ping Shan Nam Pak Road and Ping Shan Chuk Lam Road, they are Feeder Roads which are roads connecting villages or remote settlements to RR, i.e., Ping Ha Road, as described in **Appendix A**. Therefore, these three roads are not considered to be similar to RR and Local Distributor. There is no specific buffer distance requirement for Feeder Road recommended in Table 3.1, Chapter 9 of the HKPSG as re-provided in **Table 2-2**. Nevertheless, a buffer distance of 5m for the feeder roads, i.e., the Unnamed Road, Ping Shan Nam Pak Road and Ping Shan Chuk Lam Road, is recommended.
- 2.4.13 The buffer distance requirements between air sensitive uses and the major roads in the vicinity of the Site are summarised in **Table 2.4**.

Table 2.4: The Buffer Distance Requirements between Air Sensitive Uses and Roads in the Vicinity of the Site

ROAD NAME	ROAD TYPE	BUFFER DISTANCE REQUIREMENTS (m)	COMPLY WITH BUFFER DISTANCE REQUIREMENTS?
Castle Peak Road – Ping Shan	Rural Trunk Road	20	Yes with the provision of buffer zone shown on Figure 2-2
Ping Ha Road	Rural Road	5	Yes with the provision of buffer zone shown on Figure 2-2
Ping Kwai Road	Rural Road	5	Yes
Ping Yeung Lane	Rural Road	5	Yes
Ping Shan Chuk Lam Road	Feeder Road	5	Yes
Ping Shan Nam Pak Road	Feeder Road	5	Yes
Unnamed Road	Feeder Road	5	Yes with the provision of buffer zone shown on Figure 2-2

- 2.4.14 As illustrated on **Figure 2-2**, most of the Site area can satisfy the buffer distances summarised in **Table 2.4**. For the Site areas within the buffer distances, buffer zones are recommended for the Proposed Development as shown on **Figure 2-2**. No air sensitive uses, including openable windows and fresh air intake of mechanical ventilation, shall be located within the buffer zones.
- 2.4.15 With the provision of the buffer zones (shown in **Figure 2-2**) in which no air sensitive uses, including any openable windows or fresh air intake of mechanical ventilation, shall be located, no adverse air quality impact on the Site from traffic emission is anticipated.

Industrial emissions

- 2.4.16 As observed from the site visits on 13 April 2021 and 7 March 2022, the following industrial activities with potential emissions were identified as follows:
- (1). A Concrete Batching Plant (“CBP”) operated by Hong Kong Concrete Co. Ltd at the junction of San Fui Street and San Hi Tsuen Street was identified, which is located at about 210m away from the Site boundary. As such, the buffer distance of at least 100m between CBP and air sensitive uses recommended in Section 3.3.10 of Chapter 9 of HKPSG will be complied with for the Proposed Development. No adverse air quality impact from the CBP on the Proposed Development is therefore anticipated.
 - (2). A chimney owned by Wing Kai Destruction and Recycle Co. located at about 160m away from the south of the Site which was assessed in an approved EIA report “*Housing Sites in Yuen Long South – Investigation*” in 2017 (EIA Reference No.: AEIAR-215/2017, thereafter namely the Approved EIA Report) was observed during the Site visit on 13 April 2021. During the Site visit, no emission from the chimney was observed. According to the register of waste collector of EPD, Wing Kai Destruction and Recycle Co. is a chemical waste collector licensed under the *Waste Disposal (Chemical Waste) (General) Regulation* ^[note 2]. In order to

² With reference to EPD’s website <https://cd.epic.epd.gov.hk/EPICDI/chemicalwaste/download/search/> on 23 August 2021.

understand the status of the chimney, the relevant representative of this company was approached on 13 August 2021. It was verbally informed that the chimney was no longer in operation for chemical waste collection and recycling which is line with the Site observation without emission from the chimney. Therefore, the chimney of Wing Kai Destruction and Recycle Co. is considered to be inactive.

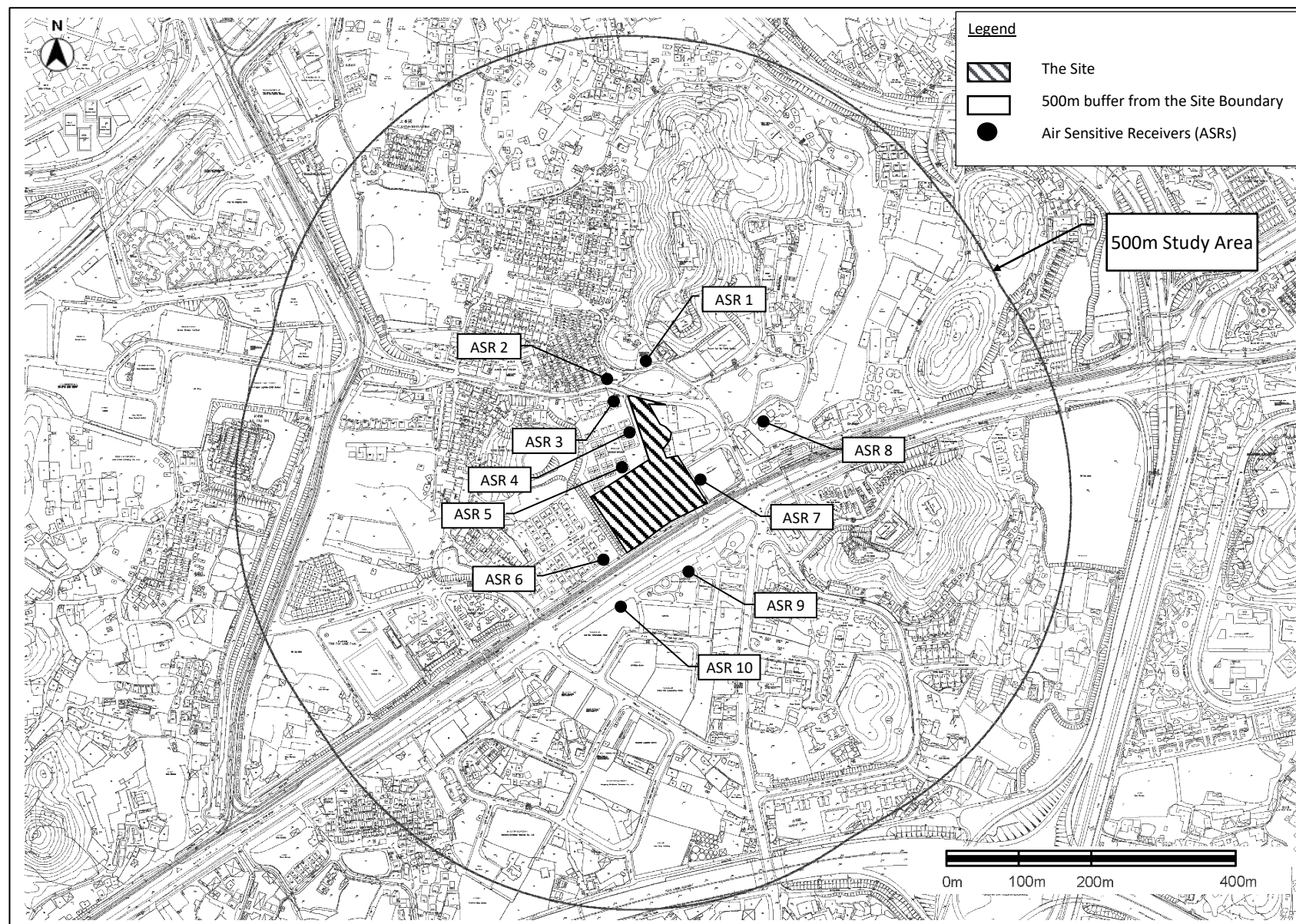
(3). A chimney was observed at Wah On Tyres Retreading Co. to the north of Wing Kai Destruction and Recycle Co.. Based on the Site observations on 13 April 2021 and 7 March 2022, no emission from the chimney of Wah On Tyres Retreading Co. was observed. Therefore, it is considered that the aforementioned chimney at Wah On Tyres Retreading Co. should be inactive.

- 2.4.17 Apart from the aforementioned CBP and chimneys, no other active chimney or dusty use such as CBP is identified within the buffer distances recommended in the HKPSG.
- 2.4.18 Since no active chimney and/or dusty use is identified within the buffer distances from the Proposed Development, no adverse air quality impact arising industrial uses on the Proposed Development is anticipated.

2.5 Conclusion

- 2.5.1 With the implementation of the recommended mitigation measures and good site practice, adverse air quality impacts during the construction phases are not anticipated.
- 2.5.2 No adverse air quality impact on the proposed development from industrial emission and vehicular emissions is anticipated with the implementation of the proposed mitigation measures during the operation phase. Meanwhile, the operation of the Proposed Development will not cause any adverse air quality impact on the surrounding air sensitive uses.
- 2.5.3 Overall, therefore, no adverse air quality impacts are anticipated during the construction and operation phases of the Site.

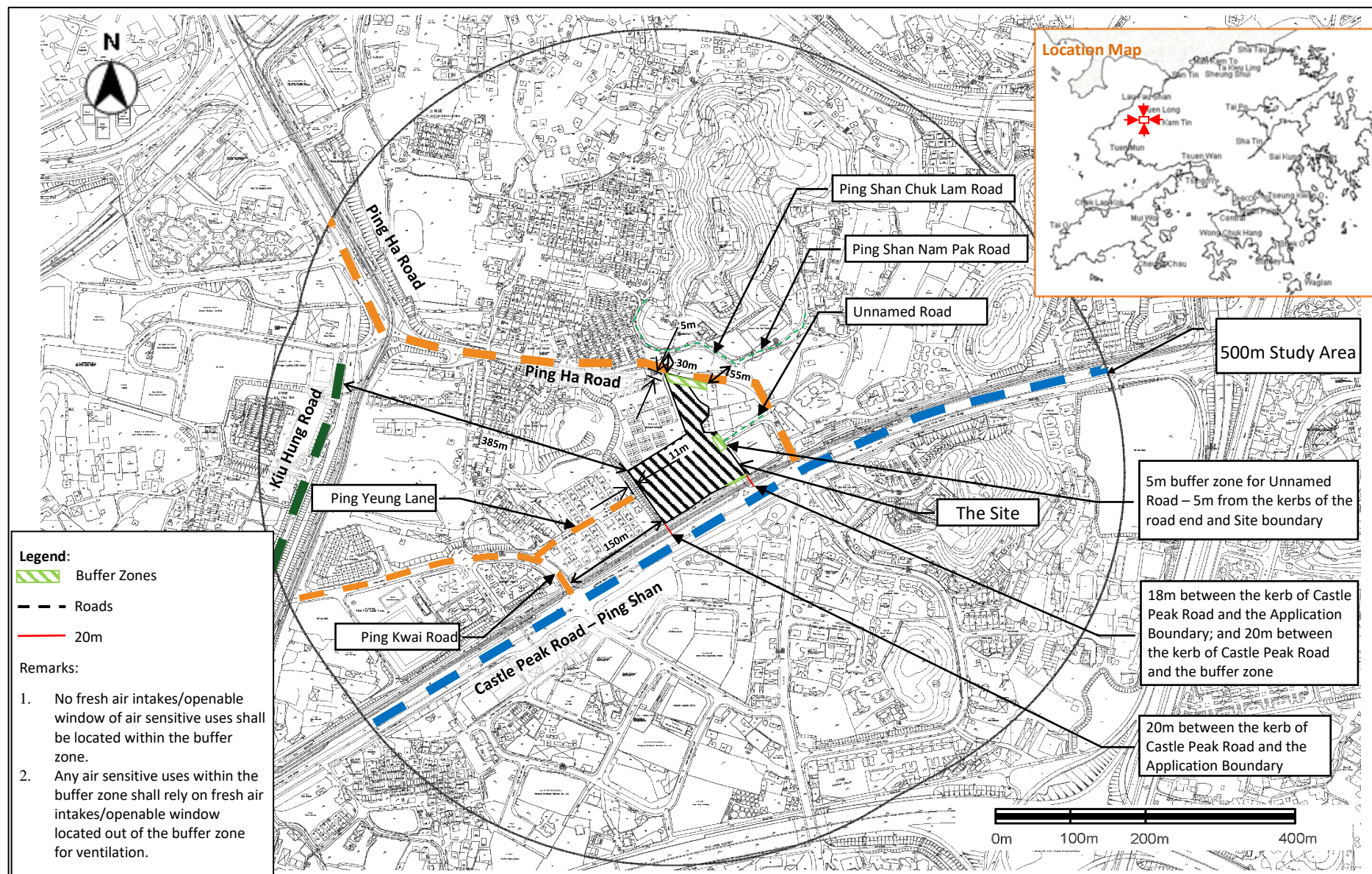
Figure 2-1 Locations of Representative Air Sensitive Receivers

**D01 ENVIRONMENTAL ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

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Figure 2-2 Shortest Horizontal Distances Between Nearby Roads and Site Boundary



3 NOISE IMPACT

3.1 Environmental Legislation and Standards

Noise Control Ordinance (Cap. 400)

- 3.1.1 The main piece of legislation controlling environmental noise nuisance is the *Noise Control Ordinance* (“NCO”). The NCO enables regulations and Technical Memoranda (“TMs”) to be made, which introduce detailed control criteria, measurement procedures and other technical matters. The relevant TMs include:
- Technical Memorandum on Noise from Percussive Piling (“PP-TM”).
 - Technical Memorandum on Noise from Construction Work other than Percussive Piling (“GW-TM”).
 - Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (“IND-TM”).
- 3.1.2 The Site falls within the Designated Area (“DA”) in accordance with EPD’s Plan No. EPD/AN/NT-01 for Yuen Long, Tin Shui Wai, Mai Po, Shek Kong and Kwu Tung. Therefore, the *Technical Memorandum on Noise from Construction Work in Designated Area* (“DA-TM”) is applicable.
- 3.1.3 Construction noise during noise control restricted hours (for all days 1900-0700 of the next days and all times on general holidays or Sundays) is governed by the PP-TM and GW-TM
- 3.1.4 In addition, the Contractor shall comply with the following requirements under the NCO:
1. Hand-held breakers having a mass of above 10kg and any air compressor capable of supplying compressed air at 500kPa or above must be fitted with a Noise Emission Label issued under the *Noise Control (Hand Held Percussive Breakers) Regulation* and *Noise Control (Air Compressors) Regulation* of NCO.
 2. Construction Noise Permit (“CNP”) must be applied by the Contractor from EPD for any percussive piling at any time or any other construction activities conducted within restricted hours.
- 3.1.5 There is no statutory control for noise arising from construction activities (other than percussive piling) during normal working hours (07:00 to 19:00 from Monday to Saturday, not including general holidays). Nevertheless, *Professional Persons Environmental Consultative Committee (ProPECC) Practice Note PN2/93 Noise from Construction Activities – Non-statutory Controls* (ProPECC PN2/93) recommends a guideline to minimise the potential construction noise impact during normal hours, the $L_{eq(30min)}$ should not exceed 75dB(A) at dwelling; 70dB(A) at School except examination periods, at which the noise level should not over 65dB(A).
- 3.1.6 Fixed noise during the site operation is governed under IND-TM. Table 2 of IND-TM stipulated the day, evening and night time Acceptable Noise Levels (“ANLs”) for Noise Sensitive Receiver (“NSR”) according to its corresponding Area Sensitivity Rating (“ASR”), which is determined by Influencing Factors (“IFs”) in accordance with the IND-TM.
- 3.1.7 Appropriate Area Sensitivity Rating (“ASR”) shall be properly determined in accordance with Table 1 of IND-TM. Any NSR shall, irrespective of Table 1, be assigned an ASR of “C” if it is within 100m of a zone designated as “Industrial” or “Industrial Estate” on a statutory Outline Zoning Plan, or an ASR of “B” if it is between 100m and 250m from such a zone, except in case where Table indicates an ASR of “C”. These are summarised in **Table 3-1**.

Table 3-1 Area Sensitivity Ratings

TYPE OF AREA CONTAINING NSR	DEGREE TO WHICH NSR IS AFFECTED BY IF		
	NOT AFFECTED	INDIRECTLY AFFECTED	DIRECTLY AFFECTED
i) Rural area, including country parks 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	C	C
iv) Area other than those above	B	B	C

Note:

1. “country park” means an area that is designed as a country park pursuant to Section 14 of the *Country Parks Ordinance*;
2. “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;
3. “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;
4. “not affected” means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR;
5. “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.

3.1.8 The ANLs are summarised in **Table 3-2**.

Table 3-2 Acceptable Noise Levels

TIME PERIOD	ANL, dB(A)		
	ASR “A”	ASR “B”	ASR “C”
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

3.1.9 In order to determine the ANL for the Proposed Development, it is essential to identify the type of area and whether the Proposed Development will be affected by IF.

3.1.10 The Site is located in residential areas with some other industrial uses nearby, i.e., Industrial Residential (“I/R”) interface. The Site should not be classified as rural area, low density residential area or urban area. Its type should therefore be Type (iv) “Area other than the above”.

3.1.11 There is an industrial zone located opposite to the Site and separated by the Castle Peak Road – Ping Shan Section. According to IND-TM, the identified representative NSRs located within industrial zone or within 100m from the industrial zone is considered as ASR “C” whereas NSRs located between 100m and 250m is considered as ASR “B”. The location of industrial zone, 100m from industrial zone and 250m from industrial zone were shown on **Figure 3-1**.

Road Traffic Noise Criteria

3.1.12 As recommended in Table 4.1 of Chapter 9 Environment of the *Hong Kong Planning Standards and Guidelines* (“HKPSG”), the standards of road traffic noise in terms of $L_{10(1-hr)}$ for the following uses relying on opened windows for ventilation are:

- All domestic premises including temporary housing accommodation (residential): 70 dB(A).
- Hotels and hostels: 70 dB(A).
- Offices: 70 dB(A).
- Educational institutions including kindergartens, child care centres and all others where unaided voice communication is required (school): 65 dB(A).
- Places of public worship and courts of law: 65 dB(A).
- Hospitals, clinics, convalescence homes and residential care homes for the elderly: 55 dB(A).

3.1.13 HKPSG recommend the following noise criteria for fixed noise sources:

- 5 dB(A) below the appropriate ANLs of IND-TM; or
- Lower than the prevailing background noise levels if the background is 5 dB(A) lower than the ANLs.

Rail Noise Criteria

3.1.14 Table 4.1 of Chapter 9 of the HKPSG recommends two noise criteria for rail noise:

1. $L_{eq}(24\text{-hour})$ of 65dB(A); and
2. $L_{max}(2300 - 0700)$ of 85dB(A).

3.1.15 Furthermore, with reference to Table 1A of the *Technical Memorandum under Environmental Impact Assessment Ordinance* ("EIAO-TM"), rail noise is under the control of the NCO and shall comply with the ANLs laid down in the IND-TM. There is an industrial zone located opposite to the Site and separated by Castle Peak Road – Ping Shan Section. According to IND-TM, the identified representative NSRs located within industrial zone or within 100m from the industrial zone is considered as ASR "C" whereas NSRs located between 100m and 250m is considered as ASR "B". The location of industrial zone, 100m from industrial zone and 250m from industrial zone were shown on **Figure 3-1**.

3.2 Potential Noise Impact during Construction

3.2.1 Construction activities in particular with the use of Powered Mechanical Equipment (PME) and the vehicle movement within the Site are the major noise sources generated during the construction phase.

3.2.2 Construction shall be carried out during non-restricted hours as far as practicable. The mitigation measures recommended in ProPECC PN2/93 should be implemented where applicable. In addition, the following measures and on-site practice are recommended in order to minimise the potential construction noise impacts during daytime:

- Quiet PME and construction method should be adopted if possible.
- The Contractor shall devise and execute working methods to minimise the noise impacts on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented.
- Switch off idling equipment.
- Regular maintenance of equipment.
- Fit muffler or silencer for equipment.
- Noisy equipment and noisy activities should be located as far away from the NSRs as is practical.

- Use quiet construction method, e.g. use saw-cut or hydraulic crusher instead of excavator-mounted percussive breaker.
- PME should be kept to a minimum and the parallel use of noisy equipment / machineries should be avoided.
- Erect noise barriers or noise enclosure for the PME if appropriate.
- Implement good house-keeping and provide regular maintenance to the PME.
- Spot check resultant noise levels at nearby NSRs.

3.2.3 If construction work involving the use of PME will be required during restricted hours, a CNP shall be applied for under the NCO. The noise criteria and assessment procedures for obtaining a CNP are specified in GW-TM.

3.2.4 In addition, the EPD's *Recommended Pollution Control Clauses* ("RPCC") for Construction Contract in COP should be incorporated in the relevant works contract. The RPCC are generally good engineering practice to minimize inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements are summarised as follows:

- The Contractor shall observe and comply with the NCO and its subsidiary regulation.
- The Contractor shall ensure that all plant and equipment to be used on the Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings and shields, acoustic sheds or screen or other means, to avoid disturbance to nearby noise sensitive receivers.
- For carrying out any construction work other than percussive piling during the time period from 0700 to 1900 hours on any day not being a general holiday (including Sundays), the Contractor shall comply with the following requirements.
 - The noise level measured at 1m from most affected external façade of the nearby noise sensitive receivers from the construction works alone during any 30-minute period shall not exceed an equivalent sound level ("L_{eq}") of 75dB(A).
 - The noise level measured at 1m from most affected external façade of the nearby schools from the construction works alone during any 30-minute period shall not exceed an equivalent sound level (L_{eq}) of 70dB(A) [65dB(A) during school examination period]. The Contractor shall liaise with the schools and/or the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract.
 - Should the limits stated in the above be exceeded, the construction shall stop and shall not recommence until appropriate measures acceptable to the Engineer that are necessary for compliance have been implemented.
 - The Contractor shall adopt, where necessary, the use of Quiet Construction Equipment ("QCE") and/or shall employ the quietist practicable working methods when carrying out demolition works, and /or road opening works during restricted hours.
- Before the commencement of any work, the Engineer may require the methods of working, plant equipment and sound-reducing measures to be used on the Site to be made available for trial demonstration inspection and approval to ensure that they are suitable for the project.
- The Contractor shall devise, arrange methods of working and carry out the Works in such a manner so as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.
- Notwithstanding the requirements and limitations set out in the bullet above and subject to compliance with the second and fifth bullet above, the Engineer may upon application in writing by the Contractor, allow the use of equipment and the carrying out of any

construction activities for any duration provided that the Engineer is satisfied with the application which, in Engineer's opinion, is considered to be of absolute necessity and adequate noise insulation has been provided to the schools to be affected, or of emergency nature, and not in contravention with the Noise Control Ordinance in any respect.

- The Contractor shall, when necessary, apply for a construction noise permit in accordance with the Noise Control (General) Regulations prior to the commencement of the relevant part(s) of the works, display the permit as required and provide a copy to the Engineer.
- Measures that are to be taken to protect adjacent noise sensitive receivers, if necessary, shall include, but not be limited to, adequate noise barriers. The barriers shall be of substantial construction and designed to reduce transmission of noise (simple plywood hoarding will not be sufficient). The barriers shall be surmounted with baffle boxes designed to reduce transmission of noise. The barriers shall be designed to BS 5228(1984). The location and details of the barriers shall be submitted to the Engineer for approval before works commence adjacent to schools and other noise sensitive receivers.

3.2.5 Moreover, the construction programme, methods adopted and plant inventory for construction works, and the noise mitigation measures shall be proposed by the Contractor of the Proposed Development in the future. Practicable mitigation measures such as noise barriers/enclosures, quieter construction plants, phasing of construction works, etc. will be provided, implemented and maintained by the Contractor for the Proposed Development.

3.2.6 With the provision, implementation and maintenance of the abovementioned mitigation measures, adverse construction noise impact is not anticipated.

3.3 Fixed Noise Impacts during Operation

3.3.1 The surrounding areas of the Site include warehouses, factories, open storages, feed mill, some other industrial uses, and a number of residential blocks located to the west and northwest of the Site.

3.3.2 Based on the Site visit conducted on 13 April 2021, there is no direct line of sight from the Site to any existing off-site fixed noise source within 300m study area of the Site. The nearest fixed noise source is Century Centre located to west the Site, which is a furniture workshop. Based on the observation from a site visit on 16 August 2021, the workshop is only in operation during day time and it closes after 6:30pm. The potential noise impacts arising from the operation of workshop at the nearest on-site NSR of the Site shown on **Figure 3-2** were estimated and is summarised in **Table 3-3** below, which would comply with noise criterion of 65dB(A) of ASR "B". As such, no adverse fixed noise impact from the surroundings on the Site is anticipated.

Table 3-3 Summary of Predicted Noise Impact from the Operation of Century Centre at the Site

ITEM OF PME	SWL, dB(A)	HORIZONTAL DISTANCE (m)	DISTANCE CORRECTION, dB(A)	SCREENING EFFECT, dB(A)	CNL, dB(A)	ANL, dB(A)
Saw (CNP201)	108	48	42	10	62	65
Forklift (Other PME)	104					

3.3.3 For the fixed plant noise impacts that will be generated within the Proposed development, most of Mechanical and Electrical ("M&E") equipment such as emergency generators, water pumps including Fire Services ("FS") pumps and transformer of the Proposed Development will be enclosed or located within the building structures. It is anticipated that the noise impacts from these noise sources to the off-site NSRs will be relatively low and insignificant.

- 3.3.4 Split-type air conditioners and/or window-type air conditioners will be selected and installed at the residential units and club house. The noise from the aforementioned types of air conditioners is considered to be minimal. Therefore, no adverse noise impact arising from the aforementioned air conditioners is anticipated.
- 3.3.5 The guidance of “*Good Practices on Ventilation System Noise Control*” and “*Good Practices on Pumping System Noise Control*” issued by the Environmental Protection Department (“EPD”) shall be referred to. The fixed noise sources within the Proposed Development will be designed to comply with the HKPSG standards as stipulated in **paragraph 3.1.13**. No adverse noise impact arising from fixed sources of the Proposed Development on the surrounding NSRs is anticipated.

3.4 Traffic Noise Impact Assessment (“TNIA”) during Operation

Assessment Methodology

Noise Prediction Methodology

- 3.4.1 The peak hour road traffic noise levels have been predicted using a computer noise model, RoadNoise, which mainly follows the prediction procedures of the UK Department of Transport’s *Calculation of Road Traffic Noise* (“CRTN”), as recommended in Chapter 9 Environment of HKPSG.

Traffic Forecast

- 3.4.2 The tentative operation of the Proposed Development will be in 2027. The maximum traffic projections within 15 years upon operation of the Proposed Development in 2042 is therefore adopted. The traffic forecast data adopted in the TNIA was based on the projected peak hourly traffic flows in 2042. All road sections situated within 300m from the boundary of the Site have been considered. Traffic forecasts provided by the Project Traffic Consultant were adopted to assess the traffic noise impact at the Site. The traffic forecast data was submitted to the Transport Department (“TD”) and no comment was received on the traffic forecast by TD. The TD’s endorsement letter on the traffic forecast is shown in **Appendix A**.

Noise Sensitive Receivers (“NSRs”) for TNIA

- 3.4.3 The noise sensitive uses e.g. dining rooms and dormitories of the RCHE, living rooms and bedrooms of the residential buildings are considered to be NSRs of TNIA. **As advised by the Applicant, there is no diagnostic room/wards in the proposed RCHE.**
- 3.4.4 These NSRs will be provided with prescribed windows for natural ventilation complying with the *Building (Planning) Regulations, Cap 123* (“B(P)R”). The noise standards stipulated in the HKPSG are applicable to noise sensitive uses which rely on opened windows for ventilation. Thus, Assessment Points (“APs”) for NSRs are assigned to these prescribed windows.
- 3.4.5 The APs were all taken to be 1m from the exterior façade of opened windows and 1.2m above the floor of the APs as shown on **Figure 3-3 to Figure 3-8**.

Assessment Result - Unmitigated Scenario

- 3.4.6 Unmitigated Scenario is the original design layout without any mitigation measures including 2.3m high solid fence wall to be located to the south of the Site near Castle Peak Road. The predicted road traffic noise levels for base scenario are detailed in **Appendix B** and summarised in **Table 3-4**.

Table 3-4 Summary of Unmitigated Scenario Traffic Noise Assessment Results

TOWER/ RCHE	NO. OF UNITS	NO. OF UNITS WITH NOISE EXCEEDANCE	NOISE LEVEL (L ₁₀ (1-hr), dB(A))	NOISE CRITERIA (L ₁₀ (1-hr), dB(A))	COMPLIANCE (%)
Tower 1	396	210	54 – 77	70	47
Tower 2	275	8	45 – 71		97
Tower 3	170	102	32 – 77		40
RCHE	40	7	63 – 72		83

Proposed Traffic Noise Mitigation Measures for the Proposed Redevelopment

- 3.4.7 From the results as shown in **Table 3-3**, a number of units have exceedances of traffic noise levels under the Unmitigated Scenario.
- 3.4.8 With reference to **two precedent cases and Practice Note on Application of Acoustic Windows (Baffle Type) in Planning Residential Developments against Road Traffic Noise Impact** and considering the differences of room sizes, two types of acoustic window (baffle type) installed with sound absorptive materials (“SAM”) are proposed to be installed at NSRs with exceedances of noise levels, in order to mitigate the noise impacts arising from traffic noise impacts. The locations of the proposed acoustic window (baffle type) are shown on **Figure 3-9**.
- 3.4.9 The typical design of acoustic window (baffle type) and the calculation of relative noise reduction are shown in **Appendix C**. According to the calculation, the proposed acoustic window (baffle type) with SAM can provide relative noise reduction of 2-7dB(A). **Based on the actual design/layout during the detailed design stage, the Applicant of the Proposed Development have committed to provide a Noise Impact Assessment (“NIA”) Report to review the noise impact submitted to the EPD for agreement. The NIA shall ensure that the proposed mitigation measures are fit-for-purpose so that the potential road traffic noise issue can be addressed.**

Schedule of Mitigation Measures

- 3.4.10 The proposed noise mitigation measures are shown on **Figure 3-9** and listed in **Table 3-5** below. With the implementation of the proposed noise mitigation measures, the predicted road traffic noise levels at all NSR would comply with the noise criteria of 70 dB(A) as presented in **Appendix B** and summarised in **Table 3-6**. The overall noise compliance rate of 100% is achieved.

Table 3-5 Schedule of Road Traffic Noise Mitigation Measures

MITIGATION MEASURES	DESCRIPTION			
For Room Size>7.2m²: Type 1: Acoustic Windows (Baffle Type) Gap Width: 175mm Overlapping Length: 340mm	Tower 1		Tower 2	
	NSR ID	Floor No.	NSR ID	Floor No.
	T1-G1	17/F-18/F	T2-O1	9/F-11/F
	T1-G3	14/F-16/F	T2-O3	11/F
	T1-G4	17/F-18/F	Tower 3	
	T1-H2	11/F-18/F		
	T1-I1	2/F-18/F		
	T1-I2	1/F-18/F		
	T1-J2	1/F-18/F		
	T1-K1	1/F-18/F		
	T1-K3	1/F-18/F		
	T1-L1	1/F-18/F		
	T1-L2	1/F-18/F		
	T1-M2	1/F-18/F		
			NSR ID	Floor No.
			T3-F1	8/F-10/F
			T3-F2	9/F-10/F
			T3-F3	10/F
			T3-J1	6/F-10/F
			T3-K1	5/F-10/F
			T3-K3	4/F-10/F
			T3-L1	6/F-10/F

MITIGATION MEASURES		DESCRIPTION																																																				
		T1-N1	1/F-18/F		T3-M1	3/F-10/F																																																
		T1-O1	1/F-18/F		T3-M4	1/F-10/F																																																
		T1-O3	1/F-18/F		T3-N1	1/F-10/F																																																
		T1-P1	1/F-18/F		T3-O2	6/F-10/F																																																
		T1-Q1	1/F-18/F		T3-P1	1/F-7/F																																																
		T1-R1	3/F-16/F		T3-P2	1/F-7/F																																																
		T1-R3	4/F-16/F		T3-Q1	1/F-7/F																																																
		T1-S2	4/F-5/F, 15/F-16/F		T3-Q2	1/F-7/F																																																
		T1-T1	5/F-16/F		T3-R1	1/F-7/F																																																
		T1-T3	6/F-14/F		T3-S1	1/F-7/F																																																
		T1-U2	8/F-11/F		T3-T1	1/F-7/F																																																
					T3-U1	1/F-7/F																																																
					T3-U2	1/F-7/F																																																
					T3-V1	1/F-7/F																																																
				T3-V2	1/F-7/F																																																	
<div>For Room Size<7.2m²:</div> <div>Type 2: Acoustic Windows (Baffle Type)</div> <div>Gap Width: 100mm</div> <div>Overlapping Length: 100mm</div>	<div>Tower 1</div> <table><tr><th>NSR ID</th><th>Floor No.</th></tr><tr><td>T1-G2</td><td>16/F</td></tr><tr><td>T1-G5</td><td>17/F-18/F</td></tr><tr><td>T1-H1</td><td>13/F-18/F</td></tr><tr><td>T1-J1</td><td>1/F-18/F</td></tr><tr><td>T1-K2</td><td>1/F-18/F</td></tr><tr><td>T1-M1</td><td>1/F-18/F</td></tr><tr><td>T1-N2</td><td>1/F-18/F</td></tr><tr><td>T1-O2</td><td>1/F-18/F</td></tr><tr><td>T1-Q2</td><td>1/F-18/F</td></tr><tr><td>T1-R2</td><td>3/F-16/F</td></tr><tr><td>T1-S1</td><td>4/F-5/F, 15/F-16/F</td></tr><tr><td>T1-T2</td><td>6/F-15/F</td></tr><tr><td>T1-U1</td><td>7/F-12/F</td></tr></table>		NSR ID	Floor No.	T1-G2	16/F	T1-G5	17/F-18/F	T1-H1	13/F-18/F	T1-J1	1/F-18/F	T1-K2	1/F-18/F	T1-M1	1/F-18/F	T1-N2	1/F-18/F	T1-O2	1/F-18/F	T1-Q2	1/F-18/F	T1-R2	3/F-16/F	T1-S1	4/F-5/F, 15/F-16/F	T1-T2	6/F-15/F	T1-U1	7/F-12/F	<div>Tower 2</div> <table><tr><th>NSR ID</th><th>Floor No.</th></tr><tr><td>T2-N3</td><td>7/F-11/F</td></tr><tr><td>T2-O2</td><td>10/F-11/F</td></tr></table>		NSR ID	Floor No.	T2-N3	7/F-11/F	T2-O2	10/F-11/F	<div>Tower 3</div> <table><tr><th>NSR ID</th><th>Floor No.</th></tr><tr><td>T3-A1</td><td>1/F-6/F</td></tr><tr><td>T3-K2</td><td>4/F-10/F</td></tr><tr><td>T3-M2</td><td>1/F-10/F</td></tr><tr><td>T3-M3</td><td>1/F-10/F</td></tr><tr><td>T3-N2</td><td>1/F-10/F</td></tr><tr><td>T3-O1</td><td>1/F-7/F</td></tr></table>		NSR ID	Floor No.	T3-A1	1/F-6/F	T3-K2	4/F-10/F	T3-M2	1/F-10/F	T3-M3	1/F-10/F	T3-N2	1/F-10/F	T3-O1	1/F-7/F
	NSR ID	Floor No.																																																				
	T1-G2	16/F																																																				
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	T1-K2	1/F-18/F																																																				
	T1-M1	1/F-18/F																																																				
	T1-N2	1/F-18/F																																																				
	T1-O2	1/F-18/F																																																				
	T1-Q2	1/F-18/F																																																				
	T1-R2	3/F-16/F																																																				
	T1-S1	4/F-5/F, 15/F-16/F																																																				
	T1-T2	6/F-15/F																																																				
T1-U1	7/F-12/F																																																					
NSR ID	Floor No.																																																					
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T3-K2	4/F-10/F																																																					
T3-M2	1/F-10/F																																																					
T3-M3	1/F-10/F																																																					
T3-N2	1/F-10/F																																																					
T3-O1	1/F-7/F																																																					
<div>For Room Size=55m²:</div> <div>Type 3: Acoustic Windows (Baffle Type)</div> <div>Gap Width: 100mm</div> <div>Overlapping Length: 250mm</div>	<div>RCHE</div> <table><tr><th>NSR ID</th><th>Floor No.</th></tr><tr><td>R1</td><td>1-5/F</td></tr><tr><td>R2</td><td>3-5/F</td></tr></table>					NSR ID	Floor No.	R1	1-5/F	R2	3-5/F																																											
	NSR ID	Floor No.																																																				
	R1	1-5/F																																																				
	R2	3-5/F																																																				

Table 3-6 Summary of Mitigated Scenario Traffic Noise Assessment Results

TOWER/ RCHE	NO. OF UNITS	NO. OF UNITS WITH NOISE EXCEEDANCE	NOISE LEVEL (L ₁₀ (1-hr), dB(A))	NOISE CRITERIA (L ₁₀ (1-hr), dB(A))	COMPLIANCE (%)
Tower 1	396	0	54 – 70	70	100
Tower 2	275	0	45 – 70		100
Tower 3	170	0	32 – 70		100
RCHE	40	0	63 – 70		100

3.5 Railway Noise Impacts during Operation

Assessment Methodology

Noise Sources

- 3.5.1 The key impact from the railway would be the train induced airborne noise of at grade section of Light Rail Train (“LRT”) located at the vicinity of the Project area. The major noise source identified from the LRT operation is rolling noise from train wheel and rail interaction. Noise from air conditioning unit on top of train cars was considered as insignificant as compared with the rolling noise during LRT operation. Therefore, noise from air conditioning units were not taken into account for Railway Noise Assessment.
- 3.5.2 Assumptions of relevant parameters adopted on railway noise assessment from LRT made reference to the approved EIA Reports listed below:
- Register No.: AEIAR-027/1999 - “Light Rail Transit (LRT) Extension in Tin Shui Wai Reserve Zone and Grade Separation of the LRT with Pui To Road and Tsing Lun Road in Tuen Mun” in 2000, and
 - Register No.: AEIAR-248/2016 – “Hung Shui Kiu New Development Area” in 2016

Noise Sensitive Receivers (NSRs) for Railway Noise Impacts

- 3.5.3 The NSRs of the proposed development, which are located closest and/or at larger view angle to the light rail may be affected by the railway noise, have been identified to evaluate the railway noise impact. The first tier NSRs (i.e. Proposed Tower 1 and Tower 3) from the light rail track will be most affected by the railway noise as compared with that at Tower 2 as it is further away from the light rail. Therefore, NSRs at Tower 1 and Tower 3 have been identified as the representative NSRs for the railway noise impact assessment. The locations and sensitive uses of these NSRs are shown on **Figure 3-10** and summarised in **Table 3-7**.

Table 3-7 Identified Representative NSRs for Rail Noise Assessment

NSR ID	Tower	No. of floors	ASRs	Assessment Criteria			
				L _{max} dB(A)	L _{eq} (24 hr) dB(A)	ANL, L _{eq} (30 min) dB(A)	
						Day & Evening Time	Night Time
RN1	Tower 1	18	C	85	65	70	60
RN2	Tower 3	8	B			65	55
RN3	Tower 3	8	B			65	55
RN4	Tower 3	10	B			65	55
RN5	Tower 1	18	B			65	55
RN6	Tower 1	16	B			65	55

Assessment Assumption

- 3.5.4 Railway noise assessment was conducted under the different scenarios including normal, abnormal, transient and emergency operation. The Sound Exposure Level (“SEL”) of the LRT was evaluated from the L_{max} with reference to the approved EIA reports as mentioned in **paragraph 3.5.2**. Some parameters of railway noise assessment as advised by MTR could be referred to **Appendix F**. The railway track within 300m from the Site Boundary was divided into different segment according to LRT speed at particular segments. The predicted noise level of each

segment was calculated. The assumptions and major parameters for the assessment are summarised in **Table 3-8**.

Table 3-8 Rail Noise Assessment Assumptions

DESCRIPTIONS	ASSUMPTIONS / REMARKS
Sound Exposure Level (SEL)	$SEL = L_{max} + 10 \log (L/V) + 10.5 - 10 \log (4D / (4D^2 + 1) + 2 \tan^{-1} (1/2D))$ <p>Where L = train length, m V = train speed, kph d = Distance from track, m D = d / L</p>
Train type	LRV, 2 cars
Length of train	40m
L_{max}	65 dB(A) (with 2 cars running 50kph at 25m)
Train frequency	536 train/ 24 hours 13 trains/30mins for day and evening time (0700-2300) 12 trains/30mins for night time (2300-0700)
LRT speed	Please refer to Appendix D for details The maximum train speed between Tong Fong Tsuen Stop and Ping Shan Stop is 70km/h for both direction
Correction of train frequency	$10 \log (N)$ dB(A)
Correction of train speed	$+20 \log_{10} (V/V_{ref})$
Correction of distance from the NSR to the train	$-10 \log_{10} (d'/d_{ref})$
Correction of view Angle	$+10 \log_{10} (\pi\theta/180) - \cos^2 \alpha \sin \theta - 5$
Façade Correction	+2.5 dB(A)
Air Conditioning Noise	N/A as insignificant contribution
Track Ware Correction	+3dB(A)
Barrier Correction	Shadow Zone: -21dB(A) for $\delta > 2.5\text{m}$ $-7.75 \log_{10}(5.2 + 203\delta)$ dB(A) for $0 \leq \delta < 2.5\text{m}$ Illuminate Zone: 0dB(A) for $\delta > 0.4\text{m}$ $0.88 + 2.14 \log_{10}(10^{-3} + \delta)$ dB(A) for $0 \leq \delta < 0.4\text{m}$ Note: δ =Path Difference

Assessment Result

- 3.5.5 The predicted railway noise levels from LTR are summarised in **Table 3-9** and the detailed calculations are presented in **Appendix E**. As shown in **Table 3-9**, predicted railway noise levels would comply with the assessment criteria $L_{eq, 30\text{min}}$ for Day & Evening Time Period, L_{max} and $L_{eq, 24\text{hr}}$. A 4dB(A) noise exceedance in $L_{eq, 30\text{min}}$ is predicted for night-time period.

Table 3-9 Summary of Predicted Railway Noise Levels (Unmitigated)

NSR ID	AREA SENSITIVITY RATING (ASR)	PREDICTED RAILWAY NOISE LEVEL				NO. OF EXCEEDENCE
		Leq (30mins), dB(A)		L _{max} , dB(A)	Leq,24hrs, dB(A)	
		Day & Evening Time (0700-2300)	Night Time (2300-0700)			
RN1	C	45-63	45- 63	70-77	45-63	5
RN2	B	58-60	58-59	72-75	57-59	7
RN3	B	57-59	57-59	72-74	56-58	7
RN4	B	54-56	54-55	70-72	53-55	0
RN5	B	52-53	52-53	68-76	51-53	0
RN6	B	51-53	51-52	67-70	51-52	0

Note: Number in Bold and underline denote exceedances of the noise criteria.

Proposed Mitigation Measure

3.5.6 According to the assessment results, the maximum exceeding level is 4dB(A) at RN2. Appropriate types of acoustic windows will be proposed for mitigation of railway noise impact. The noise reduction provided by acoustic window would be benefited to indoor environment. In accordance with the IND-TM, when the noise is transmitted primarily through the structural elements of the building (i.e. acoustic window in this case) the appropriate ANL shall be 10dB(A) less the relevant ANL as shown in Table 2 of the IND-TM. As the maximum predicted railway noise exceedance is 4.0 dB(A), acoustic window (e.g. baffle type) with in-out-difference (IOD) of not less than 14.0dB(A) could be adopted for mitigation of railway noise. Typical configuration of acoustic window (e.g. baffle type) is given in **Appendix C**.

3.5.7 Careful design in window configuration, room dimensions and interior finishing shall be implemented so as to ensure railway noise compliance. Acoustic window (e.g. baffle type) is one of the potential mitigation measures to be considered in the detailed design stage. Taking into account the site characteristics and the future detail design, a combination of mitigation features for the purpose of achieving the overall noise reduction may be adopted. The acoustic window design could be combined with more noise reduction features, e.g. balcony design with full-height side wall(s), increased solid parapet height, additional screen wall(s), micro-perforated absorber (MPA) and/or additional Sound Absorptive Material (SAM) on more surfaces.

3.5.8 Based on the actual design/layout during the detailed design stage, the Applicant of the Proposed Development shall provide a Noise Impact Assessment ("NIA") Report to review the noise impact submitted to the EPD for agreement. The NIA shall ensure that the proposed mitigation measures are fit-for-purpose so that the potential railway noise issue can be addressed.

3.5.9 The details of railway noise assessment with proposed acoustic window (baffle type) were presented in **Appendix E** and summarised in **Table 3-10**.

Table 3-10 Summary of Predicted Railway Noise Levels (Mitigated)

NSR ID	ASR	ASSESSMENT CRITERIA (FAÇADE) Leq (30mins), dB(A)		ASSESSMENT CRITERIA (INDOOR) Leq (30mins), dB(A)		PREDICTED RAILWAY NOISE LEVEL (FAÇADE) Leq (30mins), dB(A)		IN-OUT DIFFERENCE BY ACOUSTIC WINDOW, dB(A)	PREDICTED RAILWAY NOISE LEVEL (INDOOR) Leq (30mins), dB(A)	
		Day & Evening Time (0700-2300)	Night Time (2300-0700)	Day & Evening Time (0700-2300)	Night Time (2300-0700)	Day & Evening Time (0700-2300)	Night Time (2300-0700)		Day & Evening Time (0700-2300)	Night Time (2300-0700)
RN1	C	70	60	60	50	45-63	45- 63	14	45-59	45-59
RN2	B	65	55	55	45	58-60	58-59	14	54-56	54-55
RN3	B	65	55	55	45	57-59	57-59	14	53-55	53-55

3.5.10 With the implementation of proposed mitigation measures, the noise levels at all representative NSRs would comply with the noise criteria of railway noise impacts.

3.6 Conclusion

3.6.1 With implementation of noise mitigation measures, adverse noise impact is not anticipated during the construction stage.

3.6.2 The surrounding areas of the Site is generally located at the urban area in Yuen Long, which are surrounded by warehouses, factories, open storages, feed mill, some other industrial uses, and a number of residential blocks are located to the west and northwest of the Site. There is no direct line of sight from the Site to any existing off-site fixed noise sources within 300m of Site. Fixed plant noise impacts at the nearest on-site NSRs arising from the operation of the furniture workshop at Century Centre was estimated, the results are in compliance with the relevant noise criteria. As such, no adverse fixed source noise impact on the Site is anticipated.

3.6.3 Most of the M&E equipment of the Proposed Development will be installed inside plant rooms. With the implementation of good practices as mentioned in **paragraph 3.3.5**, adverse fixed noise impact arising from the operation of the Proposed Development on the off-site NSRs is not anticipated.

3.6.4 For road traffic noise impacts, the predicted noise impact on the proposed development shall comply with the standards as recommended in Chapter 9 Environment of the HKPSG with the implementation of mitigation measures recommended in **paragraph 3.4.7** in place.

3.6.5 For railway noise impacts, the predicted noise impacts from LRT to the proposed development shall comply with the requirements as listed in IND-TM and HKPSG after the implementation of proposed mitigation measures including the provision of acoustic windows at selected units of NSRs.

3.6.6 This EA Report has been prepared based on the best available information to assess the noise impact that would not exceed the noise criteria at the NSRs. However, in order to demonstrate that the noise criteria will be complied with in practice, based on the actual design/layout during the detailed design stage, when this has been finalised the Applicant/landlord of the Proposed Development shall hire a qualified Acoustic Consultant to prepare a NIA Report. The Acoustic Consultant shall re-assess the noise impact on and arising from the Proposed Development, and prepare the NIA Report to be submitted to the relevant authorities for review. The compliance with the noise criteria specified in the HKPSG and NCO shall be demonstrated. The NIA Report to be certified by the Acoustic Consultant shall form part of the land lease of the Site. The Acoustic Consultant shall be a member of the Hong Kong Institute of Acoustics ("MHKIOA"), a member of

the Institute of Acoustics in UK (“MIOA”), a member of the Hong Kong Institute of Qualified Environmental Professional (“MHKIQEP”), or equivalent.

- 3.6.7 Overall, therefore, there will be no adverse noise impact during the construction and operation phases of the Proposed Development.

Figure 3-1 Identification of Area Sensitivity Ratings

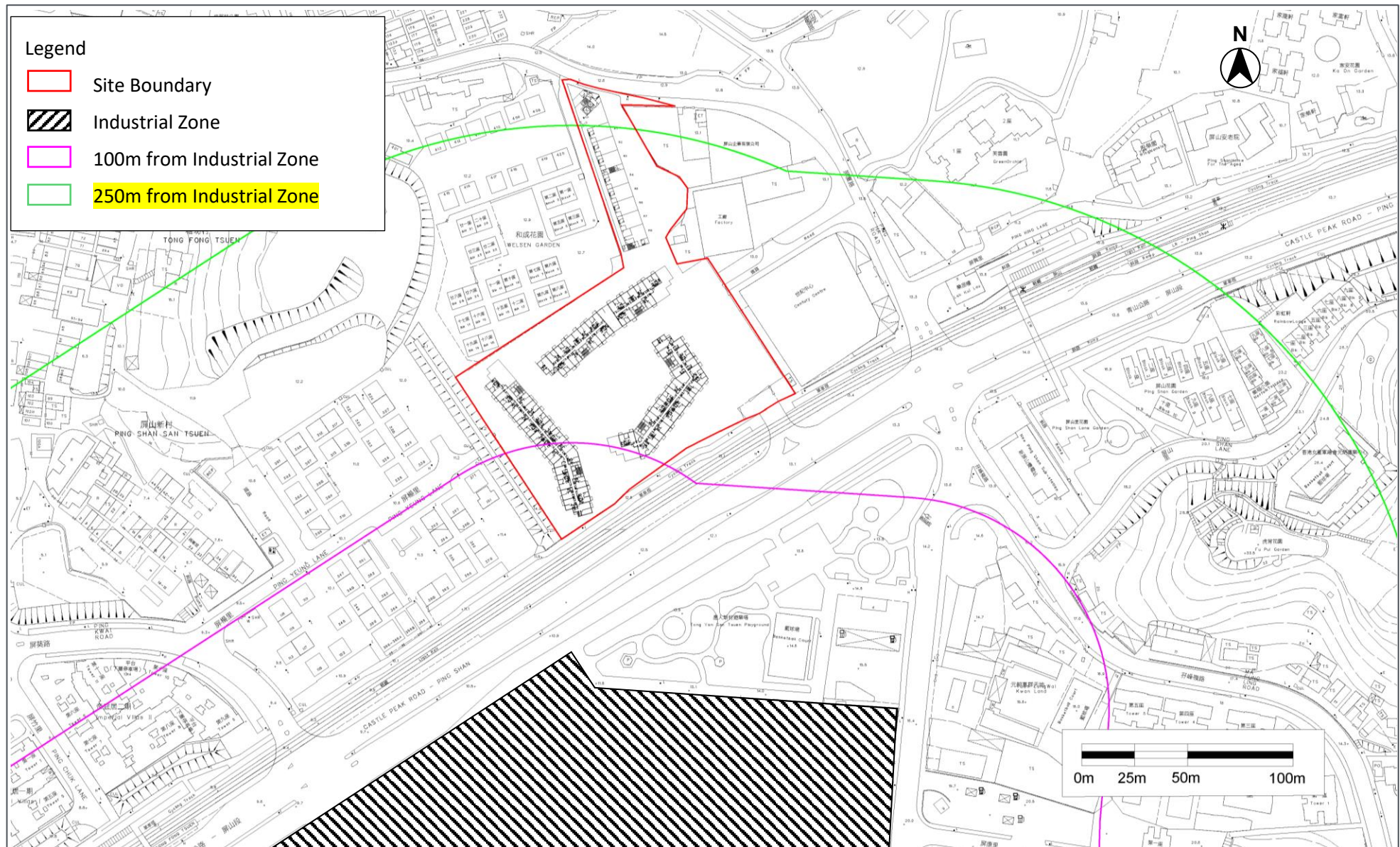


Figure 3-2 Location of Notional Noise Source of Century Centre and On-Site NSR

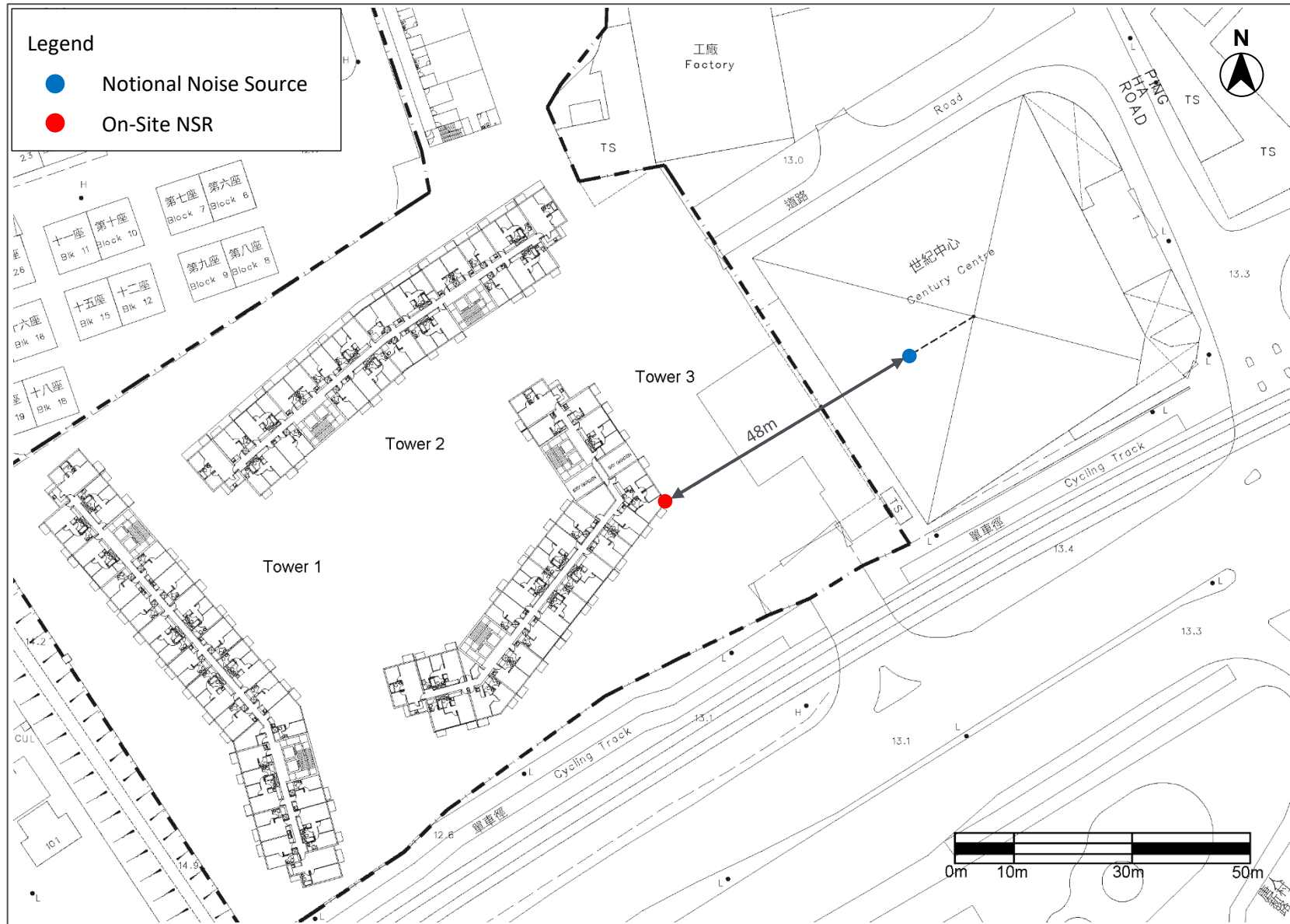


Figure 3-3 Location of Assessment Points for Noise Sensitive Receivers on G/F

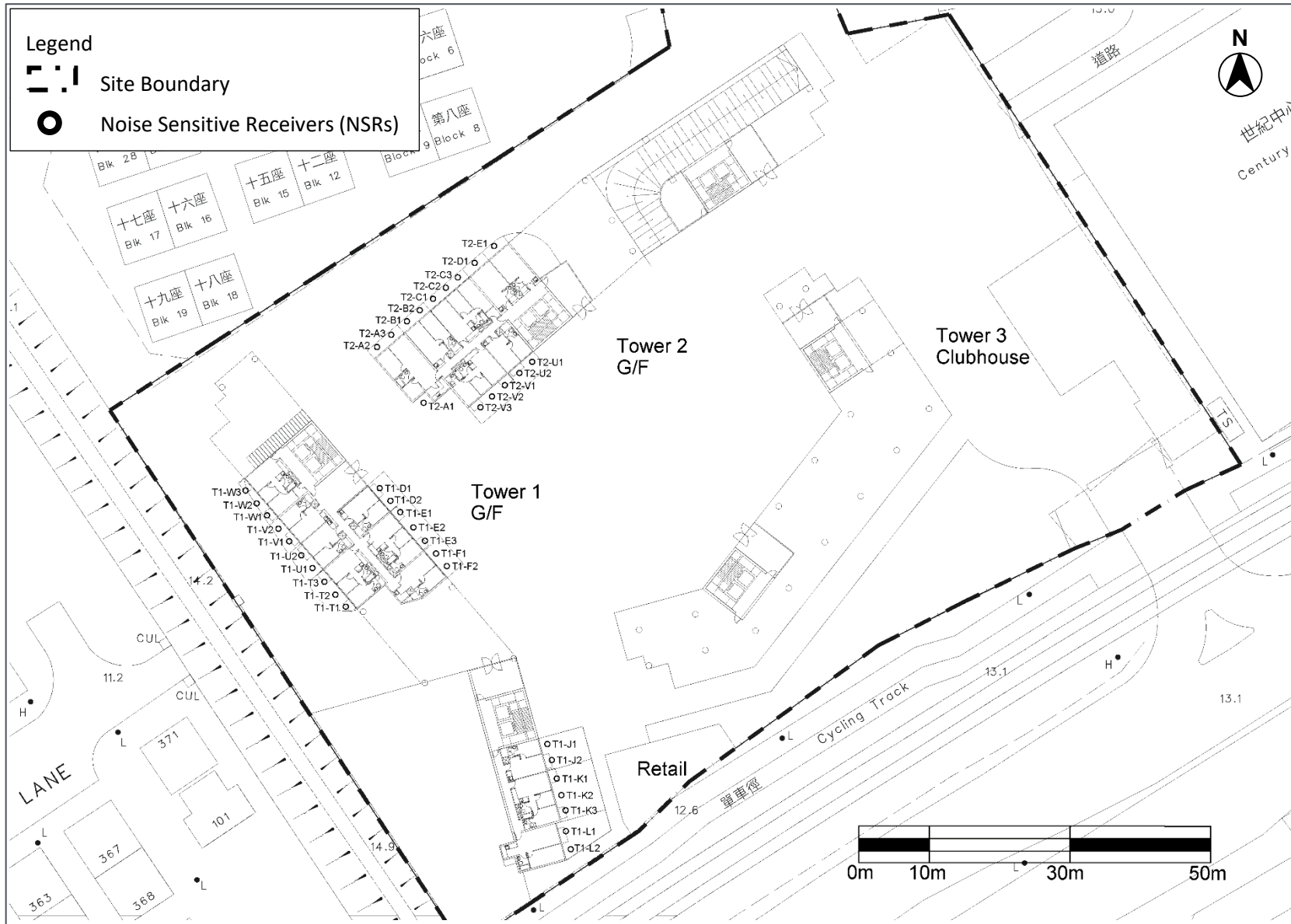


Figure 3-4 Location of Assessment Points for Noise Sensitive Receivers on Typical Floor A

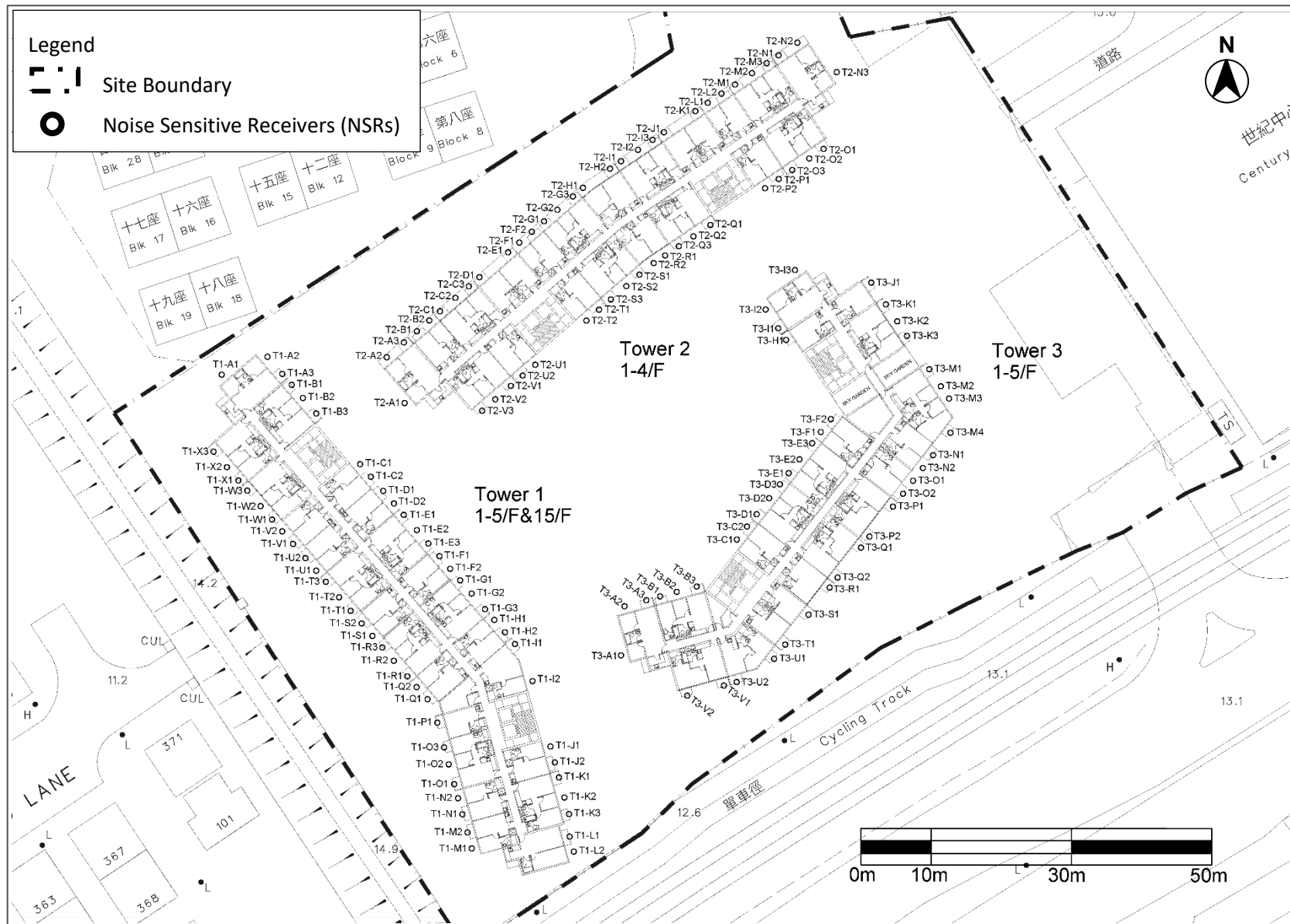


Figure 3-5 Location of Assessment Points for Noise Sensitive Receivers on Typical Floor B

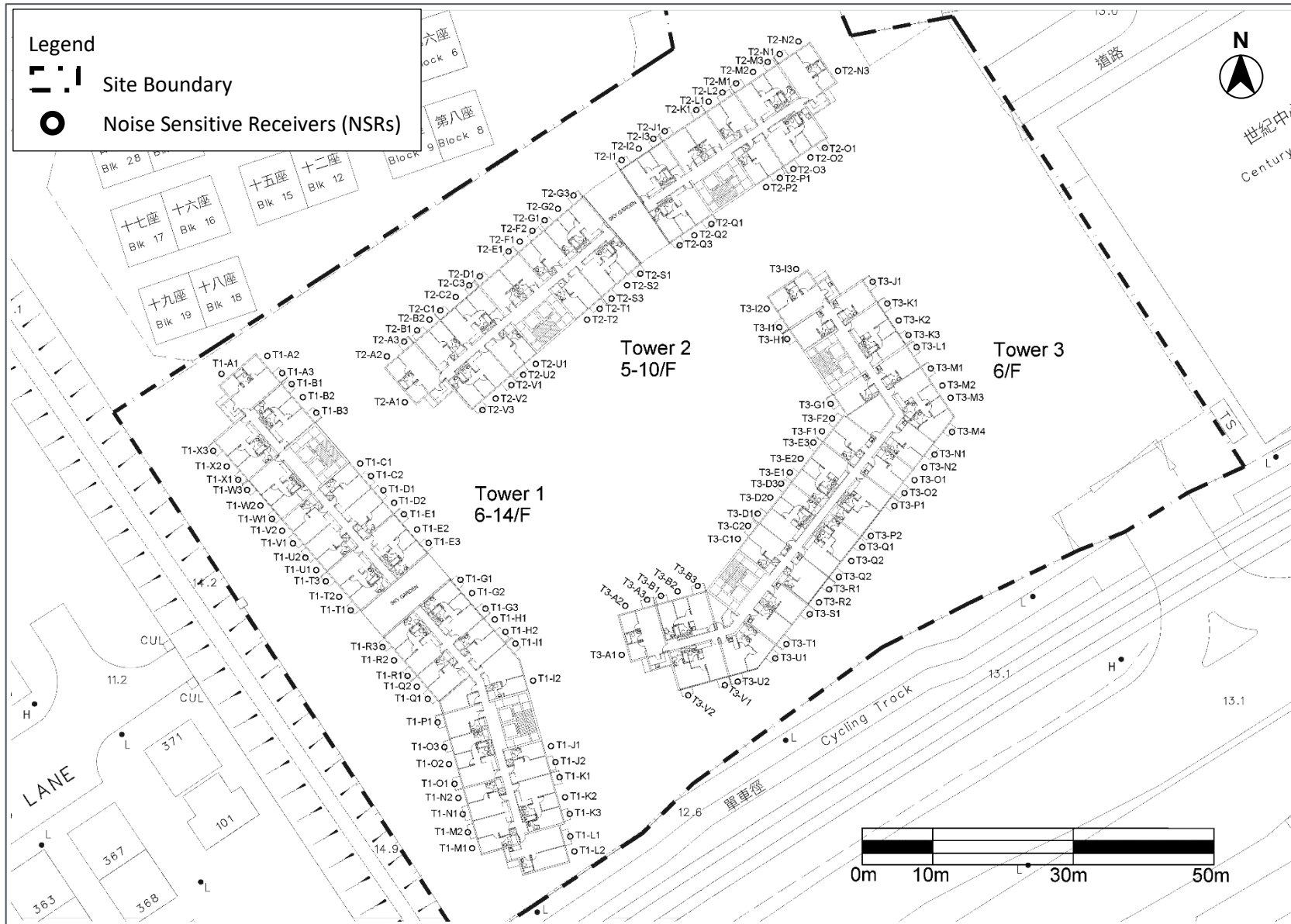


Figure 3-6 Location of Assessment Points for Noise Sensitive Receivers on Typical Floor C

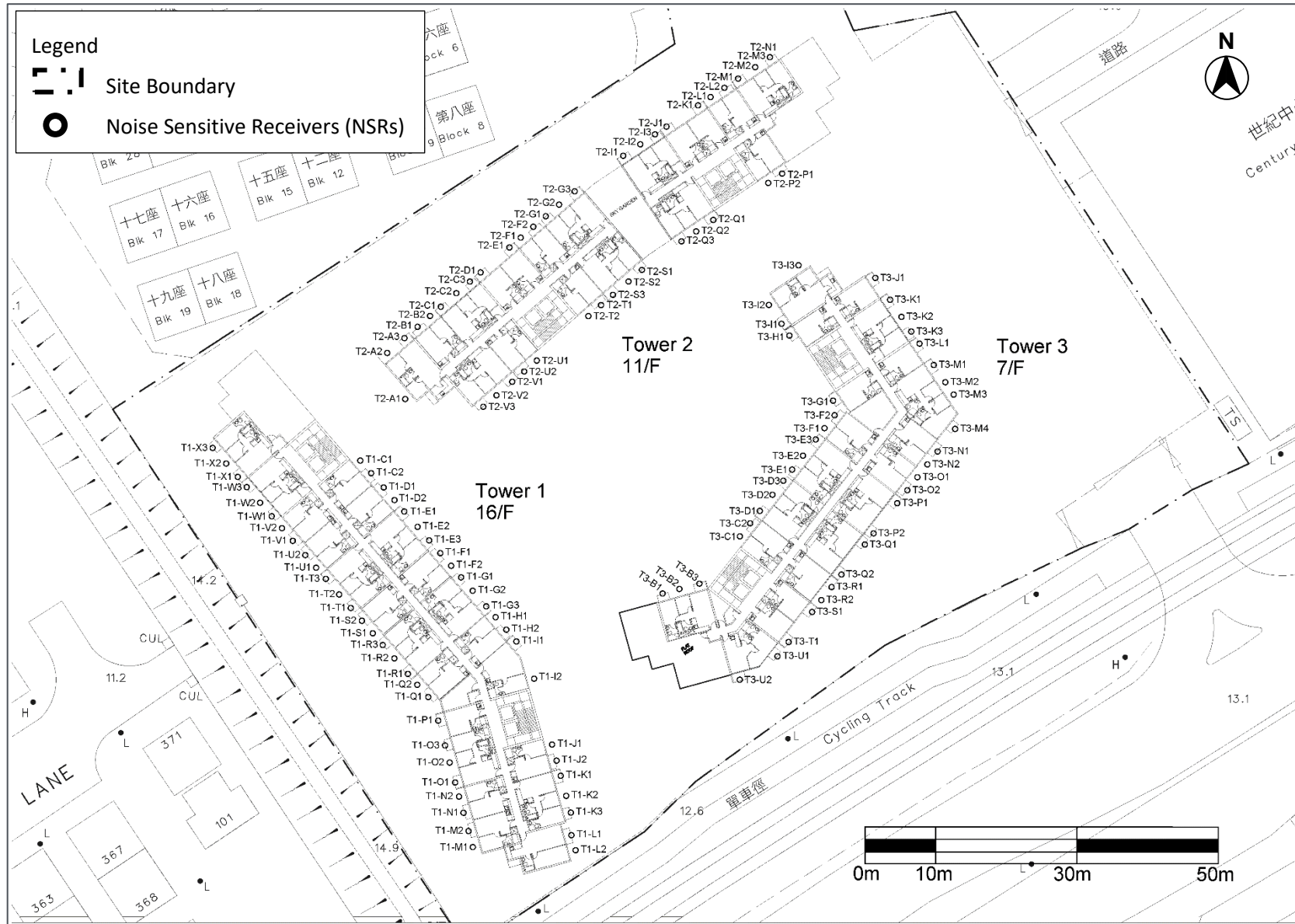


Figure 3-7 Location of Assessment Points for Noise Sensitive Receivers on Typical Floor D

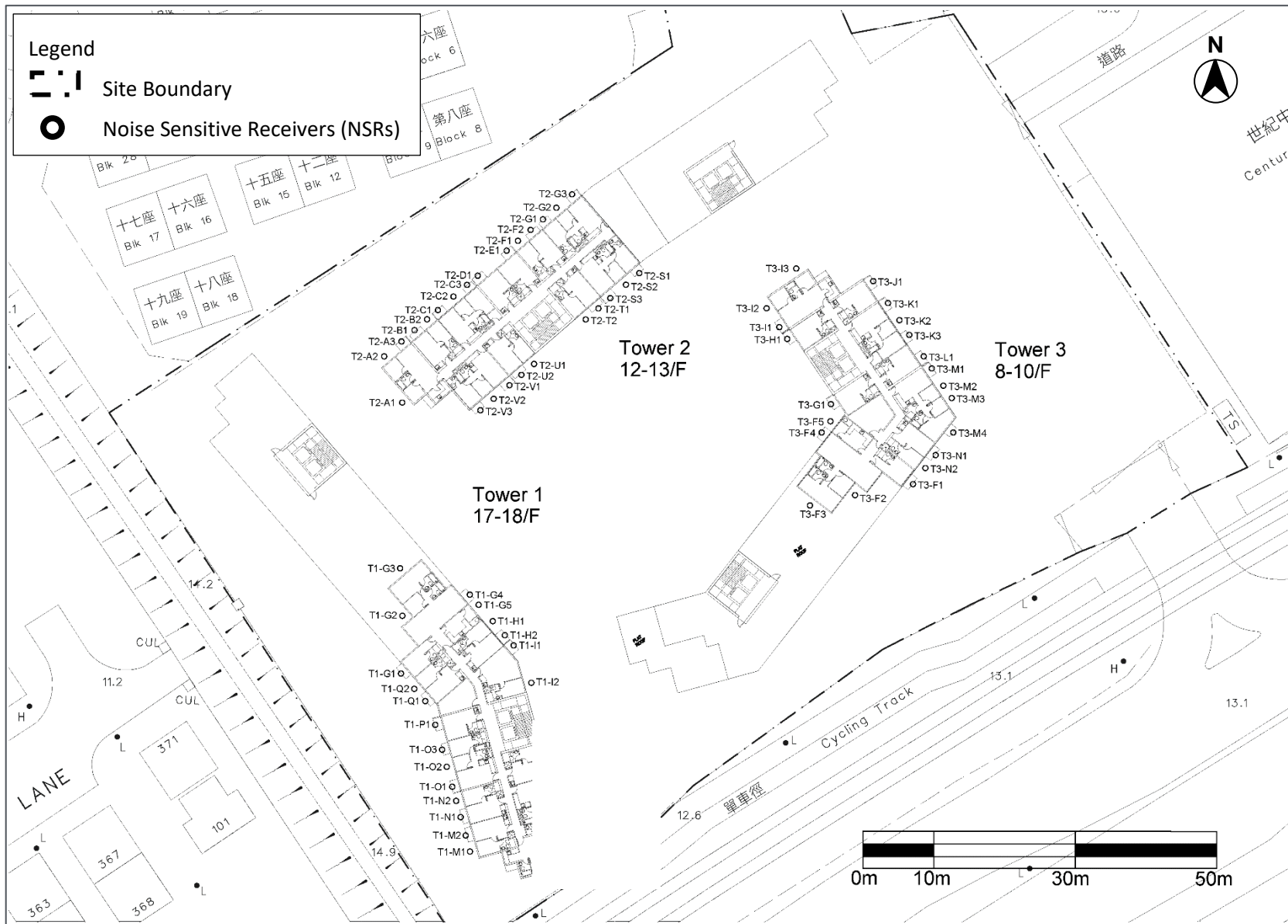


Figure 3-8 Location of Assessment Points for Noise Sensitive Receivers at RCHE

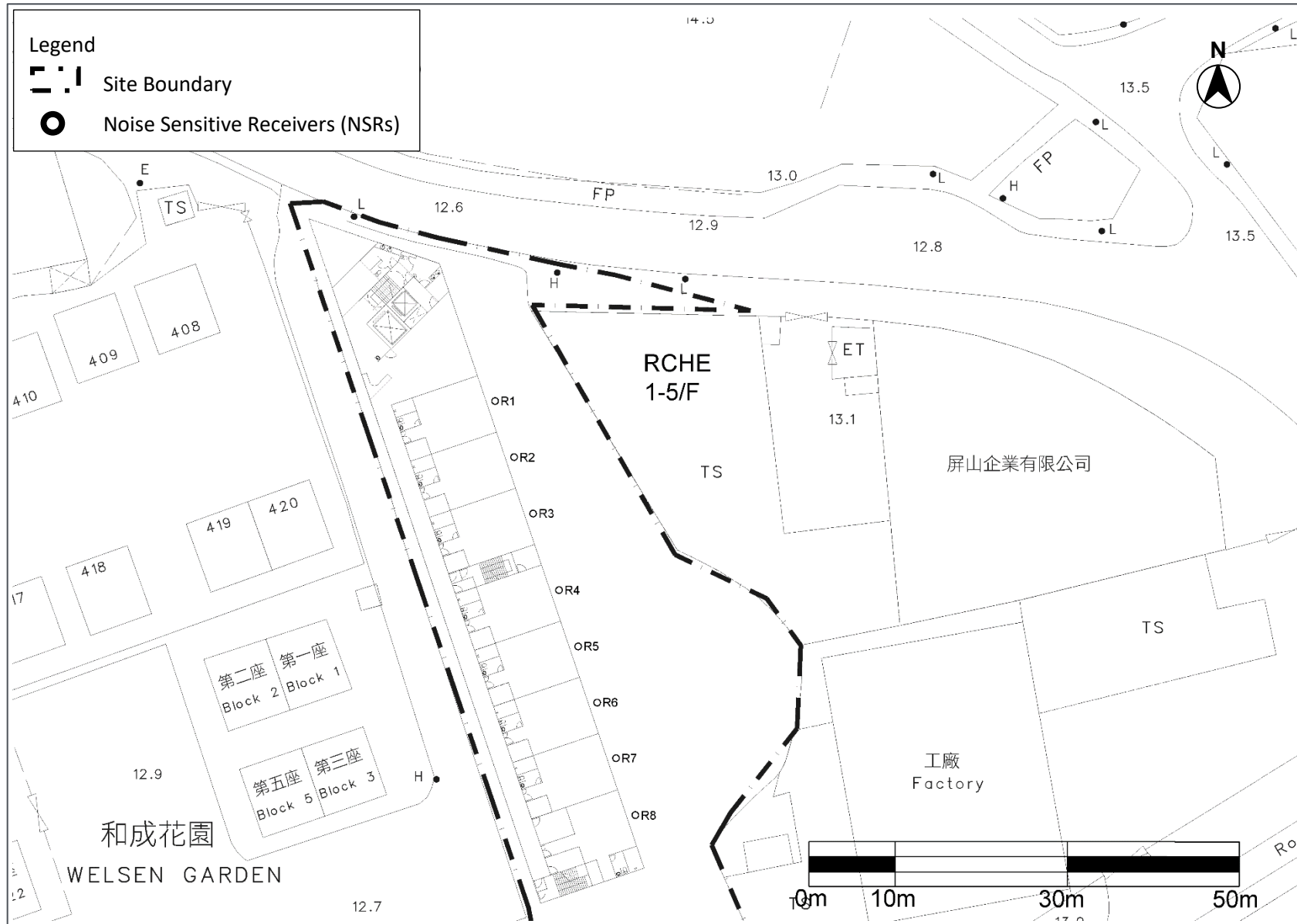


Figure 3-9 Proposed Noise Mitigation Measure

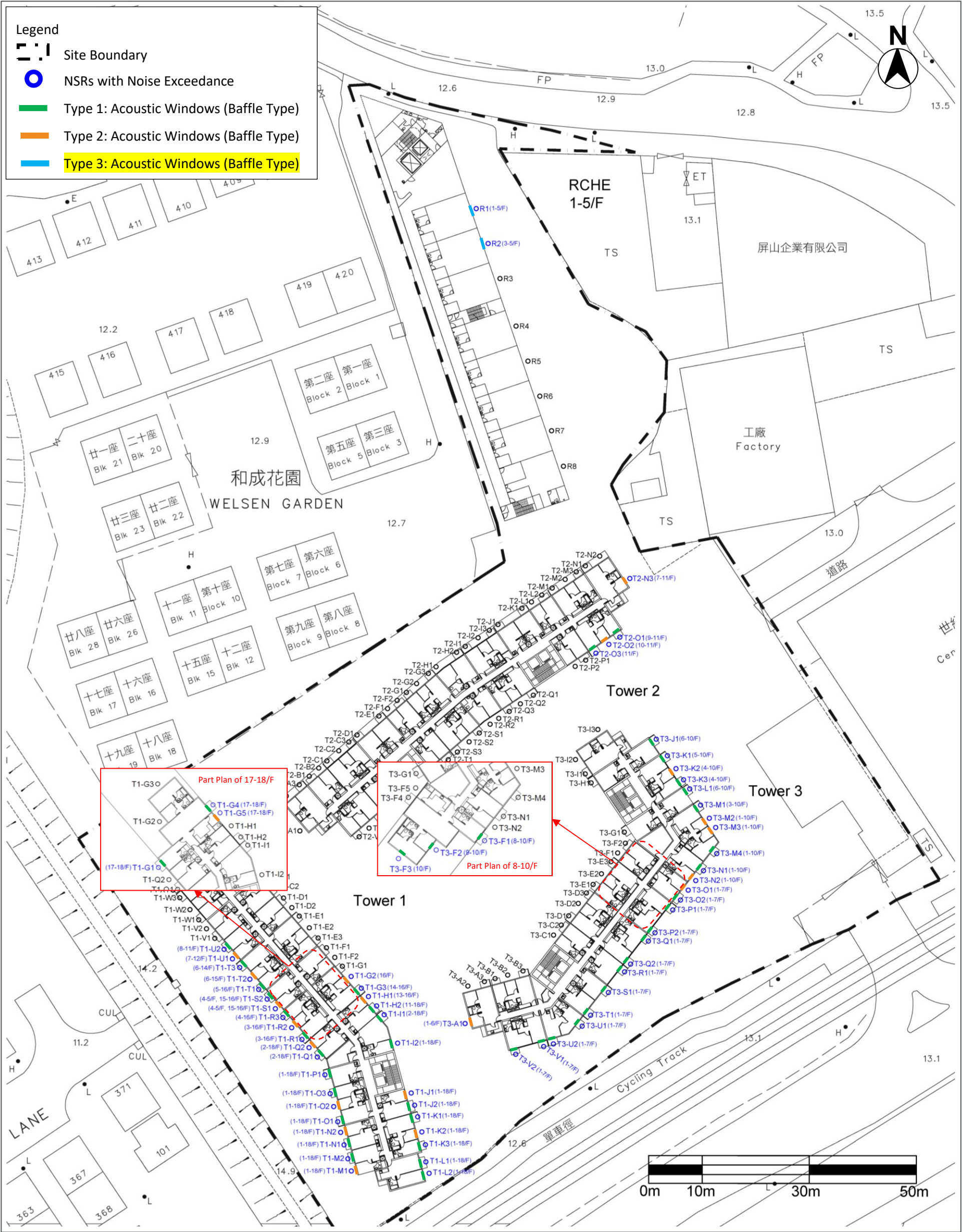
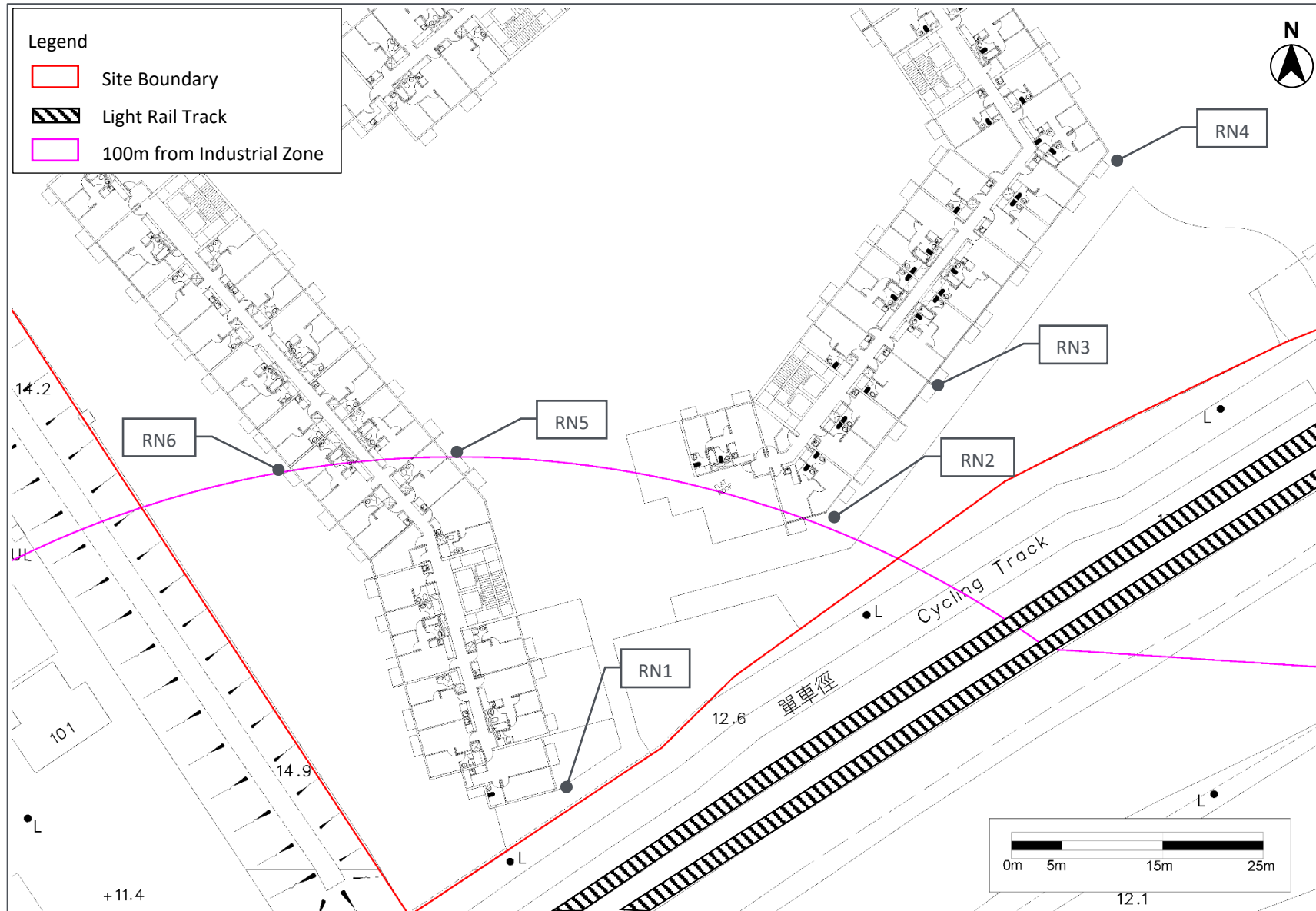


Figure 3-10 Locations of Noise Sensitive Receivers for Rail Noise Assessment



4 WATER QUALITY

4.1 Introduction

- 4.1.1 This section assesses the potential water quality impact arising from the Proposed Development during construction and operation phases. Mitigation measures are recommended, where necessary, as part of the assessment.

4.2 Environmental Legislation and Standards

Water Pollution Control Ordinance (Cap. 358)

- 4.2.1 An amendment to the *Water Pollution Control Ordinance* (“WPCO”) was enacted in 1990 and provides a mechanism for setting effluent standards. These are included in the *Technical Memorandum Standards for Effluents Discharged in to Drainage and Sewerage Systems, Inland and Coastal Waters* (WPCO Cap 358, S.21). All discharges into government sewerage systems, marine and inland waters are required to comply with the standards stipulated in the Technical Memorandum.

Construction Site Drainage, ProPECC PN1/94

- 4.2.2 Under ProPECC Practice Note PN1/94 Construction Site Drainage (ProPECC PN1/94), various guidelines for the handling and disposal of construction site discharges are included. The guidelines include the use of sediment traps, wheel washing facilities for vehicles leaving the Site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, and disposal) procedures.

Drainage Plans subject to Comment by the Environmental Protection Department, ProPECC PN5/93

- 4.2.3 Under ProPECC Practice Note PN5/93, drainage plans submitted to the Building Authority are referred to the Environmental Protection Department (“EPD”) for comment whenever there is a concern for pollution control. The EPD has, based on the experience of the common problems found in the drainage submissions, prepared this practice note for reference by Authorised Persons (“APs”) in preparing drainage plans. Although the guidelines contained in this practice note are not meant to be exhaustive, it is hoped that they will help secure early approval of drainage plans.

4.3 Potential Water Quality Impacts

Water Sensitive Receiver (“WSR”)

- 4.3.1 In accordance with the *Technical Memorandum on Environmental Impact Assessment Ordinance* (“EIAO-TM”), WSR is defined as existing or potential beneficial uses that are sensitive to water pollution, which include, but are not limited to, the following:
- Areas of ecological or conservation values including marine conservation areas, existing or gazetted proposed marine parks and marine reserves, Sites of Special Scientific Interest (“SSSI”), existing or gazetted proposed country parks and special areas, wetlands, mangroves and important freshwater habitats.
 - Area for abstraction of water for potable water supply.
 - Water abstraction for irrigation and aquaculture;

- Fish spawning grounds, fish culture zones, shellfish harvesting/culture site and brackish/freshwater fish ponds;
- Beaches or other recreational areas.
- Water abstraction for cooling, flushing and other industrial purposes.
- Areas for navigation/shipping including typhoon shelters, marinas and boat parks

4.3.2 Desktop study on the OZP, topographic map and site visit were conducted, one water sensitive receiver is identified within 500m from the Site boundary, which is listed as follows:

- WSR1 River along Hung Kiu Road

4.3.3 The location of WSR1 is shown in Figure 4-1.

Construction Phase

4.3.4 Muddy runoff from the Site may be generated during the construction phase, especially during the rainy season.

4.3.5 Wash water from vehicles and equipment; silt from any on-site stockpiles of soil, cement and grouting materials; and spillage of fuels, oil and lubricants from construction vehicles and plant may generate water quality impacts. If these pollution sources are not properly controlled, it would lead to increased amounts of suspended solids, grease and oil, pH, Biochemical Oxygen Demand ("BOD"), etc. in the drainage system.

4.3.6 There is also the issue of sewage generated by construction workers on-site.

Operation Phase

4.3.7 Wastewater arising from the Proposed Development will be discharged into the municipal sewerage system. Therefore, no adverse water quality impact will be arising from the operation phase of the Proposed Development.

4.4 Mitigation Measures

Construction Phase

4.4.1 During the Site visits on 24 March and 13 April 2021, no watercourse was observed within the Site boundary. In order to avoid muddy surface runoff from entering the existing watercourse/storm water drainage system outside the Site, channels along the site boundary shall be provided to collect and direct the muddy runoff to the wastewater treatment facilities for treatment prior to being discharged. The design of the construction site drainage system shall be independent from the existing watercourse. The details of wastewater treatment arrangement shall be submitted to EPD for review during the application of the wastewater discharge licence before commencement of the construction activities.

4.4.2 The construction contractor shall also follow good site practice and be responsible for the design construction, operation and maintenance of all the mitigation measures as specified in ProPECC PN 1/94 for construction site drainage:

- Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct storm water to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the Site so that it will not

wash across the Site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.

- Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- Construction works should be programmed to minimize soil excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.
- Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary.
- Measures shall be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be covered with tarpaulin or similar fabric during rainstorms. Measures shall be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Manholes shall always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.
- Wash water from vehicles shall be reused on site. The wastewater generated from potential pollution sources as stated in paragraph 4.3.5 shall be maintained as limited as possible, and shall be properly treated to fulfil the valid Water Discharge Licence before discharge.
- Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.
- Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.

4.4.3 During construction, it is recommended that portable toilets should be provided for construction workers. These will be supplied, maintained and emptied (at a sewage treatment facility) by a special contractor.

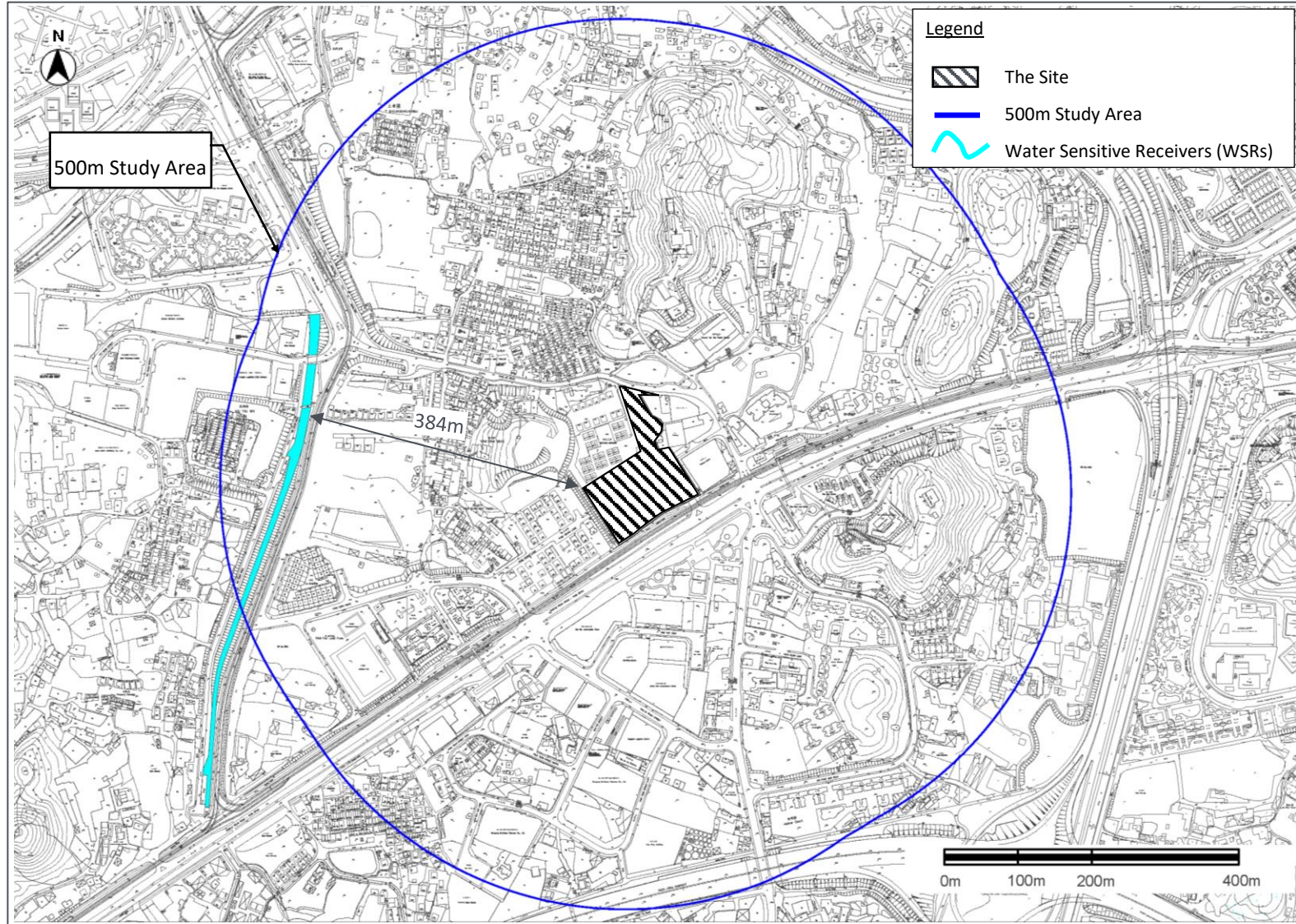
Operation Phase

- 4.4.4 During operation, the best practice regarding the handling of main drain from swimming pool should be followed in accordance with ProPEC PN 5/93. Swimming pool main drain, footpath main drain and swimming pool make-up tank drain should be connected to stormwater drains (except in water gathering grounds where APs are advised to consult Water Supplies Department) while the filtration plant backwash should be discharged into foul sewers. Swimming pool drainage layout, filtration plant room drainage layout and filtration plant schematic line diagrams are required to be included in drainage plans.
- 4.4.5 Based on the preliminary design layout, there will have some landscape area with greening within the Proposed Development. To avoid any potential non-point source pollutions arising from application of agrochemicals, environmentally friendly fertilisers and pesticides will be adopted for these plantings to avoid contamination of the water ponds or other water resources and minimise any potential water quality impact generated. The types of fertilisers and pesticides to be used will make reference to the guidelines published by the Agriculture, Fisheries and Conservation Department (“AFCD”) including “Good Agricultural Practices – General Guidelines: Production of Local Vegetables” and “Good Agricultural Practices for Crop Production: Farm Operation – Use of Fertilizers”.
- 4.4.6 With the implementation of the good practice and control measures, no adverse water quality impact is anticipated from the Proposed Development since all the wastewater / sewage will be discharged to municipal sewage systems.

4.5 Conclusion

- 4.5.1 During construction, water quality impacts can be properly controlled with the implementation of good site practice, as stated in **paragraph 4.4.2**. Portable toilets will be provided for construction workers on-site. Provided these measures are implemented, it is unlikely that any adverse water quality impacts from the Site will be generated during the construction phase.
- 4.5.2 The contractor shall apply for a Discharge Licence from EPD under the WPCO. All site discharges shall be treated in accordance with the terms and conditions of the Discharge Licence.
- 4.5.3 The wastewater generated from the Proposed Development will be discharged into the municipal sewerage system and a separate SIA results indicated that the capacity of the existing sewerage system is sufficient for conveying the sewage generated from the Site to the downstream areas. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the residents and employees of the Site.
- 4.5.4 Moreover, there will be no adverse water quality impact due to runoff with the provision and implementation of the recommended mitigation measures for non-point sources as mentioned in **Section 4.4**.
- 4.5.5 Overall, therefore, no adverse water quality impacts are anticipated during the construction or operational phases of the Proposed Development.

Figure 4-1 Location of Identified Water Sensitive Receiver (WSR)



D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

5 WASTE MANAGEMENT

5.1 Environmental Legislation and Standards

5.1.1 In carrying out the assessment, references have been made to the following relevant legislation, documents and guidelines that are applicable to waste management and disposal in Hong Kong:

- The *Waste Disposal Ordinance* (Cap. 354) (“WDO”) setting out requirements for storage, handling and transportation of all types of wastes, and subsidiary legislation such as the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* and the *Waste Disposal (Chemical Waste) (General) Regulation*.
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C).
- Waste Disposal (Charges for Disposal of Chemical Waste) Regulation (Cap. 354J).
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).
- Land (Miscellaneous Provisions) Ordinance (Cap. 28).
- Public Health and Municipal Services Ordinance (Cap.132BK) – Public Cleansing and Prevention of Nuisances Regulation
- Environmental, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 19/2005, Environmental Management on Construction Sites.
- Environmental, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 22/2003A, Additional Measures to improve Site Cleanliness and Control Mosquito Breeding on Construction Sites.
- Development Bureau (“DevB”) Technical Circular (Works) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials.
- Civil Engineering and Development Department (“CEDD”) Technical Circulars (CEDD TC No. 03/2015), Management of Construction and Demolition Materials.
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers – Construction and Demolition Waste (“ADV-19”).
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Provision of Fitments and Fittings in New Buildings (“APP-114”).
- Building Department Practice Note for Registered Contractors (“PNRC 17”), Control of Environmental Nuisance from Construction Sites.
- CEDD Project Administration Handbook for Civil Engineering Works (“PAH”).
- EPD Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.
- EPD Recommended Pollution Control Clauses (“RPCC”) for Construction Contracts in COP.
- EPD Guidance Note for Contamination Land Assessment and Remediation.
- EPD Practice Guide for Investigation and Remediation of Contaminated Land.
- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management.

5.2 Potential Waste Management Impacts

Construction Phase

- 5.2.1 The key potential waste sources during the construction phase are:
- Inert Construction and Demolition (“C&D”) materials (e.g. waste concrete, surplus soil, waste asphalt, etc.).
 - Non-inert C&D Waste (e.g. wood and plastics).
 - Chemical wastes (e.g. waste battery and waste lubricating oil from vehicles / plant maintenance)
 - General refuse, i.e. Municipal Solid Waste (MSW), generated by site workers.
- 5.2.2 On-site waste management should be implemented to sort and separate inert and non-inert wastes prior to disposal. Inert C&D wastes should be re-used on-site as far as practicable. The remaining inert C&D wastes should be sent to public fill reception facilities, Fill Bank at Tuen Mun Area 38 and/or Fill Bank at Tseung Kwan O Area 137. Non-inert C&D wastes are materials that can decompose, and on-site sorting should be carried out for non-inert C&D wastes generated from the construction works. All non-inert wastes should be recycled as far as possible and landfill disposal should be adopted as the last resort. The nearest disposal facility to the Site is the West New Territories Landfill (WENT) Landfill.
- 5.2.3 Chemical wastes such as spent lubricants may be generated in small quantity. If any chemical wastes will be generated during the construction phase, the relevant contractors shall be registered as chemical waste producers with EPD. A licensed collector shall be employed to handle and dispose of the chemical wastes, if any. In addition, any chemical waste generated should be handled in accordance with EPD’s Code of Practice on the Packaging, Labelling and Storage Chemical Waste.
- 5.2.4 For general refuse, provisions of recycle bins for different types of recyclable waste should be provided together with a general refuse bin to separate from C&D materials. Arrangements should be made with the recycling companies to collect the recycle waste. The remaining general refuse generated by site workers after sorting and recycling will be collected and stored in enclosed bin, and disposed of at the nearest Tai Kiu Refuse Collection Point regularly along with the existing Municipal Solid Waste (“MSW”) generated from the Site so as to avoid creating odour impact or pest and vermin problem within the Site, and will finally be disposed of at WENT Landfill.
- 5.2.5 Common Good Site practices are recommended as follows:
- The construction contractor should adopt good housekeeping practices, such as waste segregation prior to disposal. Besides the provision of stockpiling and segregation areas within the site, effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating odour impact or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.
 - General refuse, or MSW, should be stored in enclosed bins or compaction units. A waste collector will be used by the contractors to remove MSW from the Site. Preferably an enclosed and covered area should be provided to reduce the occurrence of windblown materials.
- 5.2.6 With the implementation of above measures, no unacceptable waste management impact during the construction phase is anticipated.

Operation Phase

- 5.2.7 During the operation phase, the major type of waste generated will be MSW generated from the residents of the Site, RCHE, and the staff of the Proposed Development. The general refuse generated will be stored in enclosed bins. The refuse bins will be collected and disposed of regularly by a licensed waste collector, and also disposed of at an appropriate waste disposal facility. Different types of waste will be considered to be reused or recycled by the operator of the project as far as practicable before they are disposed.
- 5.2.8 With the implementation of recommended MSW handling practices, no adverse waste management impact is anticipated.

5.3 Land Contamination

- 5.3.1 Site appraisal was conducted in order to identify any potential contamination sources generated by the past and present land-use activities within the Site and the associated causes for land contamination.

Historical Use of the Site

- 5.3.2 Aerial photographic records obtained from the Survey and Mapping Office (“SMO”) of Lands Department between 1963 and 2020 were reviewed. These photographic records revealed that the Site was a vacant land on or before 1963. From 1967, the aerials indicated that the Site started to have a few temporary building structures were located to the southern part of the Site, while the northern part of the Site were mainly vegetation. More building structures were identified at the southern part of the Site since 1985, the same conditions last from 1985 to 1995. In 1995, the vegetation in the northern part of the Site was partly removed and this part seemed to be paved after 1995 and up to 2002. In 2003, some existing building structures were demolished and the Site was transformed to the same building structure of logistic plant and last the same condition up to present, and its northern part became vegetated again. In 2020, the northern part of the Site became an open carpark.
- 5.3.3 The Site has been in operation as a logistic plant for more than 18 years since from around 2003 with reference to the review of past aerial photos extracted from the Lands Department as shown in **Figure 5-1** to **Figure 5-10**. There was no other development on the site before the commencement operation and no existing contamination was present prior to the use as proposed development. The historical land uses of the Site as reviewed from the aerial photographic records is summarised in **Table 5-1**.

Table 5-1 Historical Land Uses of the Site based on the Aerial Photographical Records

Photo Date	Land Use
Before 1963	Vacant land
1967	A few building structures were identified to the southern part of the Site, while the northern part of the Site was mainly vegetation. It started its operation as a Plant with storage of animal feeds.
1985	More building structures were found
1985 – mid 1990s	Building structures identified in 1985 and the condition remain unchanged until around mid 1990s. It was still operated as a Plant with storage of animal feeds up to about mid 1990s.
mid 1990s – 2002	From mid 1990s to 2002, the vegetation in the northern part of the Site was partly removed. This northern part was paved after 1995 and up to 2002. The operation of the Plant with storage of animal feeds ended in 2002.

Photo Date	Land Use
2003	A few existing building structures in the southern part of the Site were demolished. The structures of the warehouses within the Site is the existing logistic plant, which started its operation from 2003.
2003 – Present	Until 2003, the Site was transformed to the same building structure of logistic plant and remains the same condition up to present, and its northern part became vegetated again. In 2020, the northern part of the Site became an open carpark.

Site Walkover

- 5.3.4 A site walk was carried out on 13 April 2021. The Site is currently entirely paved with concrete and it is an existing logistic plant that is solely adopted as a storage of general goods. No Dangerous Good (“DG”), chemical or oil was observed to be stored in the plant. No stains were observed and there was no sign of vegetation stress, which can be indicative of contaminated soils. In addition, no equipment and vehicles repairing activities were observed onsite, and no underground fuel storage tank was found during the site walk. In addition, no leakage of chemical was observed. Therefore, no land contamination impact is anticipated owing to the existing use as a logistic plant. Site walkover photographs showing the current condition of the Site are shown on **Figure 5-11** for reference.

Dangerous Goods & Incident Records

- 5.3.5 Enquiries regarding the past records of registered Chemical Waste Producers or accident spillage/leakage of dangerous or chemical, as well as current/past licences for storage of Dangerous Good (DG), registration of DG licence, fire incidents, spillage/leakage of DG were made to the Environmental Protection Department (“EPD”) and Fire Services Department (“FSD”), respectively. With reference to replies from both EPD and FSD (**Appendix F** refers), it is confirmed that there is no accident spillage / leakage of dangerous or chemical, no current/past licences for storage of DG, no registration of DC licence, no fire incidents, and no records of spillage/leakage of DG from relevant authorities were found at the existing Site. Review of chemical waste producer records was made in EPD’s office, no chemical waste producer record was registered within the existing Site.

5.4 Conclusion

- 5.4.1 With the implementation of good site practices recommended therein, the waste generation during construction phase can be greatly reduced. Provided that good site practices as recommended in **paragraphs 5.2.2 to 5.2.5** are followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.
- 5.4.2 During the operation phase, the major type of waste generated will be MSW. With the implementation of recommended MSW handling practices, no adverse waste management impact is anticipated.
- 5.4.3 With the implementation of the recommended mitigation measures, adverse waste impacts generated during the construction and operational phases of the Proposed Development are not anticipated.

Figure 5-1 Site in 1963

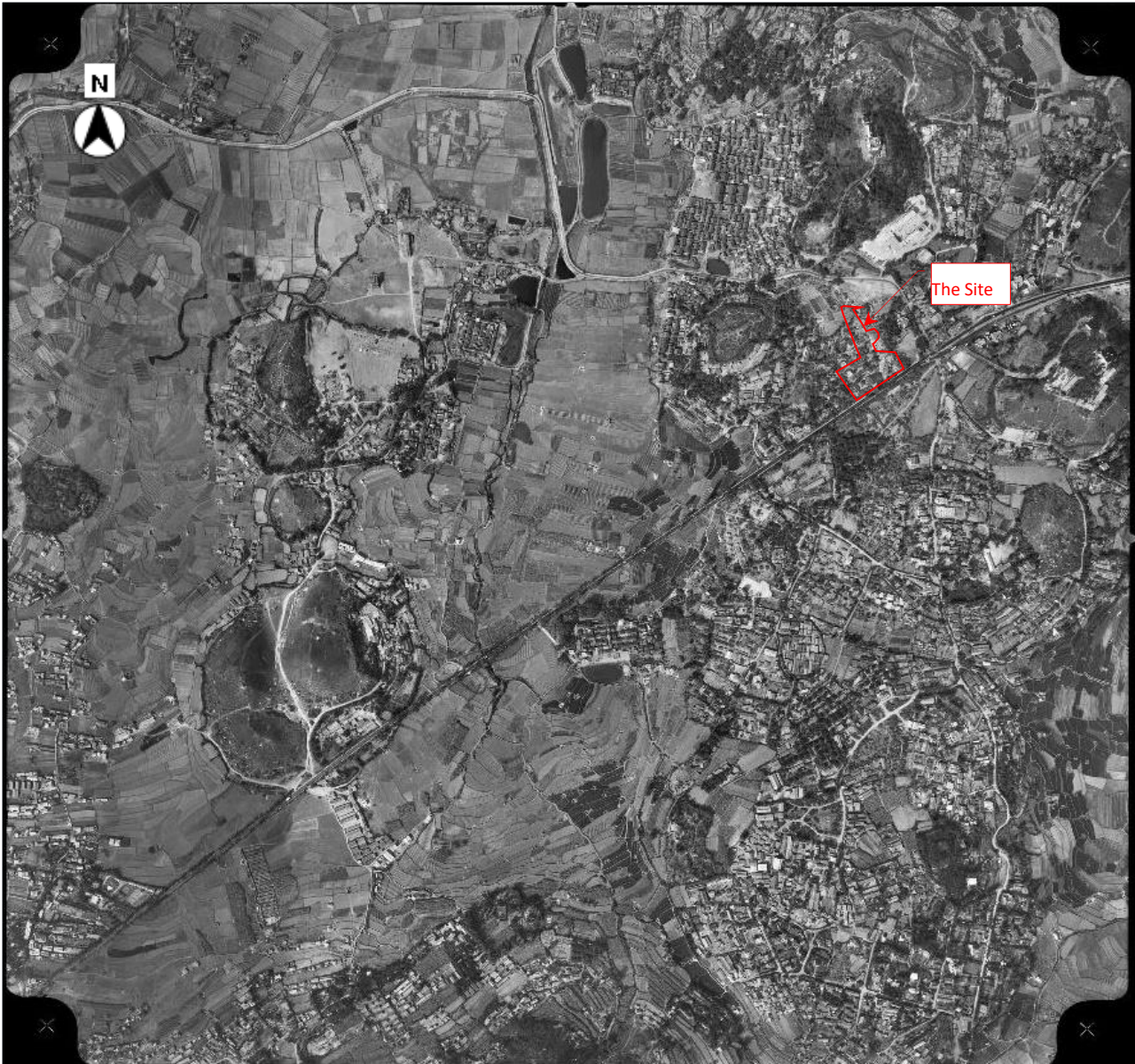


Figure 5-2 Site in 1967



Figure 5-3 Site in 1985

**D01 ENVIRONMENTAL ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
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Figure 5-4 Site in 1991

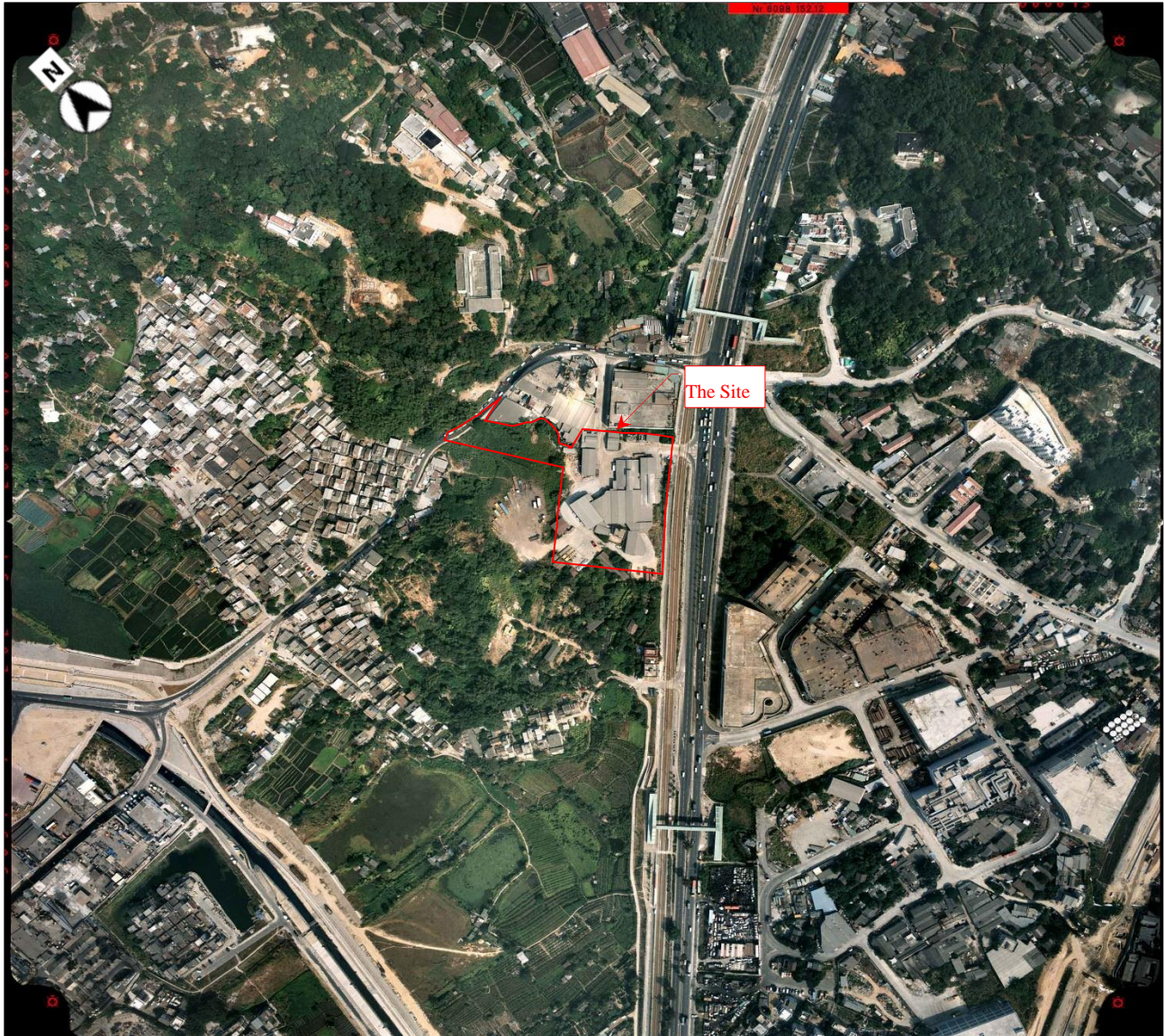


Figure 5-5 Site in 1995

**D01 ENVIRONMENTAL ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
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Figure 5-6 Site in 2000

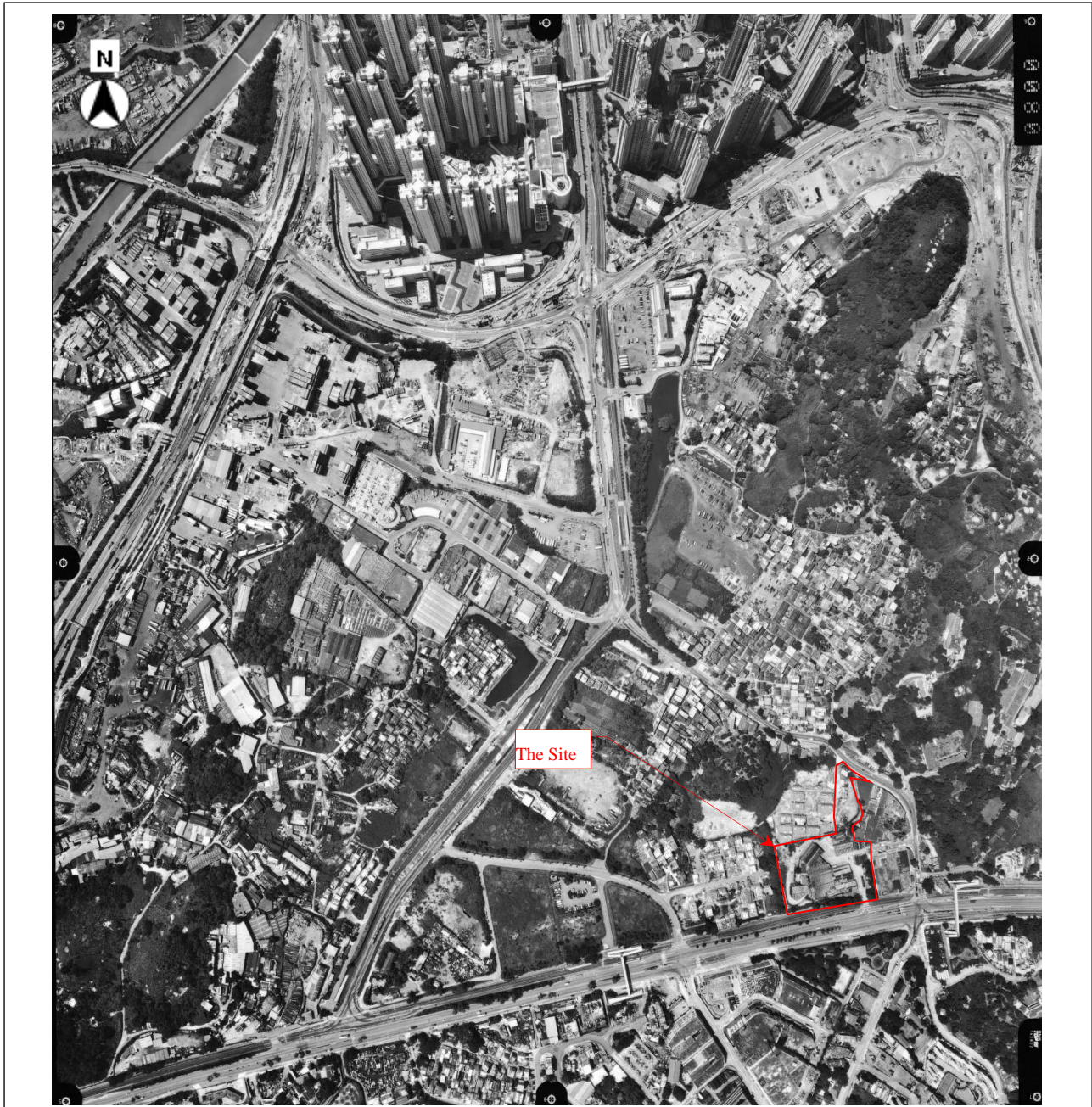


Figure 5-7 Site 2002

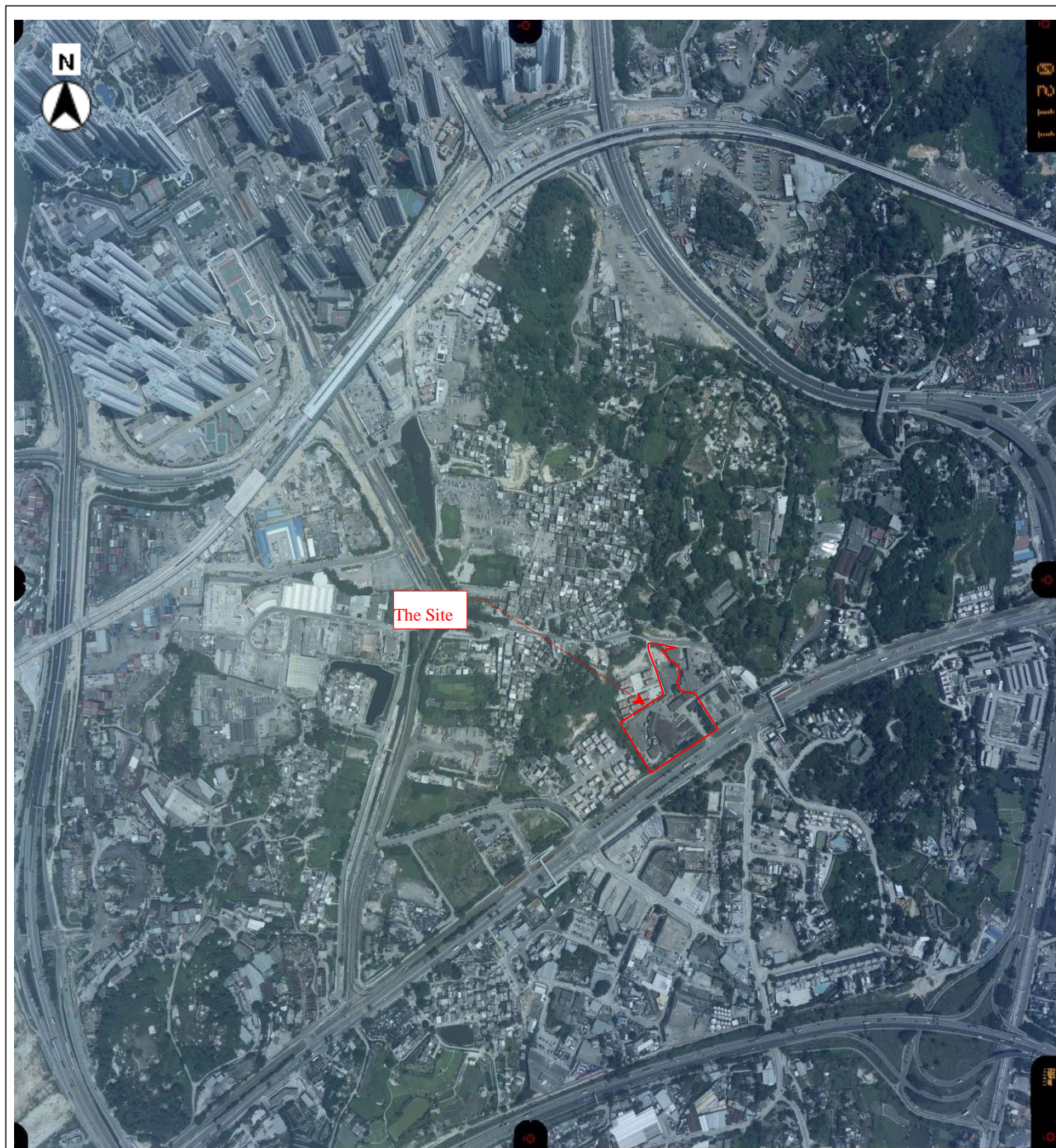


Figure 5-8 Site 2003

**D01 ENVIRONMENTAL ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
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Figure 5-9 Site in 2004



Figure 5-10 Site in 2020

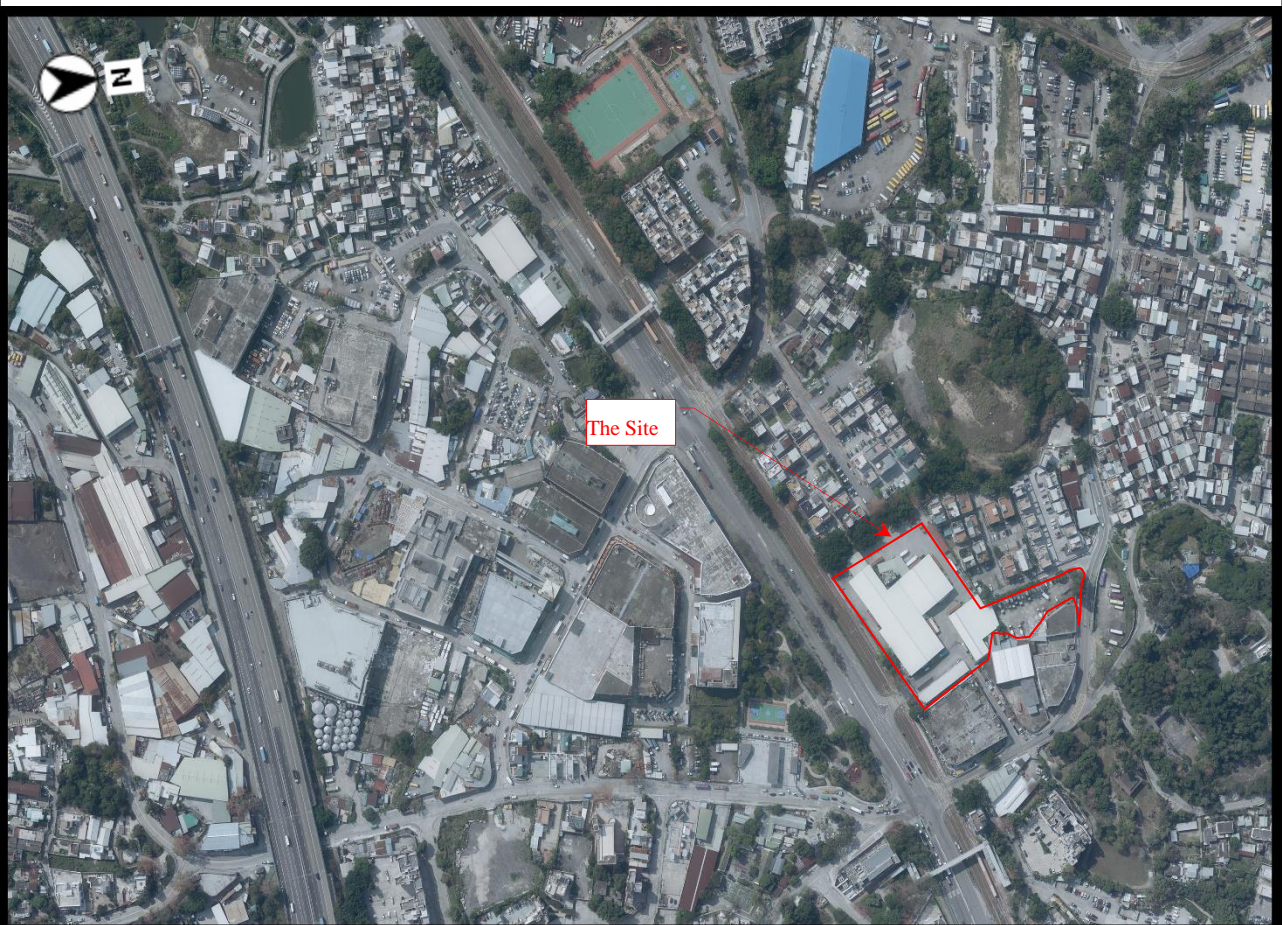


Figure 5-11 Site Walkover Photos



6 CONCLUSION

6.1.1 The potential environmental impacts arising from the Proposed Development on the nearby sensitive uses, have been assessed. Mitigation measures have been recommended, where appropriate, to alleviate any identified adverse environmental impacts during the construction and operation of the Project. This EA has indicated that the Proposed Development will not generate any unacceptable environmental impacts during construction and operation phases, provided that all the recommended mitigation measures and good site practice are strictly implemented.

6.1.2 The conclusions of the different aspects of environmental impact assessments are as follows:

Air Quality

6.1.3 With the implementation of the recommended mitigation measures and good site practice, adverse impacts during the construction phases are not anticipated.

6.1.4 No adverse air quality impact on the Proposed Development is anticipated with the implementation of the proposed mitigation measures during the operation phase.

6.1.5 Overall, therefore, no adverse air quality impact is anticipated during the construction or operation phases of the Proposed Development.

Noise

6.1.6 Adverse noise impact is not anticipated during the construction stage with the implementation of noise mitigation measures.

6.1.7 There is no direct line of sight from the Site to any existing off-site fixed noise sources within 300m of Site. Fixed plant noise impacts at the nearest on-site NSRs arising from the operation of the furniture workshop at Century Centre was estimated, the results are in compliance with the relevant noise criteria. As such, no adverse fixed source noise impact at the on-site NSRs is anticipated.

6.1.8 Most of the M&E equipment of the Proposed Development will be installed inside plant rooms. With the implementation of good practices, adverse fixed noise impact arising from the operation of the proposed development to the off-site NSRs is not anticipated.

6.1.9 For TNIA, the predicted noise impact on the proposed development shall comply with the standards as recommended in Chapter 9 Environment of the HKPSG with the implementation of mitigation measures recommended in **paragraph 3.4.8** in place.

6.1.10 For railway noise impacts, the predicted noise impacts from LRT to the proposed development shall comply with the requirements as listed in EIAO-TM, IND-TM and HKPSG with the implementation of mitigation measures at selected units of NSRs recommended in **paragraph 3.5.6 to 3.5.8**.

6.1.11 Overall, therefore, there will be no adverse noise impact during the construction and operation phases of the proposed development. A NIA as mentioned in **paragraph 3.6.6** of this EA Report shall be conducted during the detailed design stage to ensure the proposed mitigation measures are feasible.

Water Quality

- 6.1.12 During construction, water quality impacts will be properly controlled with the implementation of good site practice. Portable or Container toilets, when necessary, will be provided for constructions workers on-site. Provided these measures are implemented, adverse water quality impact is not anticipated during the construction phase. The Contractor shall apply for a Discharge Licence under the WPCO and the effluent discharged from the construction site shall comply with the terms and conditions of the Discharge Licence.
- 6.1.13 The wastewater generated from the Proposed Development will be discharged into the municipal sewerage system and a separate SIA results indicated that the capacity of the existing sewerage system is sufficient for conveying the sewage generated from the Site to the downstream areas. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the residents and employees of the Site.
- 6.1.14 Overall, therefore, no adverse water quality impacts are anticipated during the construction or operational phases of the Proposed Development.

Waste Management

- 6.1.15 With the provision and implementation of the good site practices recommended therein, the waste generation during construction phase will be reduced. Provided that good site practices are followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.
- 6.1.16 During operation stage, MSW generated will be stored in enclosed bins, which will be collected and disposed of regularly by a licensed waste collector and disposed of at an appropriate waste disposal facility. Different types of waste will be considered to be reused or recycled by the operator of the project as far as practicable before they are disposed.
- 6.1.17 No potential land contamination sources and issues were identified, further land contamination investigation is considered not necessary.
- 6.1.18 Therefore, no adverse waste management impacts will be arising during both the construction and operation stages with the implementations of recommended mitigation measures and control.

Overall Conclusions

- 6.1.19 Overall, the findings of this EA concluded that the operation of the proposed Cold Storage will not result in any adverse environmental impact.

Appendix A TD'S ENDORSEMENT ON THE TRAFFIC FORECAST AND NO COMMENT ON ROAD TYPES

By Fax
2528 6343



運輸署

Transport Department

本署檔案 Our Ref. : (NH9JK) in TD NR157/161/YLDD-121
來函檔號 Your Ref. : J7077/1
電話 Tel. : 2399 2422
圖文傳真 Fax : 2381 3799
電郵 Email : wilsonkhman@td.gov.hk

12 August 2021

CKM Asia Limited
21st Floor, Methodist House
36 Hennessy Road
Wanchai, Hong Kong

Dear Sir/Madam,

**Proposed Residential Care Home for the Elderly and Flat
at Various Lots in D.D.121 and D.D.122, Ping Shan, Yuen Long**

Traffic Forecast for Traffic Noise Impact Assessment

I refer to your above-referenced letter dated 6 August 2021 regarding Traffic Forecast for Traffic Noise Impact Assessment. I have no comment to the traffic forecast for traffic noise impact assessment purpose.

As the subject site is located in close vicinity of LRT, you may need to consider the noise arising from LRT in your noise assessment.

Yours faithfully,

(Wilson MAN)
for Commissioner for Transport

新界分區辦事處
NT Regional Office
九龍聯運街三十號旺角政府合署七樓
7th Floor, Mong Kok Government Offices, 30 Luen Wan Street, Kowloon.
圖文傳真 Fax No.: 2381 3799 (新界區) (NTRO)
網址 Web Site: <http://www.td.gov.hk>

TOTAL P.001

Antony WONG

From: Wilson KH MAN <wilsonkhman@td.gov.hk>
Sent: Sunday, 6 March 2022 9:48 AM
To: Antony WONG
Cc: Grace CHEUNG (gcheung@aikon.hk); Julie CHAN; kkhlee@pland.gov.hk; 'Thomas Luk'; wilsonkhman@td.gov.hk
Subject: Re: 7076822 Planning Application No. Y/YL-PS/4 - Rezoning from "CDA" and "V" to "R(B)2", Ping Shan - Road Types
Attachments: Figure 1 Public Roads.pdf
Importance: High

Dear Antony,

I have no comment to the proposed classification on the road type for environmental assessment purpose.

Regards,
Wilson MAN

E/YLW, TD
Tel : 2399 2422

From: Antony WONG <Antony.Wong@smec.com>
To: "wilsonkhman@td.gov.hk" <wilsonkhman@td.gov.hk>
Cc: "kkhlee@pland.gov.hk" <kkhlee@pland.gov.hk>, "Grace CHEUNG (gcheung@aikon.hk)" <gcheung@aikon.hk>, 'Thomas Luk' <tluk@aikon.hk>, Julie CHAN <Julie.chan@smec.com>
Date: 2022/03/04 下午 08:37
Subject: 7076822 Planning Application No. Y/YL-PS/4 - Rezoning from "CDA" and "V" to "R(B)2", Ping Shan - Road Types

Dear Mr Man,

We are the Environmental Consultant appointed by the Applicant to support in the captioned planning application. Recently we received comments from EPD on our Environmental Assessment (EA) Report. One of EPD's comments is to seek the agreement from the Transport Department on the road types for the roads not included in the Annual Traffic Census.

In order to address the aforementioned comment provide by EPD, we would appreciate if you could review on the road types of the road sections listed below which are also shown on the attached figure:

ID	Road Section	Road Type	Remarks
1	Castle Peak Road – Ping Shan (from Ping Ha Road to Tin Ha Road)	Rural Trunk Road	ATC Station No. 5252
2	Ping Ha Road (from Castle Peak Road – Ping Shan to Tin Yiu Road)	Rural Road	ATC Station No. 6053
3	Ping Kwai Road	Rural Road	roads connecting the smaller centres of population to major road (i.e. Castle Peak Road)
4	Ping Yeung Lane	Rural Road	
5	Ping Shan Chuk Lam Road	Feeder Road	roads connecting villages or remote settlements to rural road (i.e. Ping Ha Road)
6	Ping Shan Nam Pak Road	Feeder Road	
7	Unnamed Road (between Ping Ha Road and the Application Site)	Feeder Road	

Please do not hesitate to contact me on 3995 8120 / 6779 2613 should you require any further information.

Kind regards,

Antony

Antony WONG

Technical Director – Water & Environment

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E antony.wong@smec.com

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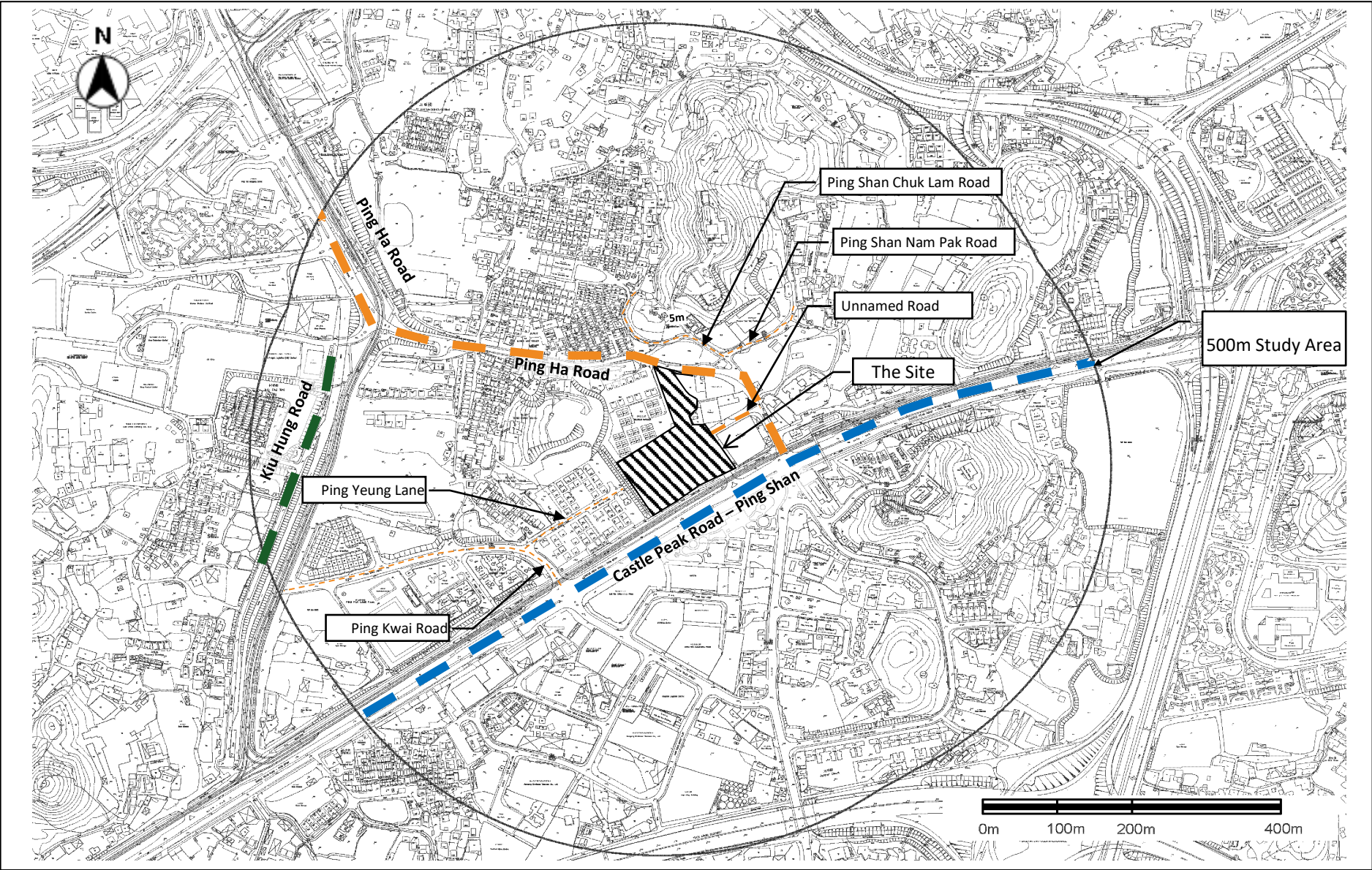
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Figure 1 Roads and Site Boundary



Appendix B PREDICTED ROAD TRAFFIC NOISE LEVELS

Base Case

Tower 1

Floor	mPD	T1-A1	T1-A2	T1-A3	T1-B1	T1-B2	T1-B3	T1-C1	T1-C2	T1-D1	T1-D2	T1-E1	T1-E2	T1-E3	T1-F1	T1-F2	T1-G1	T1-G2	T1-G3	T1-G4	T1-G5
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54	55	55	55	56	56	56	N/A	N/A	N/A	N/A	N/A
1/F	23.1	56	57	57	57	57	58	59	60	60	60	61	61	62	63	63	64	64	65	N/A	N/A
2/F	26.3	59	59	59	59	59	60	61	61	62	62	63	63	64	64	65	66	66	67	N/A	N/A
3/F	29.4	61	61	61	61	61	61	62	63	63	64	64	65	65	66	66	66	67	68	N/A	N/A
4/F	32.6	62	62	62	62	62	62	63	64	64	64	65	65	66	66	66	67	67	68	N/A	N/A
5/F	35.7	63	62	62	63	63	63	64	64	65	65	65	66	66	66	67	67	68	68	N/A	N/A
6/F	38.9	64	63	63	63	63	63	64	64	65	65	65	66	66	N/A	N/A	67	68	68	N/A	N/A
7/F	42.0	64	63	63	63	63	64	64	65	65	65	65	66	66	N/A	N/A	67	68	68	N/A	N/A
8/F	45.2	65	63	63	63	63	64	64	65	65	65	66	66	66	N/A	N/A	67	68	68	N/A	N/A
9/F	48.3	65	63	63	64	64	64	65	65	65	65	66	66	66	N/A	N/A	67	68	68	N/A	N/A
10/F	51.5	65	64	64	64	64	64	65	65	65	66	66	66	66	N/A	N/A	67	68	69	N/A	N/A
11/F	54.6	66	64	64	64	64	64	65	65	66	66	66	67	67	N/A	N/A	68	68	69	N/A	N/A
12/F	57.8	66	64	64	64	64	65	66	66	66	67	67	67	68	N/A	N/A	69	69	70	N/A	N/A
13/F	60.9	66	65	65	65	65	65	67	67	67	67	68	68	68	N/A	N/A	69	70	70	N/A	N/A
14/F	64.1	66	65	65	65	66	66	67	67	68	68	68	68	69	N/A	N/A	70	70	71	N/A	N/A
15/F	67.2	66	66	66	67	67	67	68	68	68	68	69	69	69	70	70	70	70	71	N/A	N/A
16/F	70.4	N/A	N/A	N/A	N/A	N/A	N/A	68	68	69	69	69	70	70	70	70	71	71	71	N/A	N/A
17/F	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	71	60	56	71	71
18/F	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	71	67	63	71	71

Floor	mPD	T1-H1	T1-H2	T1-I1	T1-I2	T1-J1	T1-J2	T1-K1	T1-K2	T1-K3	T1-L1	T1-L2	T1-M1	T1-M2	T1-N1	T1-N2	T1-O1	T1-O2	T1-O3	T1-P1
G/F	15.0	N/A	N/A	N/A	N/A	65	65	65	66	67	68	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	66	68	69	71	74	75	75	75	76	76	77	75	74	73	73	72	72	71	71
2/F	26.3	68	69	71	72	75	75	75	76	76	76	77	75	74	73	73	72	72	72	71
3/F	29.4	68	70	71	72	74	75	75	75	76	76	77	75	74	73	73	73	72	72	72
4/F	32.6	69	70	71	72	74	75	75	75	76	76	77	75	74	73	73	73	72	72	72
5/F	35.7	69	70	71	72	74	75	75	75	76	76	77	75	74	73	73	73	72	72	72
6/F	38.9	69	70	71	72	74	75	75	75	76	76	77	75	74	73	73	72	72	72	72
7/F	42.0	69	70	71	72	74	74	75	75	75	76	76	75	74	73	73	72	72	72	72
8/F	45.2	69	70	71	72	74	74	75	75	75	75	76	75	73	73	73	72	72	72	72
9/F	48.3	69	70	71	72	74	74	74	75	75	75	76	74	73	73	72	72	72	72	72
10/F	51.5	69	70	71	72	74	74	74	74	75	75	76	74	73	73	72	72	72	72	71
11/F	54.6	70	71	72	73	74	74	74	74	75	75	76	74	73	72	72	72	72	72	71
12/F	57.8	70	71	72	73	74	74	74	74	74	75	75	74	73	72	72	72	72	71	71
13/F	60.9	71	71	72	73	73	74	74	74	74	74	75	74	73	72	72	72	72	71	71
14/F	64.1	71	72	72	73	73	73	74	74	74	74	75	74	73	72	72	72	71	71	71
15/F	67.2	71	72	72	73	73	73	74	74	74	74	75	73	72	72	72	71	71	71	71
16/F	70.4	71	72	72	73	73	73	73	74	74	74	75	73	72	72	72	71	71	71	71
17/F	73.5	71	72	72	73	73	73	73	73	73	74	74	75	73	72	72	71	71	71	71
18/F	76.7	71	72	72	72	73	73	73	73	73	74	74	74	73	72	72	71	71	71	71

Floor	mPD	T1-Q1	T1-Q2	T1-R1	T1-R2	T1-R3	T1-S1	T1-S2	T1-T1	T1-T2	T1-T3	T1-U1	T1-U2	T1-V1	T1-V2	T1-W1	T1-W2	T1-W3	T1-X1	T1-X2	T1-X3
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	61	61	60	60	60	60	60	60	59	59	N/A	N/A	N/A
1/F	23.1	70	70	69	69	69	69	68	68	68	67	67	67	66	66	66	66	65	65	65	64
2/F	26.3	71	71	70	70	70	69	69	69	68	68	68	68	67	67	67	66	66	66	66	66
3/F	29.4	71	71	71	71	70	70	70	70	69	69	69	68	68	68	68	67	67	67	67	67
4/F	32.6	71	71	71	71	71	71	71	71	70	70	70	69	69	69	68	68	68	68	68	68
5/F	35.7	72	71	71	71	71	71	71	71	70	70	70	70	69	69	69	69	69	69	68	68
6/F	38.9	72	71	71	71	71	N/A	N/A	71	71	71	70	70	70	70	70	69	69	69	69	69
7/F	42.0	71	71	71	71	71	N/A	N/A	71	71	71	71	70	70	70	70	70	70	69	69	69
8/F	45.2	71	71	71	71	71	N/A	N/A	71	71	71	71	71	70	70	70	70	70	70	70	70
9/F	48.3	71	71	71	71	71	N/A	N/A	71	71	71	71	71	70	70	70	70	70	70	70	70
10/F	51.5	71	71	71	71	71	N/A	N/A	71	71	71	71	71	70	70	70	70	70	70	70	70
11/F	54.6	71	71	71	71	71	N/A	N/A	71	71	71	71	71	70	70	70	70	70	70	70	70
12/F	57.8	71	71	71	71	71	N/A	N/A	71	71	71	71	71	70	70	70	70	70	70	70	70
13/F	60.9	71	71	71	71	71	N/A	N/A	71	71	71	71	70	70	70	70	70	70	70	70	70
14/F	64.1	71	71	71	71	71	N/A	N/A	71	71	71	70	70	70	70	70	70	70	70	70	70
15/F	67.2	71	71	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	70	70	70
16/F	70.4	71	71	71	71	71	71	71	71	70	70	70	70	70	70	70	70	70	70	70	70
17/F	73.5	71	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18/F	76.7	71	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

- Notes:
- “mPD” means the level of the assessment point.
 - Red shading indicates that predicted noise level exceeds road traffic noise standard of 70 dB(A) L₁₀(1 hour).

Base Case

Tower 2

Floor	mPD	T2-A1	T2-A2	T2-A3	T2-B1	T2-B2	T2-C1	T2-C2	T2-C3	T2-D1	T2-E1	T2-F1	T2-F2	T2-G1	T2-G2	T2-G3	T2-H1	T2-H2
G/F	15.0	54	46	45	45	45	45	45	45	45	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	59	50	50	50	50	49	49	49	49	49	49	49	49	49	50	61	60
2/F	26.3	61	53	52	52	52	52	51	51	51	51	51	51	51	51	51	61	61
3/F	29.4	62	55	55	55	54	54	54	53	53	52	52	52	52	53	53	62	61
4/F	32.6	63	56	56	56	56	56	55	55	55	54	54	54	55	55	55	50	62
5/F	35.7	64	57	57	57	57	57	56	56	56	56	56	56	57	57	57	N/A	N/A
6/F	38.9	64	58	58	57	57	57	57	57	58	58	58	58	58	58	58	N/A	N/A
7/F	42.0	64	58	58	58	58	58	58	58	58	58	58	58	59	59	59	N/A	N/A
8/F	45.2	65	59	59	59	59	59	59	59	59	59	59	59	59	59	60	N/A	N/A
9/F	48.3	65	59	59	59	59	59	59	59	59	59	60	60	60	60	60	N/A	N/A
10/F	51.5	65	59	59	59	60	60	60	60	60	60	60	60	61	61	61	N/A	N/A
11/F	54.6	65	60	60	60	60	60	60	60	60	61	61	61	61	61	61	N/A	N/A
12/F	57.8	65	60	60	60	61	61	61	61	61	61	61	61	62	62	62	N/A	N/A
13/F	60.9	65	61	61	61	61	61	61	61	61	62	62	62	62	62	63	N/A	N/A
14/F	64.1	66	61	61	61	62	62	62	62	62	62	62	63	63	63	63	N/A	N/A

Floor	mPD	T2-I1	T2-I2	T2-I3	T2-J1	T2-K1	T2-L1	T2-L2	T2-M1	T2-M2	T2-M3	T2-N1	T2-N2	T2-N3	T2-O1	T2-O2	T2-O3	T2-P1
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	53	54	55	55	56	57	55	56	56	57	58	62	66	66	65	65	64
2/F	26.3	54	54	55	55	56	57	56	57	57	58	59	63	67	67	66	66	65
3/F	29.4	55	55	56	56	57	58	57	57	58	59	60	64	68	68	67	67	66
4/F	32.6	56	57	57	57	58	58	58	58	59	59	61	65	69	68	68	68	67
5/F	35.7	58	58	58	58	59	59	58	59	60	60	62	66	70	69	69	68	68
6/F	38.9	59	59	59	59	59	60	59	60	60	61	62	66	70	70	69	69	68
7/F	42.0	59	60	60	60	60	60	60	60	61	62	63	66	71	70	70	69	69
8/F	45.2	60	60	60	60	61	61	61	61	62	63	63	67	71	70	70	70	69
9/F	48.3	61	61	61	61	62	62	62	62	63	63	64	67	71	71	70	70	70
10/F	51.5	61	61	62	62	63	63	63	63	64	64	64	67	71	71	71	70	70
11/F	54.6	62	62	63	63	63	64	64	64	64	64	65	67	71	71	71	71	70
12/F	57.8	63	63	63	64	64	64	64	64	65	65	N/A	N/A	N/A	N/A	N/A	N/A	70
13/F	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14/F	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Floor	mPD	T2-P2	T2-Q1	T2-Q2	T2-Q3	T2-R1	T2-R2	T2-S1	T2-S2	T2-S3	T2-T1	T2-T2	T2-U1	T2-U2	T2-V1	T2-V2	T2-V3
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54	54	54	54	55
1/F	23.1	64	59	58	58	58	58	58	58	58	58	58	59	59	59	60	60
2/F	26.3	64	60	59	59	59	59	59	59	59	59	59	61	61	61	61	62
3/F	29.4	65	61	60	59	59	59	59	59	60	60	60	62	62	62	63	63
4/F	32.6	66	62	61	61	60	60	60	60	60	61	61	63	63	63	64	64
5/F	35.7	67	63	62	62	N/A	N/A	61	60	61	61	61	63	63	64	64	64
6/F	38.9	68	64	64	63	N/A	N/A	62	61	61	61	62	63	64	64	64	65
7/F	42.0	68	65	65	64	N/A	N/A	62	61	61	62	62	64	64	64	65	65
8/F	45.2	69	66	65	65	N/A	N/A	63	62	62	62	62	64	64	64	65	65
9/F	48.3	69	67	66	66	N/A	N/A	64	63	63	63	63	64	65	65	65	65
10/F	51.5	70	68	67	67	N/A	N/A	66	66	65	65	65	65	65	66	66	66
11/F	54.6	70	69	68	68	N/A	N/A	67	67	67	67	67	67	67	67	66	67
12/F	57.8	70	69	69	68	N/A	N/A	68	68	68	68	68	68	68	67	67	67
13/F	60.9	N/A	N/A	N/A	N/A	N/A	N/A	65	65	64	64	64	65	66	66	66	66
14/F	64.1	N/A	N/A	N/A	N/A	N/A	N/A	66	66	66	66	66	66	66	66	66	66

- Notes:
1.

“mPD” means the level of the assessment point.
2.

Red shading indicates that predicted noise level exceeds road traffic noise standard of 70 dB(A) L₁₀(1 hour).

Base Case

Tower 3

Floor	mPD	T3-A1	T3-A2	T3-A3	T3-B1	T3-B2	T3-B3	T3-C1	T3-C2	T3-D1	T3-D2	T3-D3	T3-E1	T3-E2	T3-E3	T3-F1	T3-F2	T3-F3	T3-F4	T3-F5
1/F	23.1	71	41	39	38	38	37	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
2/F	26.3	72	41	39	39	38	37	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
3/F	29.4	72	41	40	40	39	38	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
4/F	32.6	72	42	40	40	40	38	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
5/F	35.7	72	42	41	41	40	39	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
6/F	38.9	72	43	41	42	41	40	34	34	34	34	34	34	33	33	33	33	N/A	N/A	N/A
7/F	42.0	N/A	N/A	N/A	43	42	41	35	35	35	35	35	34	34	34	33	33	N/A	N/A	N/A
8/F	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	76	66	61	38	38
9/F	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	76	73	66	38	39
10/F	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75	74	71	40	40

Floor	mPD	T3-G1	T3-H1	T3-I1	T3-I2	T3-I3	T3-J1	T3-K1	T3-K2	T3-K3	T3-L1	T3-M1	T3-M2	T3-M3	T3-M4	T3-N1	T3-N2
1/F	23.1	N/A	36	37	38	57	67	68	68	69	N/A	68	71	72	75	75	75
2/F	26.3	N/A	36	37	38	58	68	69	69	70	N/A	70	72	72	75	75	75
3/F	29.4	N/A	36	37	38	59	69	69	70	70	N/A	71	72	73	75	76	76
4/F	32.6	N/A	36	37	38	60	70	70	71	71	N/A	71	73	73	76	76	76
5/F	35.7	N/A	36	37	38	61	70	71	71	72	N/A	72	73	74	76	76	76
6/F	38.9	32	36	36	38	62	71	71	72	72	72	72	73	74	76	76	76
7/F	42.0	33	36	37	39	62	71	72	72	72	72	73	73	74	76	76	76
8/F	45.2	44	47	47	47	63	71	72	72	72	72	73	73	74	76	76	76
9/F	48.3	46	48	48	48	63	72	72	72	72	72	73	73	74	75	75	75
10/F	51.5	48	50	50	50	63	72	72	72	72	72	73	73	74	75	75	75

Floor	mPD	T3-O1	T3-O2	T3-P1	T3-P2	T3-Q1	T3-Q2	T3-R1	T3-S1	T3-T1	T3-U1	T3-U2	T3-V1	T3-V2
1/F	23.1	75	75	76	76	76	76	76	77	77	77	77	77	77
2/F	26.3	76	76	76	76	76	76	77	77	77	77	77	77	77
3/F	29.4	76	76	76	76	76	76	77	77	77	77	77	77	77
4/F	32.6	76	76	76	76	76	76	76	77	77	77	77	77	77
5/F	35.7	76	76	76	76	76	76	76	77	77	77	77	77	76
6/F	38.9	76	76	76	76	76	76	76	76	77	77	77	77	76
7/F	42.0	76	76	76	76	76	76	76	76	77	77	77	76	76
8/F	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/F	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/F	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RCHE

Floor	mPD	R1	R2	R3	R4	R5	R6	R7	R8
1/F	19.6	71	69	67	65	65	64	63	63
2/F	23.8	72	70	69	67	66	65	65	64
3/F	28.0	72	71	69	68	67	67	66	66
4/F	32.2	72	71	70	69	68	68	68	67
5/F	36.4	71	71	70	69	69	69	69	68

- Notes:
- 1. “mPD” means the level of the assessment point.
 - 2. Red shading indicates that predicted noise level exceeds road traffic noise standard of 70 dB(A) L₁₀(1 hour).

Mitigated Case

Tower 1

Floor	mPD	T1-A1	T1-A2	T1-A3	T1-B1	T1-B2	T1-B3	T1-C1	T1-C2	T1-D1	T1-D2	T1-E1	T1-E2	T1-E3	T1-F1	T1-F2	T1-G1	T1-G2	T1-G3	T1-G4	T1-G5
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54	55	55	55	56	56	56	N/A	N/A	N/A	N/A	N/A
1/F	23.1	56	57	57	57	57	58	59	60	60	60	61	61	62	63	63	64	64	65	N/A	N/A
2/F	26.3	59	59	59	59	59	60	61	61	62	62	63	63	64	64	65	66	66	67	N/A	N/A
3/F	29.4	61	61	61	61	61	61	62	63	63	64	64	65	65	66	66	66	67	68	N/A	N/A
4/F	32.6	62	62	62	62	62	62	63	64	64	64	65	65	66	66	66	67	67	68	N/A	N/A
5/F	35.7	63	62	62	63	63	63	64	64	65	65	65	66	66	66	67	67	68	68	N/A	N/A
6/F	38.9	64	63	63	63	63	63	64	64	65	65	65	66	66	N/A	N/A	67	68	68	N/A	N/A
7/F	42.0	64	63	63	63	63	64	64	65	65	65	65	66	66	N/A	N/A	67	68	68	N/A	N/A
8/F	45.2	65	63	63	63	63	64	64	65	65	65	66	66	66	N/A	N/A	67	68	68	N/A	N/A
9/F	48.3	65	63	63	64	64	64	65	65	65	65	66	66	66	N/A	N/A	67	68	68	N/A	N/A
10/F	51.5	65	64	64	64	64	64	65	65	65	66	66	66	66	N/A	N/A	67	68	69	N/A	N/A
11/F	54.6	66	64	64	64	64	64	65	65	66	66	66	67	67	N/A	N/A	68	68	69	N/A	N/A
12/F	57.8	66	64	64	64	64	65	66	66	66	67	67	67	68	N/A	N/A	69	69	70	N/A	N/A
13/F	60.9	66	65	65	65	65	65	67	67	67	67	68	68	68	N/A	N/A	69	70	70	N/A	N/A
14/F	64.1	66	65	65	65	66	66	67	67	68	68	68	68	69	N/A	N/A	70	70	69	N/A	N/A
15/F	67.2	66	66	66	67	67	67	68	68	68	68	69	69	69	70	70	70	70	69	N/A	N/A
16/F	70.4	N/A	N/A	N/A	N/A	N/A	N/A	68	68	69	69	69	69	70	70	70	70	69	69	N/A	N/A
17/F	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69	60	56	69	69
18/F	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69	67	63	69	69

Floor	mPD	T1-H1	T1-H2	T1-I1	T1-I2	T1-J1	T1-J2	T1-K1	T1-K2	T1-K3	T1-L1	T1-L2	T1-M1	T1-M2	T1-N1	T1-N2	T1-O1	T1-O2	T1-O3	T1-P1
G/F	15.0	N/A	N/A	N/A	N/A	65	65	65	66	67	68	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	66	68	69	68	69	70	70	70	70	70	70	70	68	67	68	66	69	69	69
2/F	26.3	68	69	69	69	70	70	70	70	70	70	70	70	68	67	68	66	69	70	69
3/F	29.4	68	70	69	69	69	70	70	70	70	70	70	70	68	67	68	67	69	70	70
4/F	32.6	69	70	69	69	69	70	70	70	70	70	70	70	68	67	68	67	69	70	70
5/F	35.7	69	70	69	69	69	70	70	70	70	70	70	70	68	67	68	67	69	70	70
6/F	38.9	69	70	69	69	69	70	70	70	70	70	70	70	68	67	68	66	69	70	70
7/F	42.0	69	70	69	69	69	69	70	69	69	70	69	70	68	67	68	66	69	70	70
8/F	45.2	69	70	69	69	69	69	70	69	69	69	69	70	67	67	68	66	69	70	70
9/F	48.3	69	70	69	69	69	69	69	69	69	69	69	69	67	67	67	66	69	70	70
10/F	51.5	69	70	69	69	69	69	69	69	69	69	69	69	67	67	67	66	69	70	69
11/F	54.6	70	69	70	70	69	69	69	69	69	69	69	69	67	66	67	66	69	70	69
12/F	57.8	70	69	70	70	69	69	69	69	68	69	68	69	67	66	67	66	69	69	69
13/F	60.9	69	69	70	70	68	69	69	69	68	68	68	69	67	66	67	66	69	69	69
14/F	64.1	69	70	70	70	68	68	69	68	68	68	68	69	67	66	67	66	68	69	69
15/F	67.2	69	70	70	70	68	68	69	68	68	68	68	68	66	66	67	65	68	69	69
16/F	70.4	69	70	70	70	68	68	68	68	68	68	68	68	66	66	67	65	68	69	69
17/F	73.5	69	70	70	70	68	68	68	68	68	68	68	68	66	66	66	65	68	69	69
18/F	76.7	69	70	70	69	68	68	68	68	68	68	67	68	66	66	66	65	68	69	69

Floor	mPD	T1-Q1	T1-Q2	T1-R1	T1-R2	T1-R3	T1-S1	T1-S2	T1-T1	T1-T2	T1-T3	T1-U1	T1-U2	T1-V1	T1-V2	T1-W1	T1-W2	T1-W3	T1-X1	T1-X2	T1-X3
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	61	61	60	60	60	60	60	60	59	59	N/A	N/A	N/A
1/F	23.1	70	70	69	69	69	69	68	68	68	67	67	67	66	66	66	66	65	65	65	64
2/F	26.3	69	69	70	70	70	69	69	69	68	68	68	68	67	67	67	66	66	66	66	66
3/F	29.4	69	69	69	69	70	70	70	70	69	69	69	69	68	68	68	67	67	67	67	67
4/F	32.6	69	69	69	69	69	69	69	70	70	70	70	69	69	69	68	68	68	68	68	68
5/F	35.7	70	69	69	69	69	69	69	69	70	70	70	70	70	69	69	69	69	69	68	68
6/F	38.9	70	69	69	69	69	N/A	N/A	69	69	69	70	70	70	70	70	69	69	69	69	69
7/F	42.0	69	69	69	69	69	N/A	N/A	69	69	69	69	70	70	70	70	70	70	69	69	69
8/F	45.2	69	69	69	69	69	N/A	N/A	69	69	69	69	69	70	70	70	70	70	70	70	70
9/F	48.3	69	69	69	69	69	N/A	N/A	69	69	69	69	69	70	70	70	70	70	70	70	70
10/F	51.5	69	69	69	69	69	N/A	N/A	69	69	69	69	69	70	70	70	70	70	70	70	70
11/F	54.6	69	69	69	69	69	N/A	N/A	69	69	69	69	69	70	70	70	70	70	70	70	70
12/F	57.8	69	69	69	69	69	N/A	N/A	69	69	69	69	69	70	70	70	70	70	70	70	70
13/F	60.9	69	69	69	69	69	N/A	N/A	69	69	69	70	70	70	70	70	70	70	70	70	70
14/F	64.1	69	69	69	69	69	N/A	N/A	69	69	69	70	70	70	70	70	70	70	70	70	70
15/F	67.2	69	69	69	69	69	69	69	69	69	70	70	70	70	70	70	70	70	70	70	70
16/F	70.4	69	69	69	69	69	69	69	69	70	70	70	70	70	70	70	70	70	70	70	70
17/F	73.5	69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18/F	76.7	69	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:

1. “mPD” means the level of the assessment point.
2. Green shading indicates predicted noise level after adoption of **Type 1 acoustic window (baffle type)**.
3. Orange shading indicates predicted noise level after adoption of **Type 2 acoustic window (baffle type)**.

Mitigated Case

Tower 2

Floor	mPD	T2-A1	T2-A2	T2-A3	T2-B1	T2-B2	T2-C1	T2-C2	T2-C3	T2-D1	T2-E1	T2-F1	T2-F2	T2-G1	T2-G2	T2-G3	T2-H1	T2-H2
G/F	15.0	54	46	45	45	45	45	45	45	45	45	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	59	50	50	50	50	49	49	49	49	49	49	49	49	49	50	61	60
2/F	26.3	61	53	52	52	52	52	51	51	51	51	51	51	51	51	51	61	61
3/F	29.4	62	55	55	55	54	54	54	53	53	52	52	52	52	53	53	62	61
4/F	32.6	63	56	56	56	56	56	55	55	55	54	54	54	55	55	55	50	62
5/F	35.7	64	57	57	57	57	57	56	56	56	56	56	56	57	57	57	N/A	N/A
6/F	38.9	64	58	58	57	57	57	57	57	58	58	58	58	58	58	58	N/A	N/A
7/F	42.0	64	58	58	58	58	58	58	58	58	58	58	58	59	59	59	N/A	N/A
8/F	45.2	65	59	59	59	59	59	59	59	59	59	59	59	59	59	60	N/A	N/A
9/F	48.3	65	59	59	59	59	59	59	59	59	59	60	60	60	60	60	N/A	N/A
10/F	51.5	65	59	59	59	60	60	60	60	60	60	60	60	61	61	61	N/A	N/A
11/F	54.6	65	60	60	60	60	60	60	60	60	61	61	61	61	61	61	N/A	N/A
12/F	57.8	65	60	60	60	61	61	61	61	61	61	61	61	62	62	62	N/A	N/A
13/F	60.9	65	61	61	61	61	61	61	61	61	62	62	62	62	62	63	N/A	N/A
14/F	64.1	66	61	61	61	62	62	62	62	62	62	62	63	63	63	63	N/A	N/A

Floor	mPD	T2-I1	T2-I2	T2-I3	T2-J1	T2-K1	T2-L1	T2-L2	T2-M1	T2-M2	T2-M3	T2-N1	T2-N2	T2-N3	T2-O1	T2-O2	T2-O3	T2-P1
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/F	23.1	53	54	55	55	56	57	55	56	56	57	58	62	66	66	65	65	64
2/F	26.3	54	54	55	55	56	57	56	57	57	58	59	63	67	67	66	66	65
3/F	29.4	55	55	56	56	57	58	57	57	58	59	60	64	68	68	67	67	66
4/F	32.6	56	57	57	57	58	58	58	58	59	59	61	65	69	68	68	68	67
5/F	35.7	58	58	58	58	59	59	58	59	60	60	62	66	70	69	69	68	68
6/F	38.9	59	59	59	59	59	60	59	60	60	61	62	66	70	70	69	69	68
7/F	42.0	59	60	60	60	60	60	60	60	61	62	63	66	69	70	70	69	69
8/F	45.2	60	60	60	60	61	61	61	61	62	63	63	67	69	70	70	70	69
9/F	48.3	61	61	61	61	62	62	62	62	63	63	64	67	69	69	70	70	70
10/F	51.5	61	61	62	62	63	63	63	63	64	64	64	67	69	69	69	70	70
11/F	54.6	62	62	63	63	63	64	64	64	64	64	65	67	69	69	69	69	70
12/F	57.8	63	63	63	64	64	64	64	64	65	65	N/A	N/A	N/A	N/A	N/A	N/A	70
13/F	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14/F	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Floor	mPD	T2-P2	T2-Q1	T2-Q2	T2-Q3	T2-R1	T2-R2	T2-S1	T2-S2	T2-S3	T2-T1	T2-T2	T2-U1	T2-U2	T2-V1	T2-V2	T2-V3
G/F	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54	54	54	54	55
1/F	23.1	64	59	58	58	58	58	58	58	58	58	58	59	59	59	60	60
2/F	26.3	64	60	59	59	59	59	59	59	59	59	59	61	61	61	61	62
3/F	29.4	65	61	60	59	59	59	59	59	60	60	60	62	62	62	63	63
4/F	32.6	66	62	61	61	60	60	60	60	60	61	61	63	63	63	64	64
5/F	35.7	67	63	62	62	N/A	N/A	61	60	61	61	61	63	63	64	64	64
6/F	38.9	68	64	64	63	N/A	N/A	62	61	61	61	62	63	64	64	64	65
7/F	42.0	68	65	65	64	N/A	N/A	62	61	61	62	62	64	64	64	65	65
8/F	45.2	69	66	65	65	N/A	N/A	63	62	62	62	62	64	64	64	65	65
9/F	48.3	69	67	66	66	N/A	N/A	64	63	63	63	63	64	65	65	65	65
10/F	51.5	70	68	67	67	N/A	N/A	66	66	65	65	65	65	65	66	66	66
11/F	54.6	70	69	68	68	N/A	N/A	67	67	67	67	67	67	67	67	66	67
12/F	57.8	70	69	69	68	N/A	N/A	68	68	68	68	68	68	68	67	67	67
13/F	60.9	N/A	N/A	N/A	N/A	N/A	N/A	65	65	64	64	64	65	66	66	66	66
14/F	64.1	N/A	N/A	N/A	N/A	N/A	N/A	66	66	66	66	66	66	66	66	66	66

Notes:

4. “mPD” means the level of the assessment point.
5. Green shading indicates predicted noise level after adoption of **Type 1 acoustic window (baffle type)**.
6. Yellow shading indicates predicted noise level after adoption of **Type 2 acoustic window (baffle type)**.

Mitigated Case

Tower 3

Floor	mPD	T3-A1	T3-A2	T3-A3	T3-B1	T3-B2	T3-B3	T3-C1	T3-C2	T3-D1	T3-D2	T3-D3	T3-E1	T3-E2	T3-E3	T3-F1	T3-F2	T3-F3	T3-F4	T3-F5
1/F	23.1	69	41	39	38	38	37	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
2/F	26.3	70	41	39	39	38	37	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
3/F	29.4	70	41	40	40	39	38	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
4/F	32.6	70	42	40	40	40	38	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
5/F	35.7	70	42	41	41	40	39	33	33	33	33	33	33	33	32	32	32	N/A	N/A	N/A
6/F	38.9	70	43	41	42	41	40	34	34	34	34	34	34	33	33	33	33	N/A	N/A	N/A
7/F	42.0	N/A	N/A	N/A	43	42	41	35	35	35	35	35	34	34	34	33	33	N/A	N/A	N/A
8/F	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70	66	61	38	38
9/F	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70	67	66	38	39
10/F	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	69	68	69	40	40

Floor	mPD	T3-G1	T3-H1	T3-I1	T3-I2	T3-I3	T3-J1	T3-K1	T3-K2	T3-K3	T3-L1	T3-M1	T3-M2	T3-M3	T3-M4	T3-N1	T3-N2
1/F	23.1	N/A	36	37	38	57	67	68	68	69	N/A	68	68	68	69	69	69
2/F	26.3	N/A	36	37	38	58	68	69	69	70	N/A	70	69	68	69	69	69
3/F	29.4	N/A	36	37	38	59	69	69	70	70	N/A	68	69	69	69	70	70
4/F	32.6	N/A	36	37	38	60	70	70	69	69	N/A	68	70	69	70	70	70
5/F	35.7	N/A	36	37	38	61	70	69	69	70	N/A	69	70	70	70	70	70
6/F	38.9	32	36	36	38	62	69	69	70	70	70	69	70	70	70	70	70
7/F	42.0	33	36	37	39	62	69	70	70	70	70	70	70	70	70	70	70
8/F	45.2	44	47	47	47	63	69	70	70	70	70	70	70	70	70	70	70
9/F	48.3	46	48	48	48	63	70	70	70	70	70	70	70	70	69	69	69
10/F	51.5	48	50	50	50	63	70	70	70	70	70	70	70	70	69	69	69

Floor	mPD	T3-O1	T3-O2	T3-P1	T3-P2	T3-Q1	T3-Q2	T3-R1	T3-S1	T3-T1	T3-U1	T3-U2	T3-V1	T3-V2
1/F	23.1	69	69	70	70	70	70	69	70	70	70	70	70	70
2/F	26.3	70	70	70	70	70	70	70	70	70	70	70	70	70
3/F	29.4	70	70	70	70	70	70	70	70	70	70	70	70	70
4/F	32.6	70	70	70	70	70	70	69	70	70	70	70	70	70
5/F	35.7	70	70	70	70	70	70	69	70	70	70	70	70	69
6/F	38.9	70	70	70	70	70	70	69	69	70	70	70	70	69
7/F	42.0	70	70	70	70	70	70	69	69	70	70	70	69	69
8/F	45.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/F	48.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10/F	51.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

RCHE									
Floor	mPD	R1	R2	R3	R4	R5	R6	R7	R8
1/F	19.6	69	69	67	65	65	64	63	63
2/F	23.8	70	70	69	67	66	65	65	64
3/F	28.0	70	69	69	68	67	67	66	66
4/F	32.2	70	69	70	69	68	68	68	67
5/F	36.4	69	69	70	69	69	69	69	68

- Notes:
7.

“mPD” means the level of the assessment point.
8.

Green shading indicates predicted noise level after adoption of **Type 1 acoustic window (baffle type)**.
9.

Yellow shading indicates predicted noise level after adoption of **Type 2 acoustic window (baffle type)**.
10.

Blue shading indicates predicted noise level after adoption of **Type 3 acoustic window (baffle type)**.

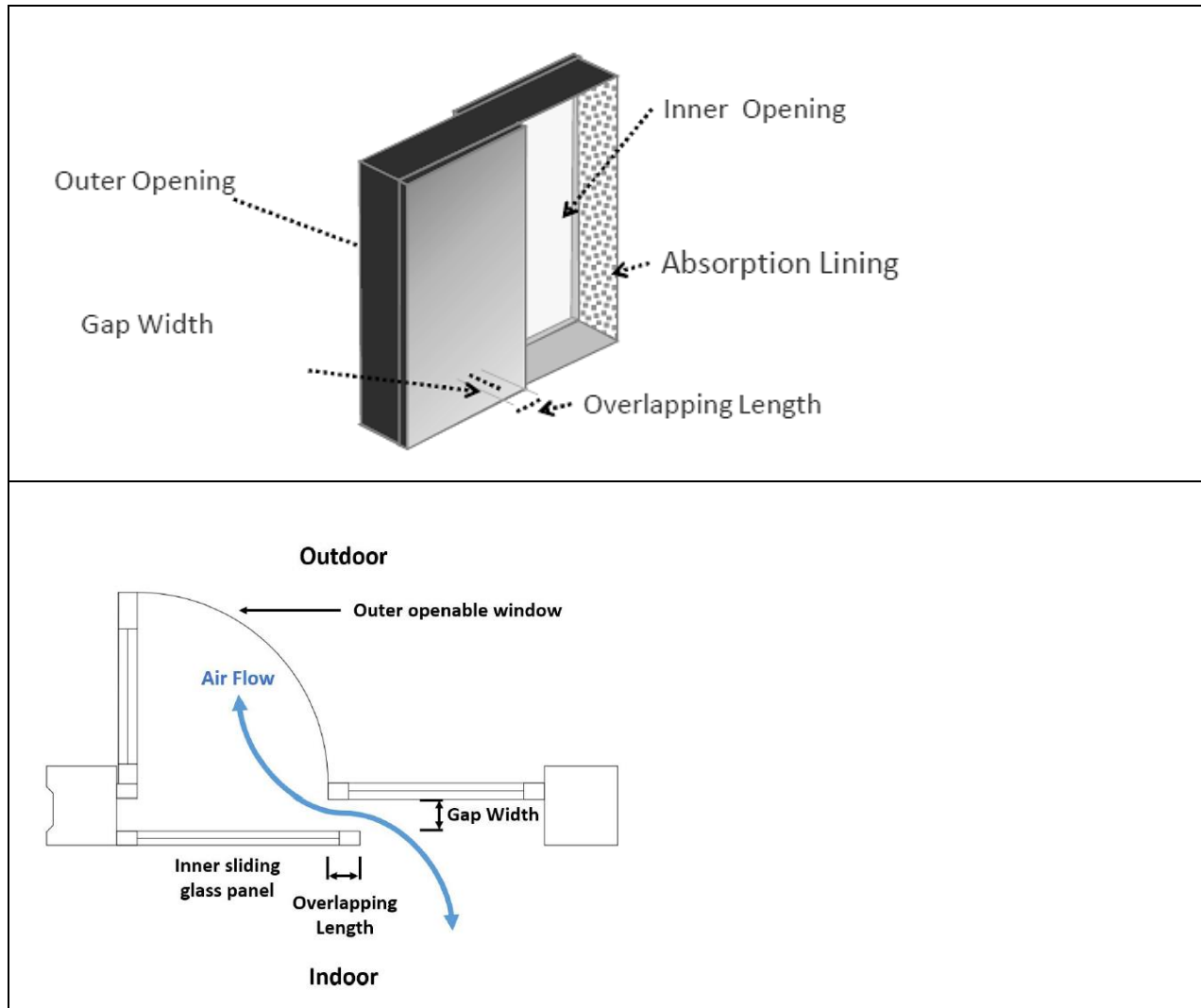
Appendix C DETAILS OF ACOUSTIC WINDOW (BAFFLE TYPE)

D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

Typical Design of Acoustic Windows (Baffle Type) with Sound Absorptive Materials (SAM) Lining



Relative Noise Reduction (RNR) of “Acoustic Windows (Baffle Type)”

Window Type	Outer Opening, m ²	Inner Opening, m ²	Gap width, mm	Overlapping Length, mm	Room Size, m ²	With SAM Lining	RNR, dB(A)
Type 1	1.2~2.3	1.1~2.1	175	340	9.8~23.3	Yes	7.1~8.1
Type 2	0.5	0.5	100	100	8	Yes	7.5
Type 3	5.3~8.8	5.3~8.8	100	250	60.1~68.2	Yes	4.0

Note:

- For optimum performance, the air gap should have a pane-to-pane length of not less than 100mm and a width between 100mm and 175mm, with the inner sliding glass panel in a closed position as required in PNAP APP-130;
- The inner sliding window and outer window set should form an overlapping length of not less than 100mm. The window pane shall be at least 6mm in thickness. The window pane shall be at least 6mm in thickness
- Type 1 Acoustic Window (Baffle Type) refers to precedent case of San Po Kong Public Housing.
- Type 2 Acoustic Window (Baffle Type) refers to Practice Note on Application of Acoustic Windows (Baffle Type) in Planning Residential Developments against Road Traffic Noise Impact published by EPD.
- Type 3 Acoustic Window (Baffle Type) refers to precedent case of residential development at Lung Kui Road, Bacon Hill.**

Tower 1

Window Type	NSR ID	Room Size, m ²	Outer Opening, m ²	Gap width, mm	Overlapping Length, mm	With SAM Lining	Relative Noise Reduction, dB(A)	Proposed Noise Reduction, dB(A)
Type 1	T1-G1	7.7	1.2	175	340	Yes	6.1	2.0
	T1-G3	13.0	1.2	175	340	Yes	7.1	2.0
	T1-G4	31.5	2.3	175	340	Yes	7.1	2.0
	T1-H2	12.8	1.2	175	340	Yes	7.1	2.0
	T1-I1	19.7	2.3	175	340	Yes	7.1	2.0
	T1-I2	7.2	1.2	175	340	Yes	5.8	3.0
	T1-J2	12.0	1.2	175	340	Yes	7.1	5.0
	T1-K1	13.2	1.2	175	340	Yes	7.1	5.0
	T1-K3	8.0	1.2	175	340	Yes	6.2	6.0
	T1-L1	14.4	1.2	175	340	Yes	7.1	6.0
	T1-L2	11.4	1.2	175	340	Yes	7.1	7.0
	T1-M2	11.5	1.2	175	340	Yes	7.1	6.0
	T1-N1	12.4	1.2	175	340	Yes	7.1	6.0
	T1-O1	13.4	1.2	175	340	Yes	7.1	6.0
	T1-O3	7.7	1.2	175	340	Yes	6.1	2.0
	T1-P1	14.7	1.2	175	340	Yes	7.1	2.0
	T1-Q1	12.9	1.2	175	340	Yes	7.1	2.0
	T1-R1	13.4	1.2	175	340	Yes	7.1	2.0
	T1-R3	7.7	1.2	175	340	Yes	6.1	2.0
	T1-S2	12.4	1.2	175	340	Yes	7.1	2.0
	T1-T1	7.7	1.2	175	340	Yes	6.1	2.0
	T1-T3	13.4	1.2	175	340	Yes	7.1	2.0
	T1-U2	11.5	1.2	175	340	Yes	7.1	2.0
Type 2	T1-G2	4.8	0.5	100	100	Yes	5.2	2.0
	T1-G5	3.0	0.5	100	100	Yes	3.2	2.0
	T1-H1	6.6	0.5	100	100	Yes	6.7	2.0
	T1-J1	6.6	0.5	100	100	Yes	6.7	5.0
	T1-K2	5.0	0.5	100	100	Yes	5.5	5.5
	T1-M1	6.5	0.5	100	100	Yes	6.6	5.0
	T1-N2	6.5	0.5	100	100	Yes	6.6	5.0
	T1-O2	4.8	0.5	100	100	Yes	5.3	3.0
	T1-Q2	6.6	0.5	100	100	Yes	6.7	2.0
	T1-R2	4.8	0.5	100	100	Yes	5.3	2.0
	T1-S1	6.6	0.5	100	100	Yes	6.7	2.0
	T1-T2	4.8	0.5	100	100	Yes	5.3	2.0
	T1-U1	6.6	0.5	100	100	Yes	6.7	2.0

Tower 2

Window Type	NSR ID	Room Size, m ²	Outer Opening, m ²	Gap width, mm	Overlapping Length, mm	With SAM Lining	Relative Noise Reduction, dB(A)	Proposed Noise Reduction, dB(A)
Type 1	T2-O1	8.0	1.2	175	340	Yes	6.2	2.0
	T2-O3	13.2	1.2	175	340	Yes	7.1	2.0
Type 2	T2-N3	5.0	0.5	100	100	Yes	5.5	2.0
	T2-O2	5.0	0.5	100	100	Yes	5.4	2.0

Note:

- Window opening area should not be less than 1/16 of the floor area of the room under B(P)Rs
- The Relative Noise Reduction was calculated by equation: Noise Reduction Reference+10log(Room Size of Proposed Development/ Room Size of Reference)

Tower 3

Window Type	NSR ID	Room Size, m ²	Outer Opening, m ²	Gap width, mm	Overlapping Length, mm	With SAM Lining	Relative Noise Reduction, dB(A)	Proposed Noise Reduction, dB(A)
Type 1	T3-F1	8.8	1.2	175	340	Yes	6.7	6.0
	T3-F2	7.2	1.2	175	340	Yes	5.8	4.0
	T3-F3	15.0	1.2	175	340	Yes	7.1	2.0
	T3-J1	13.8	1.2	175	340	Yes	7.1	2.0
	T3-K1	12.6	1.2	175	340	Yes	7.1	2.0
	T3-K3	8.6	1.2	175	340	Yes	6.5	2.0
	T3-L1	13.8	1.2	175	340	Yes	7.1	2.0
	T3-M1	12.9	1.2	175	340	Yes	7.1	3.0
	T3-M4	10.8	1.2	175	340	Yes	7.1	6.0
	T3-N1	12.5	1.2	175	340	Yes	7.1	6.0
	T3-O2	12.5	1.2	175	340	Yes	7.1	6.0
	T3-P1	12.6	1.2	175	340	Yes	7.1	6.0
	T3-P2	12.8	1.2	175	340	Yes	7.1	6.0
	T3-Q1	12.7	1.2	175	340	Yes	7.1	6.0
	T3-Q2	12.6	1.2	175	340	Yes	7.1	6.0
	T3-R1	19.2	1.2	175	340	Yes	7.1	7.0
	T3-S1	13.8	1.2	175	340	Yes	7.1	7.0
	T3-T1	13.8	1.2	175	340	Yes	7.1	7.0
	T3-U1	12.4	1.2	175	340	Yes	7.1	7.0
	T3-U2	12.6	1.2	175	340	Yes	7.1	7.0
	T3-V1	13.4	1.2	175	340	Yes	7.1	7.0
	T3-V2	12.7	1.2	175	340	Yes	7.1	7.0
Type 2	T3-A1	5.2	0.5	100	100	Yes	5.6	2.0
	T3-K2	4.8	0.5	100	100	Yes	5.3	2.0
	T3-M2	5.0	0.5	100	100	Yes	5.5	3.0
	T3-M3	5.0	0.5	100	100	Yes	5.5	3.0
	T3-N2	6.5	0.5	100	100	Yes	6.6	6.0
	T3-O1	6.5	0.5	100	100	Yes	6.6	6.0

RCHE

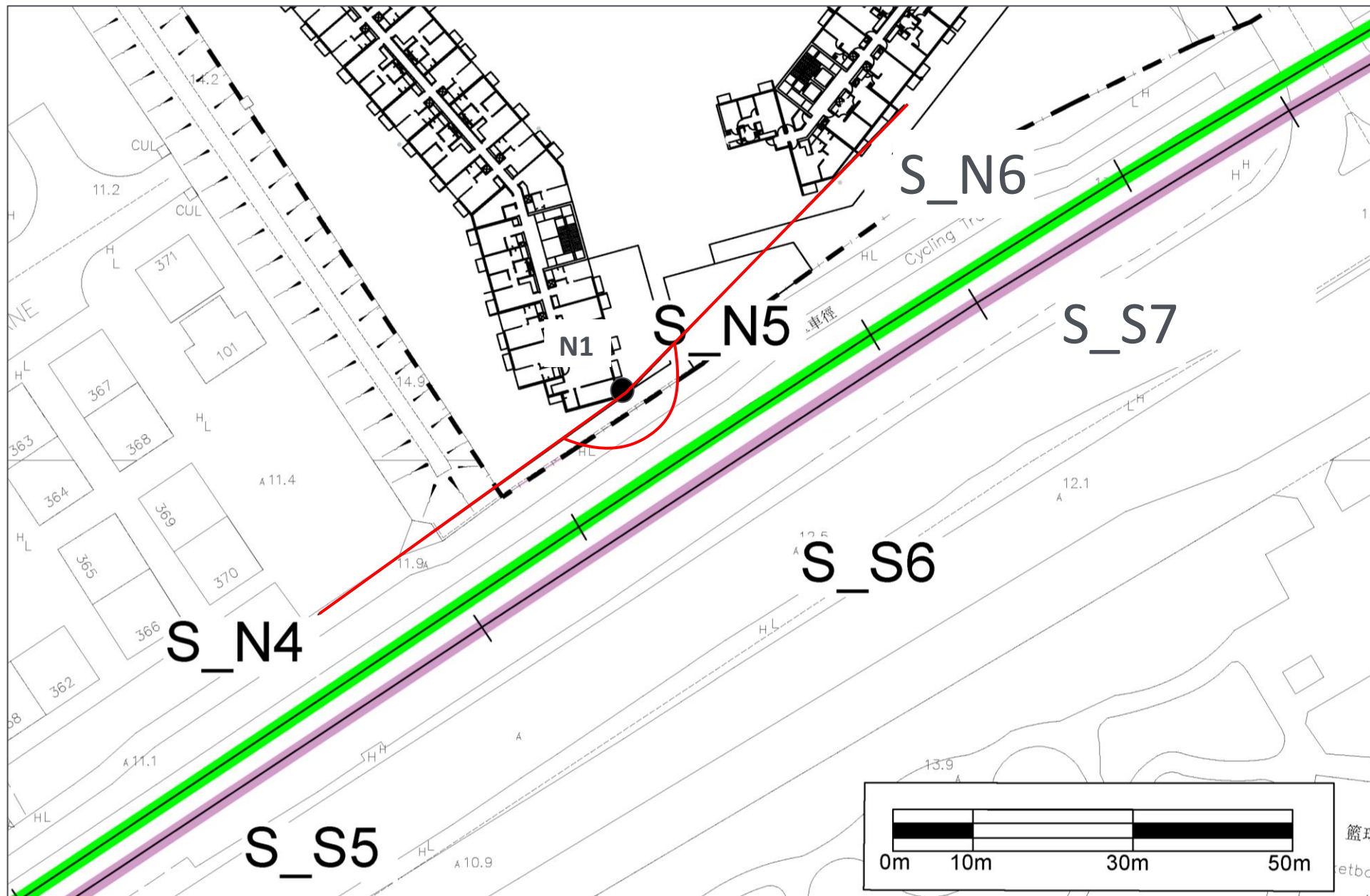
Window Type	NSR ID	Room Size, m ²	Outer Opening, m ²	Gap width, mm	Overlapping Length, mm	With SAM Lining	Relative Noise Reduction, dB(A)	Proposed Noise Reduction, dB(A)
Type 3	R1	55.0	5.3	100	250	Yes	3.6	2.0
	R2	55.0	5.3	100	250	Yes	3.6	2.0

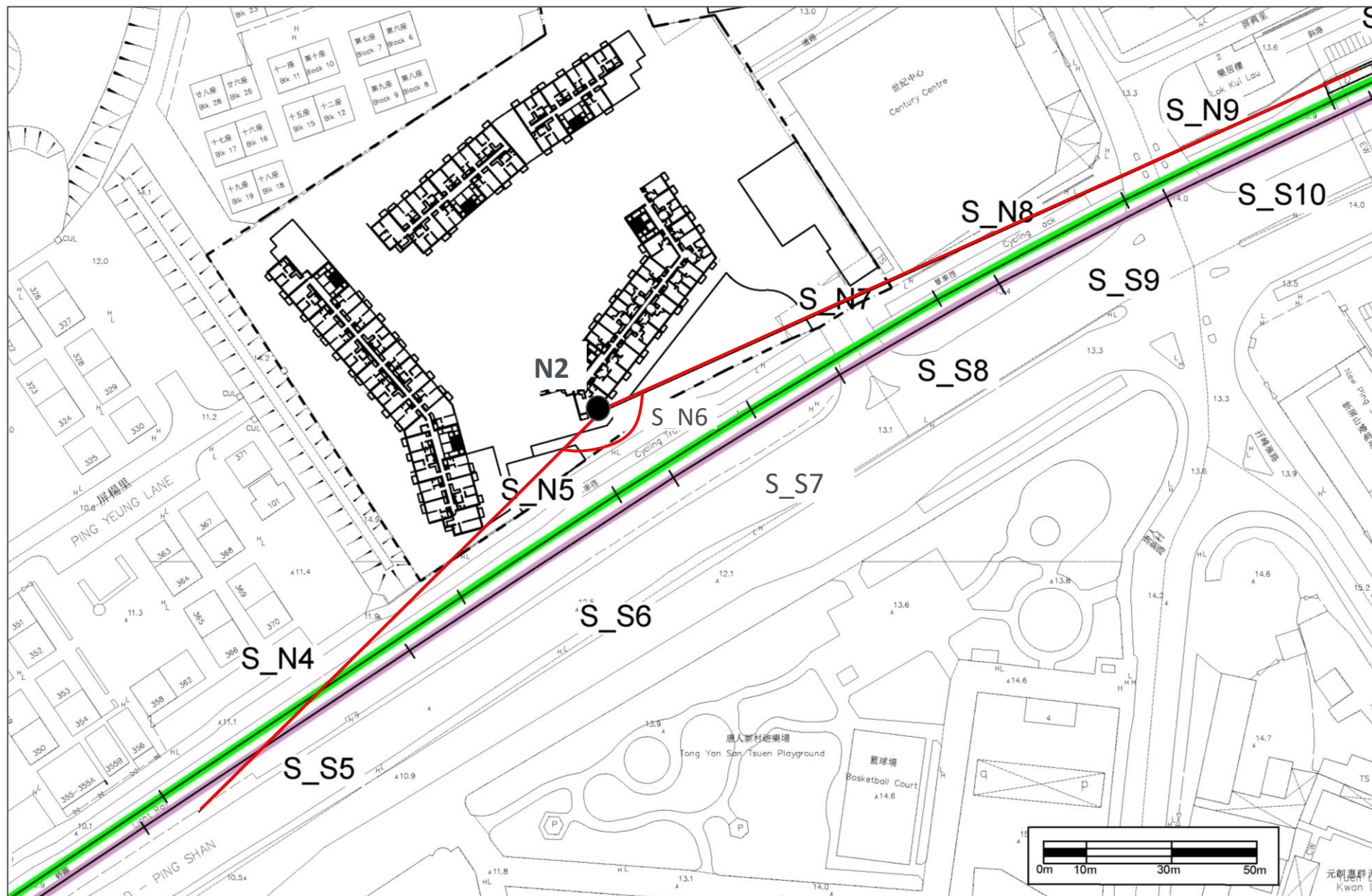
Note:

1. Window opening area should not be less than 1/16 of the floor area of the habitable rooms under B(P)Rs.
2. The Relative Noise Reduction was calculated by equation: Noise Reduction Reference+10log(Room Size of Proposed Development/ Room Size of Reference)
3. For RCHE, commissioning test will be conducted to verify the noise reduction performance of acoustic windows.

Appendix D **TRAIN SPEED, IDENTIFIED RAIL SEGMENTS AND VIEW ANGLE**







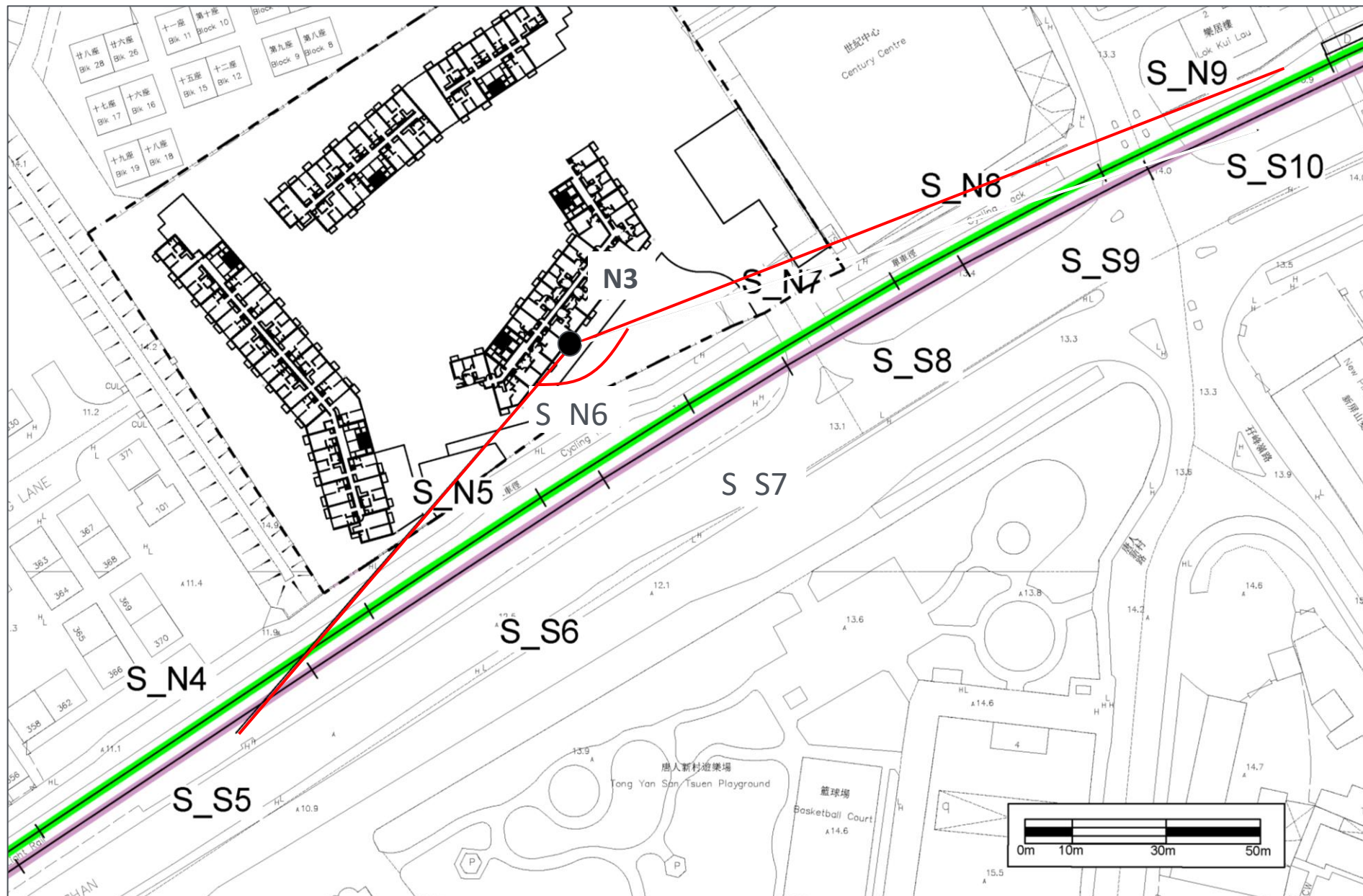
D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
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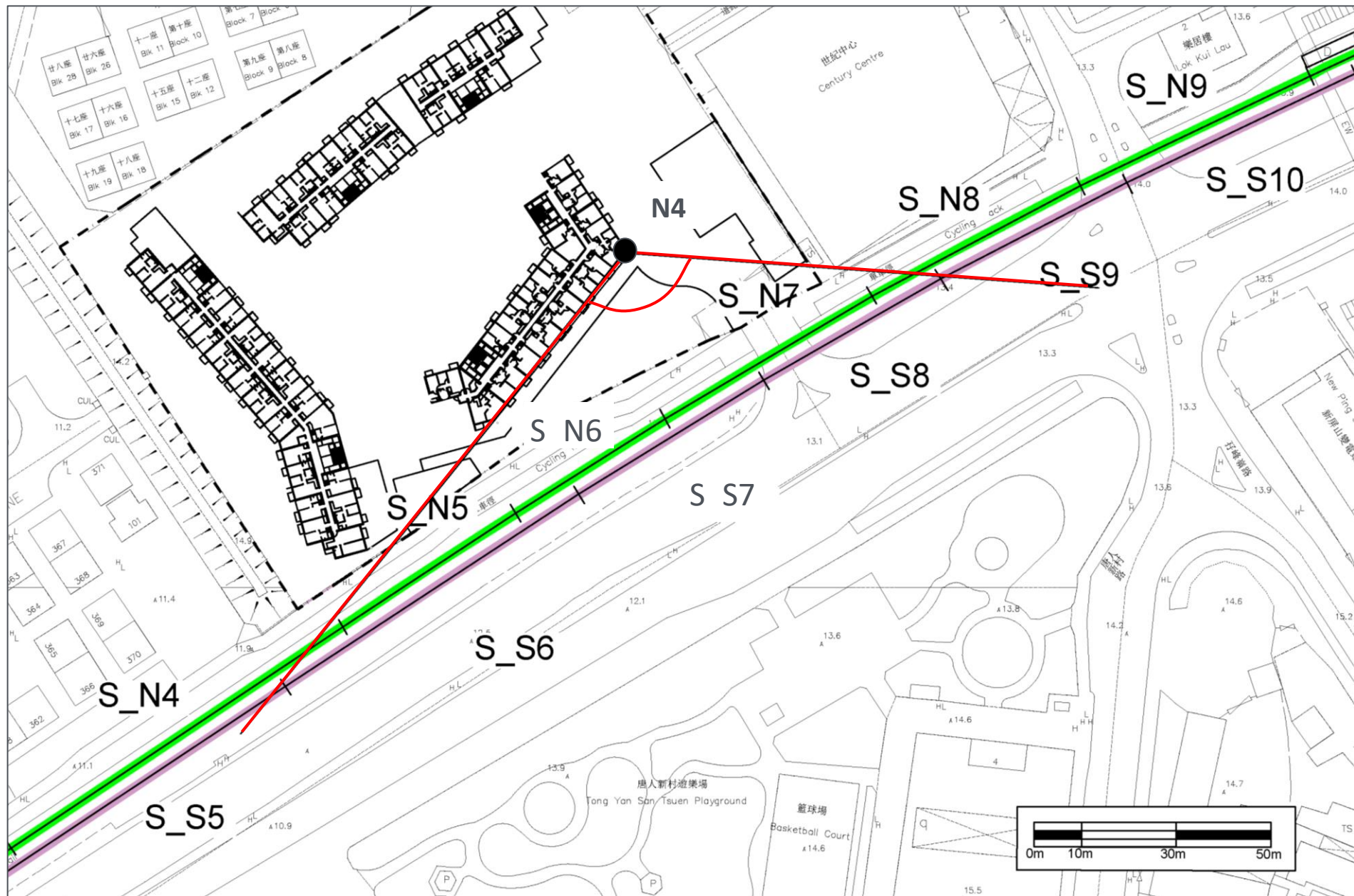
D01 ENVIRONMENTAL ASSESSMENT

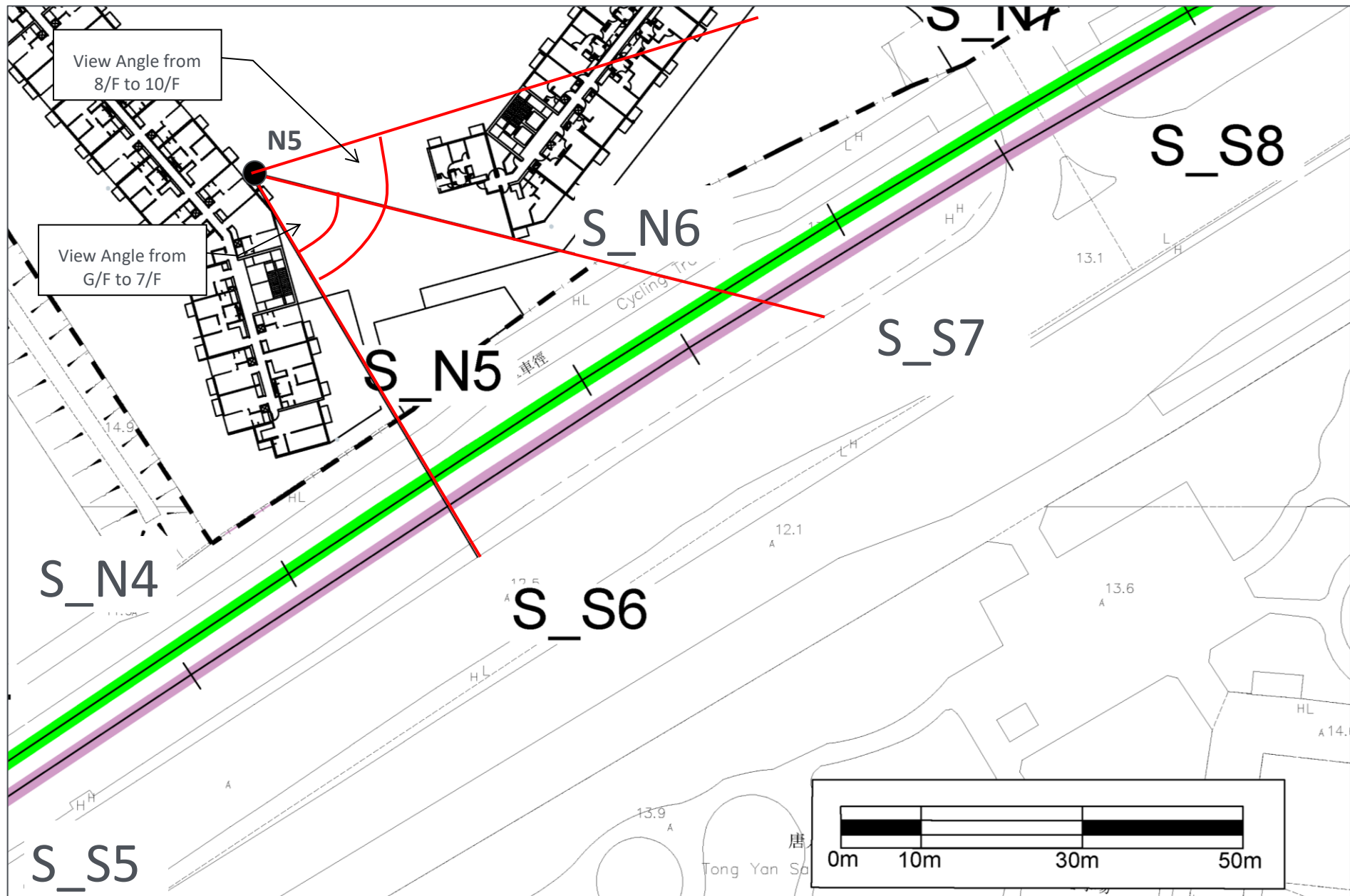
Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

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Appendix E **CALCULATION OF RAIL NOISE ASSESSMENT**

RN1

G	Parameters	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Leq24	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	8.9	9.4	9.7	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.9
	track mPD + track head (D.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
	vert distance from track to NSR	5.7	4.9	3.7	2.4	1.2	0.6	0.3	0.0	-0.4	-0.5	-0.3	0.0	0.6	5.6	5.2	4.5	3.6	2.4	1.1	0.4	0.1	-0.3	-0.5	-0.5	-0.1	0.4	0.7
	Slant distance	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
	View angle (α)	0.020	0.040	0.075	0.371	1.400	2.099	4.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.044	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094
	View angle (β) (degree)	1.668	2.306	4.276	21.275	80.201	11.998	4.777	0.667	1.636	1.875	3.141	4.549	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.100	1.408	0.576	1.497	3.608	4.716	5.398
	View angle (θ)	0.0002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009
	View angle (φ) (degree)	0.133	0.598	2.815	31.144	126.261	8.767	0.578	0.200	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.646	0.558	0.533
	Average Speed	10.0	20.0	50.0	70.0	65.0	30.0	15.0	10.0	10.0	10.0	10.0	10.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Cor for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Cor for distance, -10log(V ₀), dB(A)	3.7	3.7	3.8	4.0	4.0	4.4	5.4	11.8	6.6	5.0	2.1	-0.1	-1.6	2.8	2.3	2.5	2.6	2.6	2.6	3.0	4.2	8.2	10.8	5.7	1.1	-0.6	-1.7
	Cor for view angle, 10log(φ/θ)/30-dBz(dB)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-44.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
Cor for screening/absorption, dB(A)	0.0	0.0	0.0	-0.2	-0.3	-19.7	-19.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-19.8	-19.2	-19.2	0.0	0.0	0.0	0.0	0.0	0.0	
Cor for Speed, 20log(V/V ₀), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Cor for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)	-15.0	2.5	20.6	28.0	40.6	45.6	15.5	18.3	-8.9	-7.0	-8.8	-2.6	1.9	2.3	-9.3	-5.4	-0.7	14.2	38.7	39.9	15.3	-0.5	-1.2	-13.1	-10.0	-5.5	-0.6	-4.2
Leq 24hr for all train	64.7																											
Leq0.5 Day/Evening	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Cor for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Cor for distance, -10log(V ₀), dB(A)	3.7	3.7	3.8	4.0	4.0	4.4	5.4	11.8	6.6	5.0	2.1	-0.1	-1.6	2.8	2.3	2.5	2.6	2.6	3.0	4.2	8.2	10.8	5.7	1.1	-0.6	-1.7	
	Cor for view angle, 10log(φ/θ)/30-dBz(dB)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-44.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Cor for screening/absorption, dB(A)	0.0	0.0	0.0	-0.2	-0.3	-19.7	-19.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-19.8	-19.2	-19.2	0.0	0.0	0.0	0.0	0.0	0.0
	Cor for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Cor for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	-14.3	3.1	21.3	28.7	41.3	16.2	18.9	-8.2	-6.1	-8.1	-2.0	2.6	3.0	-8.7	-4.7	-0.0	14.8	39.3	40.6	16.0	0.1	-0.5	-12.5	-9.3	-4.8	0.1	-3.5
	Leq 0.5hr for all train	45.4																										
	Leq0.5 Night	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Cor for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Cor for distance, -10log(V ₀), dB(A)	3.7	3.7	3.8	4.0	4.0	4.4	5.4	11.8	6.6	5.0	2.1	-0.1	-1.6	2.8	2.3	2.5	2.6	2.6	3.0	4.2	8.2	10.8	5.7	1.1	-0.6	-1.7
		Cor for view angle, 10log(φ/θ)/30-dBz(dB)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-44.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37	-55.7	-67.7	-56.0	-46.9	-43.8
Cor for screening/absorption, dB(A)		0.0	0.0	0.0	-0.2	-0.3	-19.7	-19.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-19.8	-19.2	-19.2	0.0	0.0	0.0	0.0	0.0	0.0
Cor for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
Cor for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)		-14.7	2.8	21.0	28.4	41.0	15.8	18.6	-8.6	-6.7	-8.5	-2.3	2.2	2.6	-9.0	-5.1	-0.4	14.5	39.0	40.2	15.6	-0.2	-0.9	-12.8	-9.7	-5.2	0.3	-3.9
Leq 0.5hr for all train		45.9																										
Lmax		Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
		Cor for distance, -10log(d)/ref, dB(A)	3.7	3.7	3.8	4.0	4.0	4.4	5.4	11.8	6.6	5.0	2.1	-0.1	-1.6	2.8	2.3	2.5	2.6	2.6	3.0	4.2	8.2	10.8	5.7	1.1	-0.6	-1.7
		Correction for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Cor for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Lmax for each train, dB(A)	60.3	66.3	74.3	77.4	76.8	74.9	71.4	71.9	63.1	61.5	62.1	62.4	58.5	59.3	58.8	59.1	65.2	73.1	76.0	75.1</							

D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong

SMEC Internal Ref. 7076822 |

D01/01

11 March 2022

E-1

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Leq24	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horize distance from track to NSR	8.9	9.4	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7		
	ground mPO + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPO + floor height + 1.2m	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	
	Vert distance from track to NSR	20.2	19.4	18.2	16.8	15.6	15.0	14.5	14.1	14.0	14.2	14.5	15.0	20.1	19.7	19.0	18.1	16.9	15.6	14.9	14.6	14.2	13.9	14.0	14.4	14.8	15.2		
	Slant distance	22.1	21.5	20.2	18.4	16.4	15.0	14.3	13.5	13.1	13.1	13.4	14.0	20.3	20.3	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	
	View angle (a)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094	
	View angle (a) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.010	1.408	0.576	1.497	3.608	4.716	5.398	
	View angle (b)	0.002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009	
	View angle (b) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	15.0	10.0	10.0	
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
	Corr for distance, -10log(d/dref), dB(A)	0.0	0.1	0.3	0.5	0.7	0.9	1.1	1.5	1.4	1.2	0.3	-0.9	-2.1	-0.2	-0.3	-0.1	0.0	0.2	0.3	0.6	1.0	1.5	1.6	1.3	-0.2	-1.3	-2.2	
	Corr for view angle, 10log(p/0.180-cos2a) dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(V/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0		
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)	-18.2	-0.6	17.7	45.4	57.6	32.2	14.7	-18.4	-11.4	-11.8	-3.9	1.3	1.9	-11.8	-7.5	-2.9	12.0	36.7	57.9	32.6	16.1	-7.1	-21.4	-13.6	-6.4	-1.1	-4.5		
Leq 24hr for all train	60.9																												
Leq0.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
Leq0.5	Total number of events	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for no. of event, 10log(N), dB(A)	0.0	0.1	0.3	0.5	0.7	0.9	1.1	1.5	1.4	1.2	0.3	-0.9	-2.1	-0.2	-0.3	-0.1	0.0	0.2	0.3	0.6	1.0	1.5	1.6	1.3	-0.2	-1.3	-2.2	
	Corr for distance, -10log(d/dref), dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	-18.1	-0.5	17.8	45.5	57.7	32.2	14.7	-18.6	-11.5	-11.9	-3.7	1.8	2.5	-11.6	-7.3	-2.7	12.2	36.8	58.1	32.7	16.1	-7.2	-21.6	-13.7	-6.1	-0.6	-4.0	
	Leq 0.5hr for all train	60.7																											
	Leq0.5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
	Leq0.5	Total number of events	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Corr for no. of event, 10log(N), dB(A)	0.0	0.1	0.3	0.5	0.7	0.9	1.1	1.5	1.4	1.2	0.3	-0.9	-2.1	-0.2	-0.3	-0.1	0.0	0.2	0.3	0.6	1.0	1.5	1.6	1.3	-0.2	-1.3	-2.2
		Corr for distance, -10log(d/dref), dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
		Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corr for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)		-18.4	-0.8	17.4	45.2	57.3	31.9	14.4	-18.9	-11.9	-12.2	-4.1	1.4	2.1	-12.0	-7.6	-3.0	11.9	36.5	57.7	32.4	15.7	-7.6	-21.9	-14.0	-6.5	-1.0	-4.4	
Leq 0.5hr for all train		60.7																											
Lmax		65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
Lmax		Measured Lmax	65	6																									

Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horize distance from track to NSR	8.9	9.4	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7	
	ground mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	
	Vert distance from track to NSR	26.5	25.7	24.5	23.1	21.9	21.3	21.0	20.5	19.4	20.3	20.5	20.8	21.2	24.4	26.0	25.9	24.8	23.2	21.9	21.2	20.9	20.5	20.2	20.0	20.7	21.1	
	Slant distance	27.9	27.3	26.3	25.1	24.0	23.2	22.2	20.8	21.1	21.8	25.7	32.9	41.6	29	29	28	28	27	26	25	23	21	20	21	28	36	
	View angle (s)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	
	View angle (s) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.030	1.408	0.076	0.147	3.608	4.716	
	View angle (B)	0.002	0.017	0.049	0.544	2.186	0.153	0.065	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	
	View angle (s) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-0.9	-0.8	-0.7	-0.5	-0.3	-0.2	0.0	0.2	0.1	0.0	0.5	-1.5	-2.4	-1.0	-1.1	-1.0	-0.9	-0.7	-0.6	-0.4	-0.1	0.2	0.3	0.1	-0.9	-1.8	
	Corr for view angle, 10log(p/6)/180*cos2asin	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5		
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)	-19.2	-1.7	16.6	44.3	56.5	31.0	13.4	-20.0	-12.9	-13.2	-4.8	0.8	1.6	-12.7	-8.3	-3.8	11.1	35.7	57.0	31.5	14.9	-8.6	-23.0	-15.0	-7.1	-1.5		
Leq 24hr for all train	59.9																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-0.9	-0.8	-0.7	-0.5	-0.3	-0.2	0.0	0.2	0.1	0.0	0.5	-1.5	-2.4	-1.0	-1.1	-1.0	-0.9	-0.7	-0.6	-0.4	-0.1	0.2	0.3	0.1	-0.9	-1.8	
	Corr for view angle, 10log(p/6)/180*cos2asin	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	-19.3	-1.8	16.5	44.1	56.3	30.8	13.2	-20.3	-13.2	-13.4	-4.9	0.9	1.8	-12.8	-8.4	-3.9	11.0	35.6	56.8	31.4	14.7	-8.9	-23.3	-15.2	-7.2	-1.4	
	Leq 0.5hr for all train	59.7																										
	Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
Corr for distance, -10log(d/dref), dB(A)		-0.9	-0.8	-0.7	-0.5	-0.3	-0.2	0.0	0.2	0.1	0.0	0.5	-1.5	-2.4	-1.0	-1.1	-1.0	-0.9	-0.7	-0.6	-0.4	-0.1	0.2	0.3	0.1	-0.9	-1.8	
Corr for screening/ absorption, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lmax for each train, dB(A)		55.6	61.7	69.8	72.9	72.5	70.3	66.0	60.2	56.7	56.6	59.5	61.1	57.7	55.5	55.4	55.5	61.7	69.8	72.9	71.7	68.4	62.7	60.3	56.6	55.6	58.3	
Lmax for all train		73.4																										

Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	8.9	9.4	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7	
	ground mPO + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPO + floor height + 1.2m	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7
	Vert distance from track to NSR	32.8	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.0	27.0	27.4	27.8
	Slant distance	33.9	33.3	32.2	31.0	29.8	29.1	28.3	27.1	27.3	27.8	30.9	37.2	45.2	35	35	34	33	32	31	30	29	27	27	33	40	46	
	View angle (s)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094
	View angle (s) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.030	1.408	0.076	0.497	3.608	4.716	5.398
	View angle (B)	0.0002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009
	View angle (B) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-1.3	-1.2	-1.1	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.9	-1.7	-2.6	-1.4	-1.5	-1.4	-1.3	-1.1	-1.0	-0.8	-0.6	-0.3	-0.3	-0.4	-1.2	-2.0	-2.6
	Corr for view angle, 10log(p0/180*cos2asin)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)	-20.1	-2.5	15.7	43.4	55.5	30.0	12.4	-21.1	-14.0	-14.2	-5.6	0.3	1.3	-13.5	-9.1	-4.6	10.3	34.9	56.1	30.7	13.9	-9.7	-24.2	-16.1	-7.8	-2.0	-5.2	
Leq 24hr for all train	59.0																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-1.3	-1.2	-1.1	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.9	-1.7	-2.6	-1.4	-1.5	-1.4	-1.3	-1.1	-1.0	-0.8	-0.6	-0.3	-0.3	-0.4	-1.2	-2.0	-2.6
	Corr for view angle, 10log(p0/180*cos2asin)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	-19.4	-1.9	16.4	44.1	56.2	30.7	13.0	-20.4	-13.3	-13.6	-5.0	1.0	1.9	-12.9	-8.5	-3.9	11.0	35.6	56.8	31.3	14.5	-9.1	-23.5	-15.4	-7.2	-1.3	-4.5
	Leq 0.5hr for all train	59.6																										
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
	Corr for distance, -10log(d/dref), dB(A)	-1.3	-1.2	-1.1	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.9	-1.7	-2.6	-1.4	-1.5	-1.4	-1.3	-1.1	-1.0	-0.8	-0.6	-0.3	-0.3	-0.4	-1.2	-2.0	-2.6
	Corr for view angle, 10log(p0/180*cos2asin)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	-19.7	-2.2	16.0	43.7	55.8	30.3	12.6	-20.9	-13.8	-14.0	-5.3	0.7	1.8	-13.2	-8.8	-4.3	10.6	35.2	56.4	30.9	14.1	-9.6	-24.0	-15.9	-7.5	-1.6	-4.7
	Leq 0.5hr for all train	59.3																										
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
	Corr for distance, -10log(d/dref), dB(A)	-1.7	-1.6	-1.5	-1.3	-1																						

Floor	10	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
	Leq24	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Total number of events	8.9	9.4	9.7	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7
	Horize distance from track to NSR	7.9	8.7	8.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0
	Vert distance from track to NSR	35.1	38.3	37.1	35.7	34.5	32.9	33.6	33.4	33.0	33.0	33.1	33.4	33.0	30.0	30.6	37.9	37.0	37.0	35.8	34.5	33.1	32.8	32.0	33.3	33.7	34.1	34.1
	Slant distance	40.1	39.4	38.3	37.0	35.9	35.1	34.4	33.3	33.8	36.5	42.0	49.3	41	41	41	40	39	38	37	36	35	33	34	39	44	50	50
	View angle (α)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094
	View angle (α) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.000	1.408	0.756	1.497	3.608	4.716	5.398
	View angle (β)	0.002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009
	View angle (β) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-2.0	-1.9	-1.7	-1.6	-1.5	-1.4	-1.3	-1.3	-1.3	-1.6	-2.3	-2.9	-2.1	-2.1	-2.0	-2.0	-1.8	-1.7	-1.6	-1.4	-1.2	-1.2	-1.3	-1.9	-2.5	-3.0
	Corr for view angle, 10log(p0/180-cos2α)dB	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)	-20.8	-3.2	15.0	42.6	54.7	29.2	11.5	-22.0	-14.9	-15.1	-6.3	-0.2	0.0	-14.2	-9.8	-5.3	9.6	34.2	55.4	29.9	13.0	-10.6	-25.1	-16.9	-8.5	-2.5	-5.5
	Leq 24hr for all train	58.2																										
	Leq0.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-2.0	-1.9	-1.7	-1.6	-1.5	-1.4	-1.3	-1.3	-1.3	-1.6	-2.3	-2.9	-2.1	-2.1	-2.0	-2.0	-1.8	-1.7	-1.6	-1.4	-1.2	-1.2	-1.3	-1.9	-2.5	-3.0
	Corr for view angle, 10log(p0/180-cos2α)dB	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	-20.1	-2.6	15.6	43.3	55.4	29.9	12.2	-21.4	-14.2	-14.4	-5.7	0.4	1.6	-13.6	-9.1	-4.6	10.3	34.8	56.0	30.5	13.7	-10.0	-24.4	-16.3	-7.8	-1.8	-4.9
	Leq 0.5hr for all train	58.9																										
	Leq0.5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-2.0	-1.9	-1.7	-1.6	-1.5	-1.4	-1.3	-1.3	-1.3	-1.6	-2.3	-2.9	-2.1	-2.1	-2.0	-2.0	-1.8	-1.7	-1.6	-1.4	-1.2	-1.2	-1.3	-1.9	-2.5	-3.0
	Corr for view angle, 10log(p0/180-cos2α)dB	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	-20.5	-2.9	15.3	42.9	55.0	29.5	11.8	-21.7	-14.6	-14.8	-6.0	0.1	1.2	-13.9	-9.5	-4.9	9.9	34.5	55.7	30.2	13.4	-10.3	-24.8	-16.6	-8.2	-2.1	-5.2
	Leq 0.5hr for all train	58.5																										
	Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-2.0	-1.9	-1.7	-1.6	-1.5	-1.4	-1.3	-1.3	-1.3	-1.6	-2.3	-2.9	-2.1	-2.1	-2.0	-2.0	-1.8	-1.7	-1.6	-1.4	-1.2	-1.2	-1.3	-1.9	-2.5	-3.0
	Correction for screening/ absorption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Facade correction, dB(A)																											

D01 ENVIRONMENTAL ASSESSMENT
Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

Floor	16	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9		
	Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536		
		Horize distance from track to NSR	8.9	9.4	9.7	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7
		track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
		ground mPD + floor height + 1.2m	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	
		Vert distance from track to NSR	58.9	57.2	56.0	54.9	53.4	52.9	52.5	52.3	51.9	51.8	52.0	52.3	52.7	57.9	57.5	56.8	55.9	54.7	53.4	52.7	52.4	52.0	51.7	51.8	52.2	52.5	53.0
		Slant distance	58.6	57.9	56.8	55.5	54.3	53.6	53.0	52.3	52.2	52.4	54.2	58.2	63.8	59	59	58	57	56	54	53	52	52	52	52	56	60	64
		View angle (α)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094
		View angle (α) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.010	1.408	0.576	1.497	3.608	4.716	5.398
		View angle (β)	0.002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.006	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009
		View angle (β) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533
		Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0	10.0
		Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
		Corr for distance, -10log(d/dref), dB(A)	-3.7	-3.6	-3.6	-3.5	-3.4	-3.3	-3.3	-3.2	-3.2	-3.2	-3.4	-3.7	-4.1	-3.7	-3.7	-3.7	-3.6	-3.5	-3.4	-3.4	-3.2	-3.2	-3.2	-3.2	-3.5	-3.8	-4.1
		Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
		Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
		Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
		Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Leq 24hr for each train, dB(A)	-22.4	-4.9	13.3	40.9	52.9	27.4	9.6	-24.0	-16.8	-17.0	-8.0	-1.6	-0.2	-15.8	-11.4	-6.9	7.9	32.5	53.7	28.1	11.2	-12.6	-27.1	-18.8	-10.1	-3.8	-6.6
		Leq 24hr for all train	56.5																										
	Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
		Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
		Corr for distance, -10log(d/dref), dB(A)	-3.7	-3.6	-3.6	-3.5	-3.4	-3.3	-3.3	-3.2	-3.2	-3.2	-3.4	-3.7	-4.1	-3.7	-3.7	-3.7	-3.6	-3.5	-3.4	-3.4	-3.2	-3.2	-3.2	-3.2	-3.5	-3.8	-4.1
		Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
		Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
		Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
		Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Leq 0.5hr for each train, dB(A)	-21.8	-4.3	13.9	41.5	53.6	28.0	10.3	-23.3	-16.1	-16.3	-7.4	-1.0	0.4	-15.2	-10.7	-6.2	8.6	33.2	54.3	28.8	11.9	-11.9	-26.4	-18.2	-9.4	-3.1	-6.0
		Leq 0.5hr for all train	57.3																										
	Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
		Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
		Corr for distance, -10log(d/dref), dB(A)	-3.7	-3.6	-3.6	-3.5	-3.4	-3.3	-3.3	-3.2	-3.2	-3.2	-3.4	-3.7	-4.1	-3.7	-3.7	-3.7	-3.6	-3.5	-3.4	-3.4	-3.2	-3.2	-3.2	-3.2	-3.5	-3.8	-4.1
		Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
		Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
		Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
		Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
		Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
		Leq 0.5hr for each train, dB(A)	-22.1	-4.6	13.6	41.2	53.2	27.7	10.0	-23.6	-16.5	-16.7	-7.7	-1.3	0.1	-15.5	-11.1	-6.6	8.3	32.8	54.0	28.4	11.5	-12.3	-26.7	-18.5	-9.8	-3.5	-6.3
		Leq 0.5hr for all train	56.8																										
	Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
		Corr for distance, -10log(d/dref), dB(A)	-3.7	-3.6	-3.6	-3.5	-3.4	-3.3	-3.3	-3.2	-3.2	-3.2	-3.4	-3.7	-4.1	-3.7	-3.7	-3.7	-3.6	-3.5	-3.4	-3.4	-3.2	-3.2	-3.2	-3.2	-3.5	-3.8	-4.1
		Correction for screening/ absorption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5														

Floor	18	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horizontal distance from track to NSR	8.9	9.4	9.7	9.8	9.8	7.9	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7	
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	72.2	
	Vertical distance from track to NSR	64.3	63.5	62.3	60.9	59.7	59.1	58.8	58.6	58.2	58.1	58.3	58.6	59.1	64.2	63.8	63.1	62.2	61.0	59.7	59.0	58.7	58.3	58.0	58.1	58.5	58.9	59.3
	Slant distance	64.9	64.1	63.0	61.7	60.5	59.8	59.2	58.6	58.5	58.6	60.3	63.9	69.1	65	65	64	64	62	61	60	59	58	58	58	62	66	70
	View angle (s)	0.029	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.033	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094
	View angle (s) (degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.010	1.408	0.576	1.497	3.608	4.716	5.398
	View angle (B)	0.002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009
	View angle (B) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-4.1	-4.1	-4.0	-3.9	-3.8	-3.8	-3.7	-3.7	-3.7	-3.7	-3.8	-4.1	-4.4	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.7	-3.7	-3.7	-3.9	-4.2	-4.5	
	Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)	-22.9	-5.4	12.8	40.4	52.4	26.9	9.2	-24.5	-17.3	-17.5	-8.5	-2.0	-0.6	-16.3	-11.8	-7.3	7.5	32.1	53.2	27.6	10.7	-13.1	-27.5	-19.3	-10.5	-4.2	-7.0	
Leq 24hr for all train	56.0																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-4.1	-4.1	-4.0	-3.9	-3.8	-3.8	-3.7	-3.7	-3.7	-3.7	-3.8	-4.1	-4.4	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.7	-3.7	-3.7	-3.9	-4.2	-4.5	
	Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	-22.2	-4.7	13.5	41.1	53.1	27.6	9.8	-23.8	-16.6	-16.8	-7.8	-1.4	0.1	-15.6	-11.1	-6.7	8.2	32.7	53.9	28.3	11.4	-12.4	-26.9	-18.7	-9.8	-3.5	-6.3
	Leq 0.5hr for all train	56.7																										
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
	Corr for distance, -10log(d/dref), dB(A)	-4.1	-4.1	-4.0	-3.9	-3.8	-3.8	-3.7	-3.7	-3.7	-3.7	-3.8	-4.1	-4.4	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.7	-3.7	-3.7	-3.9	-4.2	-4.5	
	Corr for view angle, 10log(p/θ)/180-cos2αsinθ	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	-22.6	-5.0	13.1	40.7	52.8	27.2	9.5	-24.1	-17.0	-17.2	-8.2	-1.7	-0.2	-16.0	-11.5	-7.0	7.8	32.4	53.5	28.0	11.0	-12.8	-27.2	-19.0	-10.2	-3.8	-6.7
	Leq 0.5hr for all train	56.3																										
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
	Corr for distance, -10log(d/dref), dB(A)	-4.1	-4.1	-4.0	-3.9	-3.8	-3.8	-3.7	-3.7	-3.7	-3.7	-3.8	-4.1	-4.4	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.7	-3.7	-3.7	-3.9	-4.2	-4.5	
	Correction for screening/ absorption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-	

Parameters	3	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Measured SEL		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horize distance from track to NSR	16.8	17.4	17.7	17.8	18.0	18.2	17.4	13.5	7.9	5.9	0.7	9.5	18.7	19.8	22.0	21.2	21.2	21.6	22.0	21.8	20.1	16.0	11.4	7.4	3.7	12.0	19.2	
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPD + floor height + 1.2m	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	
	Vert distance from track to NSR	20.2	19.4	18.2	16.8	15.6	15.0	14.7	14.5	14.1	14.0	14.2	14.5	15.0	20.1	19.7	19.0	18.1	16.9	15.6	14.9	14.6	14.2	13.9	14.0	14.4	14.8	15.2	
	Slant distance	26.3	26.0	25.4	24.4	23.8	23.6	22.7	19.8	16.2	15.2	14.2	17.3	24.0	28	30	28	28	27	26	25	21	18	16	15	13	24		
	View angle (a) (degree)	0.049	0.064	0.103	0.257	0.764	1.236	0.361	0.132	0.051	0.028	0.003	0.033	0.055	0.059	0.075	0.087	0.122	0.244	1.077	0.833	0.284	0.138	0.069	0.034	0.014	0.038	0.054	
	View angle (a) (deg)	2.800	3.645	5.920	14.718	43.772	70.840	20.690	7.552	2.917	1.631	0.168	1.908	3.177	3.379	4.289	4.968	6.991	13.975	61.720	47.730	16.253	7.900	3.966	1.925	0.779	2.198	3.111	
	View angle (θ)	0.003	0.023	0.054	0.155	0.848	1.393	0.304	0.060	0.017	0.006	0.000	0.004	0.011	0.007	0.010	0.019	0.051	0.126	1.528	0.879	0.156	0.051	0.022	0.009	0.002	0.005	0.006	
	View angle (θ) (degree)	0.199	1.307	3.075	8.878	48.591	79.803	17.400	3.464	0.980	0.338	0.026	0.254	0.635	0.418	0.588	1.109	2.917	7.212	87.539	50.347	8.920	2.895	1.255	0.500	0.114	0.290	0.338	
	Average Speed	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
	Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.1	0.1	0.2	0.3	0.4	1.0	1.9	2.2	2.5	1.6	0.2	-0.5	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	0.0	0.7	1.4	2.0	2.3	1.2	0.1	
	Corr for view angle, 10log(a/d180*cos2a180), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)					35.4	50.9	52.9	34.3	13.1	-3.3	-12.7	-39.8	-7.1	-2.6					30.7	55.1	50.4	31.3	14.9	3.5	-9.7	-23.7	-8.3	-9.2	
Leq 24hr for all train		58.8			3499.5	122811.9	195102.1	2666.3	20.5	0.5	0.1	0.0	0.2	0.5					1162.4	321173.6	110139.0	1364.3	30.7	2.2	0.1	0.0	0.1	0.1	
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.1	0.1	0.2	0.3	0.4	1.0	1.9	2.2	2.5	1.6	0.2	-0.5	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	0.0	0.7	1.4	2.0	2.3	1.2	0.1	
	Corr for view angle, 10log(a/d180*cos2a180), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)					36.1	51.6	53.6	34.9	13.8	-2.6	-12.0	-39.1	-6.5	-2.0					31.3	55.7	51.1	32.0	15.5	4.2	-9.1	-23.1	-7.6	-8.5
	Leq 0.5hr for all train		59.5			4074.1	142998.3	227133.8	3104.1	23.9	0.5	0.1	0.0	0.2	0.6					1953.2	373903.5	128431.1	1588.3	35.8	2.6	0.1	0.0	0.2	0.1
	Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.1	0.1	0.2	0.3	0.4	1.0	1.9	2.2	2.5	1.6	0.2	-0.5	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	0.0	0.7	1.4	2.0	2.3	1.2	0.1
		Corr for view angle, 10log(a/d180*cos2a180), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
		Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32																			

Parameters	5	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Measured SEL		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	16.8	17.4	17.7	17.8	18.0	18.2	17.4	13.5	7.9	5.9	0.7	9.5	18.7	19.8	22.0	21.2	21.2	21.6	22.0	21.8	20.1	16.0	11.4	7.4	3.7	12.0	19.2
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4
	Vert distance from track to NSR	26.5	25.7	24.5	23.1	21.9	21.3	21.0	20.8	20.4	20.3	20.5	20.8	21.3	26.4	26.0	25.3	24.4	23.2	21.9	21.2	20.9	20.5	20.2	20.3	20.7	21.1	21.5
	Slant distance	31.4	31.0	30.2	29.1	28.4	28.0	27.2	26.7	26.1	25.9	26.1	26.5	26.8	33	34	33	32	31	30	29	28	26	23	22	21	24	29
	View angle (a) (degree)	0.049	0.064	0.103	0.257	0.764	1.236	0.361	0.132	0.051	0.028	0.003	0.033	0.055	0.059	0.075	0.087	0.122	0.244	1.077	0.833	0.284	0.138	0.069	0.034	0.014	0.038	0.054
	View angle (θ)	0.003	0.023	0.054	0.155	0.848	1.393	0.304	0.060	0.017	0.006	0.000	0.004	0.011	0.007	0.010	0.019	0.051	0.126	1.528	0.879	0.156	0.051	0.022	0.009	0.002	0.005	0.006
	View angle (θ) (degree)	0.199	1.307	3.075	8.878	48.591	79.803	17.400	3.464	0.980	0.338	0.026	0.254	0.635	0.418	0.588	1.109	2.917	7.212	87.539	50.347	8.920	2.895	1.255	0.500	0.114	0.290	0.338
	Average Speed	10.0	10.0	10.0	10.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	10.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-1.0	-0.9	-0.8	-0.7	-0.5	-0.5	-0.4	0.0	0.6	0.7	0.9	0.4	-0.5	-1.2	-1.3	-1.2	-1.1	-1.0	-0.9	-0.8	-0.6	-0.2	0.3	0.6	0.8	0.1	-0.6
	Corr for view angle, 10log(a/θ)/80*cos2(a/θ)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)					34.7	50.1	52.2	33.5	12.2	-4.6	-14.1	-11.4	-8.3	-3.4				30.0	54.5	49.8	30.7	14.0	2.4	-11.1	-25.2	-9.3	-9.9
	Leq 24hr for all train	58.1				2936.0	103246.8	164218.1	2226.1	18.4	0.3	0.0	0.0	0.1	0.5				1005.5	279068.2	95823.1	1169.2	25.3	1.7	0.1	0.0	0.1	0.1
	Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Corr for no. of event, 10log(N), dB(A)		11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Corr for distance, -10log(d/dref), dB(A)		-1.0	-0.9	-0.8	-0.7	-0.5	-0.5	-0.4	0.0	0.6	0.7	0.9	0.4	-0.5	-1.2	-1.3	-1.2	-1.1	-1.0	-0.9	-0.8	-0.6	-0.2	0.3	0.6	0.8	0.1	-0.6
Corr for view angle, 10log(a/θ)/80*cos2(a/θ)		-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
Corr for screening/absorption, dB(A)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corr for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Leq 0.5hr for each train, dB(A)						35.3	50.8	52.8	34.1	12.8	-3.9	-13.5	-40.7	-7.7	-2.7				30.7	55.1	50.5	31.3	14.7	3.1	-10.4	-24.6	-8.6	-9.2
Leq 0.5hr for all train		58.8				3418.0	120197.8	191179.3	2591.5	19.1	0.4	0.0	0.0	0.2	0.5				1170.5	324885.4	111555.3	1361.1	29.4	2.0	-0.1	0.0	0.1	0.1
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-1.0	-0.9	-0.8	-0.7	-0.5	-0.5	-0.4	0.0	0.6	0.7	0.9	0.4	-0.5	-1.2	-1.3	-1.2	-1.1	-1.0	-0.9	-0.8	-0.6	-0.2	0.3	0.6	0.8	0.1	-0.6
	Corr for view angle, 10log(a/θ)/80*cos2(a/θ)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		

Parameters:	Segment (Northbound)													Segment (Southbound)														
	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horizontal distance from track to NSR	16.8	17.4	17.7	17.8	18.0	18.2	17.4	13.5	7.9	5.9	0.7	9.5	18.7	19.8	22.0	21.2	21.2	21.6	22.0	21.8	20.1	16.0	11.4	7.4	3.7	12.0	19.2
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	
	Vert distance from track to NSR	32.8	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.6	27.0	27.4	27.8
	Slant distance	36.8	36.4	35.5	34.3	33.5	33.1	32.4	30.2	27.8	27.2	26.8	28.7	33.3	38	39	38	37	37	36	35	34	31	29	28	27	30	34
	View angle (α)	0.049	0.064	0.103	0.257	0.764	1.236	0.361	0.132	0.051	0.028	0.003	0.033	0.055	0.059	0.075	0.087	0.122	0.244	1.077	0.833	0.284	0.138	0.069	0.034	0.014	0.038	0.054
	View angle (α) (degree)	2.800	3.645	5.920	14.718	43.772	70.840	20.690	7.552	2.917	1.631	0.168	1.908	3.177	3.379	4.289	4.968	6.991	13.975	61.720	47.730	16.253	7.900	3.966	1.925	0.779	2.198	3.111
	View angle (β)	0.003	0.023	0.054	0.155	0.848	1.393	0.304	0.060	0.017	0.006	0.000	0.004	0.011	0.007	0.010	0.019	0.051	0.126	1.528	0.879	0.156	0.051	0.022	0.009	0.002	0.005	0.006
	View angle (β) (degree)	0.199	1.307	3.075	8.878	48.591	79.803	17.400	3.464	0.980	0.338	0.026	0.254	0.635	0.418	0.588	1.109	2.917	7.212	87.529	50.347	8.920	2.895	1.255	0.500	0.114	0.290	0.338
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-0.8	-0.5	-0.4	-0.3	-0.6	-1.2	-1.8	-1.9	-1.8	-1.7	-1.6	-1.6	-1.5	-1.3	-1.0	-0.6	-0.4	-0.4	-0.8	-1.3
	Corr for view angle, 10log((β/180-cos2α)sinβ), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Leq 24hr for each train, dB(A)	34.0	49.4	51.4	32.7	11.3	-6.6	-15.2	-42.5	-8.3	-4.1				29.4	53.8	49.2	30.0	13.2	1.5	-12.1	-26.4	-10.2	-10.0					
Leq 24hr for all train	57.5			2490.6	87507.5	139151.4	1874.8	13.4	0.3	0.0	0.0	0.1	0.4					871.5	242205.7	83043.3	1002.5	21.0	1.4	0.1	0.0	0.1	0.1	
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-0.8	-0.5	-0.4	-0.3	-0.6	-1.2	-1.8	-1.9	-1.8	-1.7	-1.6	-1.6	-1.5	-1.3	-1.0	-0.6	-0.4	-0.4	-0.8	-1.3
	Corr for view angle, 10log((β/180-cos2α)sinβ), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	34.6	50.1	52.1	33.4	11.9	-5.0	-14.6	-41.9	-8.7	-3.4				30.1	54.5	49.9	30.7	13.9	2.1	-11.5	-25.7	-9.5	-9.9				
	Leq 0.5hr for all train	58.1			2899.5	101874.4	161997.2	2182.6	15.6	0.3	0.0	0.0	0.1	0.5					1014.6	281970.9	96677.2	1167.1	24.5	1.6	0.1	0.0	0.1	0.1
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
	Corr for distance, -10log(d/dref), dB(A)	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-0.8	-0.5	-0.4	-0.3	-0.6	-1.2	-1.8	-1.9	-1.8	-1.7	-1.6	-1.6	-1.5	-1.3	-1.0	-0.6	-0.4	-0.4	-0.8	-1.3
	Corr for view angle, 10log((β/180-cos2α)sinβ), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	34.3	49.7	51.7	33.0	11.6	-5.3	-14.9	-42.2	-9.0	-3.8				29.7	54.2	49.5	30.3	13.5	1.8	-11.8	-26.1	-9.9	-10.3				
	Leq 0.5hr for all train	57.8			2676.4	94038.0	149535.9	2014.7	14.4	0.3	0.0	0.0	0.1	0.4					936.6	260280.8	89240.5	1077.3	22.6	1.5	0.1	0.0	0.1	0.1
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
	Corr for distance, -10log(d/dref), dB(A)	-1.7	-1.6	-1.5	-1.4	-1.3	-1.2	-1.1	-0.8	-0.5	-0.4	-0.3	-0.6	-1.2	-1.8	-1.9	-1.8	-1.7	-1.6	-1.6	-1.5	-1.3	-1.0	-0.6	-0.4	-0.4	-0.8	-1.3
	Corr for view angle, 10log((β/180-cos2α)sinβ), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									

Floor	1	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horiz distance from track to NSR	22.0	22.5	22.9	22.9	23.3	23.8	23.4	20.2	15.3	13.4	7.2	1.1	9.8	24.9	24.2	26.4	26.4	26.8	27.3	27.6	26.4	22.9	18.8	15.1	4.6	3.3	10.2	
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPD + floor height + 1.2m	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	
	Vert distance from track to NSR	10.7	9.9	8.7	7.4	6.2	5.6	5.3	5.0	4.7	4.6	4.7	5.0	5.6	10.6	10.2	9.5	8.6	7.4	6.1	5.4	5.1	4.7	4.5	4.6	4.9	5.4		
	Slant distance	24.4	24.6	24.5	24.1	24.1	24.4	24.0	20.8	16.0	14.1	8.6	5.1	11.3	27.0	29.1	28.0	27.8	27.8	28.1	26.9	25.3	25.6	25.7	25.7	25.7	25.7	25.7	
	View angle (α)	0.061	0.078	0.121	0.276	0.565	1.471	0.663	0.231	0.109	0.070	0.031	0.004	0.031	0.071	0.088	0.101	0.138	0.266	0.775	1.259	0.461	0.225	0.125	0.073	0.018	0.011	0.030	
	View angle (α) (degree)	3.493	4.460	6.960	15.817	32.383	84.287	37.981	13.243	6.229	4.010	1.775	0.234	1.748	4.058	5.032	5.797	7.933	15.249	44.423	72.149	26.409	12.914	7.168	4.190	1.019	0.636	1.722	
	View angle (β)	0.004	0.026	0.058	0.110	0.458	1.313	0.648	0.121	0.040	0.016	0.005	0.001	0.006	0.008	0.011	0.021	0.053	0.087	0.919	1.239	0.293	0.093	0.043	0.020	0.003	0.002	0.003	
	View angle (β) (degree)	0.237	1.512	3.322	6.280	26.214	75.213	37.153	6.911	2.293	0.891	0.292	0.033	0.365	0.479	0.654	1.215	3.037	4.966	52.643	70.998	16.795	5.304	2.469	1.162	0.157	0.088	0.195	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0	
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
	Corr for distance, -10log(d/dref), dB(A)	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.8	1.9	2.5	4.6	6.9	3.4	-0.3	-0.7	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	0.3	1.1	2.0	5.7	6.0	3.3	
	Corr for view angle, 10log(d0/180-cos2α), dB(A)	-14.0	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, 20log(V/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)					34.5	46.0	52.9	42.0	20.7	7.1	-0.4	-6.6	-29.0	-7.0					29.7	51.3	53.4	37.8	21.3	11.3	0.7	-16.6	-19.4	-13.5	
Leq 24hr for all train					2847.1	40088.9	196623.4	16023.8	118.6	5.1	0.9	0.2	0.0	0.2					924.2	114304.1	118509.4	5999.2	136.3	13.4	1.2	0.0	0.0	0.0	
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.8	1.9	2.5	4.6	6.9	3.4	-0.3	-0.7	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	0.3	1.1	2.0	5.7	6.0	3.3	
	Corr for view angle, 10log(d0/180-cos2α), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)					35.2	46.7	53.6	42.7	21.1	7.4	0.3	-6.0	-28.3	-6.3					30.3	51.9	54.1	38.4	22.0	11.9	1.4	-15.9	-18.7	-12.8
	Leq 0.5hr for all train					58.6														1075.9	156354.0	254384.1	6984.2	158.7	15.6	1.4	0.0	0.0	0.0
	Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Corr for distance, -10log(d/dref), dB(A)	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.8	1.9	2.5	4.6	6.9	3.4	-0.3	-0.7	-0.5	-0.5	-0.5	-0.5	-0.5	-0.3	0.3	1.1	2.0	5.7	6.0	3.3
		Corr for view angle, 10log(d0/180-cos2α), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
		Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for																													

E-16

E-17

Floor	7	Segment (Northbound)														Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
	Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
		Horize distance from track to NSR	22.0	22.5	22.9	22.9	23.3	23.8	23.4	20.2	15.3	13.4	11.2	9.1	8.8	24.9	27.2	26.4	26.4	26.8	27.3	27.6	26.4	22.9	18.8	15.1	14.6	13.1	
		Track width at track head (0-2m)	7.9	8.7	9.9	11.3	12.5	13.6	14.4	13.1	14.5	13.9	13.4	11.1	8.0	8.4	10.2	11.2	12.5	13.5	13.5	13.5	13.5	14.1	13.7	13.1	12.9		
		ground PFD + floor height + 1.2m	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7		
		Vert distance from track to NSR	38.4	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.6	27.0		
		Start distance	39.4	39.1	38.3	37.3	36.6	36.4	35.9	33.8	30.8	26.8	25.8	27.7	27.1	29.3	41.0	42.2	41.1	40.5	39.8	39.2	38.9	37.8	35.2	32.5	30.6		
		View angle (θ) (degree)	0.001	0.078	0.121	0.276	0.565	1.473	0.643	0.211	0.109	0.070	0.031	0.004	0.001	0.071	0.088	0.101	0.138	0.166	0.175	0.159	0.146	0.125	0.107	0.088	0.061		
		View angle (θ) (degree)	3.493	4.460	6.960	15.817	32.383	84.287	33.681	13.243	6.229	4.020	1.775	0.234	0.748	0.008	5.032	5.797	7.933	15.249	44.423	72.149	62.409	12.914	7.194	1.019	0.636		
		View angle (θ) (degree)	0.004	0.026	0.058	0.130	0.458	1.313	0.648	0.212	0.104	0.060	0.005	0.001	0.006	0.008	0.011	0.021	0.035	0.059	0.129	0.239	0.203	0.143	0.030	0.003	0.002		
		View angle (θ) (degree)	0.237	1.512	3.322	6.286	26.214	75.213	37.153	6.911	2.959	0.891	0.299	0.033	0.365	0.479	0.654	1.215	3.037	4.960	52.643	60.998	16.795	5.304	2.460	1.162	0.157		
		Average Speed	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
		Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3		
		Corr for distance, 10log(d)/dref, dB(A)	-2.0	-1.9	-1.9	-1.7	-1.7	-1.6	-1.3	-0.9	-0.8	-0.4	-0.3	-0.7	-2.2	-2.3	-2.2	-2.1	-2.0	-1.9	-1.8	-1.5	-1.1	-0.9	-0.4	-0.4	-0.7		
		Corr for frequency, 10log(f)/fref, dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6		
		Corr for screening/absorption, dB(A)																											

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

Floor	1	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	30.9	31.5	31.9	32.0	32.5	33.6	33.9	32.0	28.1	26.5	21.1	13.6	5.6	33.8	36.3	35.4	35.4	35.9	36.6	37.6	37.3	34.9	31.6	28.5	19.1	13.9	5.5
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
	View distance from track to NSR	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7
	Slant distance	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7	32.7
	View angle (α)	0.080	0.099	0.147	0.130	0.454	0.907	1.303	0.500	0.243	0.159	0.101	0.055	0.019	0.089	0.108	0.123	0.161	0.304	0.550	1.320	0.940	0.447	0.252	0.157	0.082	0.043	0.017
	View angle (α) (degree)	4.565	5.681	8.388	17.790	25.997	51.957	74.611	26.055	13.949	9.135	5.806	3.153	1.075	5.107	6.160	7.022	9.241	17.399	31.529	75.658	53.881	25.595	14.456	8.992	4.682	2.477	1.002
	View angle (θ)	0.005	0.001	0.061	0.094	0.241	0.623	1.187	0.333	0.106	0.060	0.019	0.008	0.004	0.020	0.023	0.023	0.054	0.107	0.468	1.021	0.678	0.223	0.101	0.049	0.014	0.007	0.002
	View angle (θ) (degree)	0.287	1.760	3.507	1.951	13.714	35.714	68.014	18.527	6.062	2.310	1.062	0.485	0.241	0.558	0.734	1.328	3.092	0.990	26.531	58.513	38.821	12.760	5.800	2.802	0.796	0.372	0.122
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, 10log(d/dref), dB(A)	-1.2	-1.2	-1.2	-1.2	-1.2	-1.3	-1.4	-1.1	-0.6	-0.3	0.6	2.4	5.0	-1.5	-1.8	-1.7	-1.6	-1.7	-1.7	-1.8	-1.8	-1.5	-1.1	-0.6	1.0	2.8	5.0
	Corr for view angle, 10log(v/v80-cos2α) dB(A)	-47.0	-37.2	-30.8	-27.0	-15.3	-6.2	-2.0	-13.2	-24.0	-31.9	-39.2	-47.9	-6														

Floor	a	Segment (Northbound)													Segment (Southbound)															
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14		
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
		Horize distance from track to NGR	30.9	31.5	31.9	32.0	32.5	33.6	33.9	32.0	28.1	26.5	21.1	13.6	5.6	33.8	36.3	35.4	35.4	35.9	36.6	37.6	37.3	34.9	31.6	28.5	19.1	11.9	5.5	
		track mP0 + track head [0.2m]	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
		ground mP0 + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	
		Stent distance from track to NGR	39.1	38.3	37.1	35.7	34.5	33.9	33.6	33.4	33.0	32.9	31.1	33.4	33.9	30.0	38.6	37.9	37.0	35.8	34.5	33.8	33.5	33.1	32.8	32.9	33.3	33.7	34.1	
		Vertical distance from track to NGR	49.8	49.6	48.9	47.9	47.4	47.7	47.7	47.6	47.2	43.4	42.3	39.2	36.0	34.4	51.6	53.0	51.8	51.2	50.6	50.3	50.5	50.1	48.1	45.6	43.5	38.3	35.7	34.5
		View angle (α)	0.080	0.099	0.147	0.310	0.454	0.907	1.303	0.500	0.243	0.159	0.031	0.055	0.019	0.089	0.308	0.123	0.161	0.304	0.550	1.300	0.940	0.447	0.252	0.157	0.082	0.043	0.017	
		View angle (α) (degree)	4.565	5.681	8.398	17.290	25.991	50.745	74.625	28.655	13.845	8.905	1.807	3.025	0.307	5.160	16.00	7.022	9.214	17.359	31.297	53.256	29.959	14.496	8.682	4.477	2.670	1.407	0.700	0.292
		View angle (β)	0.005	0.011	0.041	0.241	0.423	0.623	1.187	0.333	0.106	0.040	0.019	0.008	0.004	0.010	0.031	0.023	0.054	0.057	0.463	1.021	0.678	0.233	0.101	0.049	0.014	0.007	0.002	
View angle (β) (degree)	0.287	1.760	3.507	1.951	13.824	35.714	68.014	18.527	6.062	2.310	1.062	0.485	0.243	0.558	0.734	1.328	3.092	0.990	26.531	58.513	38.821	12.760	5.800	2.802	0.796	0.372	0.122			
Average Speed	10.0	20.0	50.0	100.0	50.0	30.0	10.0	50.0	10.0	15.0	20.0	15.0	20.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	10.0	15.0	10.0		
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
		Horize distance from track to NGR	30.9	31.5	31.9	32.0	32.5	33.6	33.9	32.0	28.1	26.5	21.1	13.6	5.6	33.8	36.3	35.4	35.4	35.9	36.6	37.6	37.3	34.9	31.6	28.5	19.1	11.9	5.5	
		track mP0 + track head [0.2m]	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
		ground mP0 + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	
		Stent distance from track to NGR	39.1	38.3	37.1	35.7	34.5	33.9	33.6	33.4	33.0	32.9	31.1	33.4	33.9	30.0	38.6	37.9	37.0	35.8	34.5	33.8	33.5	33.1	32.8	32.9	33.3	33.7	34.1	
		Vertical distance from track to NGR	49.8	49.6	48.9	47.9	47.4	47.7	47.7	47.6	47.2	43.4	42.3	39.2	36.0	34.4	51.6	53.0	51.8	51.2	50.6	50.3	50.5	50.1	48.1	45.6	43.5	38.3	35.7	34.5
		View angle (α)	0.080	0.099	0.147	0.310	0.454	0.907	1.303	0.500	0.243	0.159	0.031	0.055	0.019	0.089	0.308	0.123	0.161	0.304	0.550	1.300	0.940	0.447	0.252	0.157	0.082	0.043	0.017	
		View angle (α) (degree)	4.565	5.681	8.398	17.290	25.991	50.745	74.625	28.655	13.845	8.905	1.807	3.025	0.307	5.160	16.00	7.022	9.214	17.359	31.297	53.256	29.959	14.496	8.682	4.477	2.670	1.407	0.700	0.292
		View angle (β)	0.005	0.011	0.041	0.241	0.423	0.623	1.187	0.333	0.106	0.040	0.019	0.008	0.004	0.010	0.031	0.023	0.054	0.057	0.463	1.021	0.678	0.233	0.101	0.049	0.014	0.007	0.002	
View angle (β) (degree)	0.287	1.760	3.507	1.951	13.824	35.714	68.014	18.527	6.062	2.310	1.062	0.485	0.243	0.558	0.734	1.328	3.092	0.990	26.531	58.513	38.821	12.760	5.800	2.802	0.796	0.372	0.122			
Average Speed	10.0	20.0	50.0	100.0	50.0	30.0	10.0	50.0	10.0	15.0	20.0	15.0	20.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	10.0	15.0	10.0		
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
		Horize distance from track to NGR	30.9	31.5	31.9	32.0	32.5	33.6	33.9	32.0	28.1	26.5	21.1	13.6	5.6	33.8	36.3	35.4	35.4	35.9	36.6	37.6	37.3	34.9	31.6	28.5	19.1	11.9	5.5	
		track mP0 + track head [0.2m]	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
		ground mP0 + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	
		Stent distance from track to NGR	39.1	38.3	37.1	35.7	34.5	33.9	33.6	33.4	33.0	32.9	31.1	33.4	33.9	30.0	38.6	37.9	37.0	35.8	34.5	33.8	33.5	33.1	32.8	32.9	33.3	33.7	34.1	
		Vertical distance from track to NGR	49.8	49.6	48.9	47.9	47.4	47.7	47.7	47.6	47.2	43.4	42.3	39.2	36.0	34.4	51.6	53.0	51.8	51.2	50.6	50.3	50.5	50.1	48.1	45.6	43.5	38.3	35.7	34.5
		View angle (α)	0.080	0.099	0.147	0.310	0.454	0.907	1.303	0.500	0.243	0.159	0.031	0.055	0.019	0.089	0.308	0.123	0.161	0.304	0.550	1.300	0.940	0.447	0.252	0.157	0.082	0.043	0.017	
		View angle (α) (degree)	4.565	5.681	8.398	17.290	25.991	50.745	74.625	28.655	13.845	8.905	1.807	3.025	0.307	5.160	16.00	7.022	9.214	17.359	31.297	53.256	29.959	14.496	8.682	4.477	2.670	1.407	0.700	0.292
		View angle (β)	0.005	0.011	0.041	0.241	0.423	0.623	1.187	0.333	0.106	0.040	0.019	0.008	0.004	0.010	0.031	0.023	0.054	0.057	0.463	1.021	0.678	0.233	0.101	0.049	0.014	0.007	0.002	
View angle (β) (degree)	0.287	1.760	3.507	1.951	13.824	35.714	68.014	18.527	6.062	2.310	1.062	0.485	0.243	0.558	0.734	1.328	3.092	0.990	26.531	58.513	38.821	12.760	5.800	2.802	0.796	0.372	0.122			
Average Speed	10.0	20.0	50.0	100.0	50.0	30.0	10.0	50.0	10.0	15.0	20.0	15.0	20.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	10.0	15.0	10.0		
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
		Horize distance from track to NGR	30.9	31.5	31.9	32.0	32.5	33.6	33.9	32.0	28.1	26.5	21.1	13.6	5.6	33.8	36.3	35.4	35.4	35.9	36.6	37.6	37.3	34.9	31.6	28.5	19.1	11.9	5.5	
		track mP0 + track head [0.2m]	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
		ground mP0 + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	
		Stent distance from track to NGR	39.1	38.3	37.1	35.7	34.5	33.9	33.6	33.4	33.0	32.9	31.1	33.4	33.9	30.0	38.6	37.9	37.0	35.8	34.5	33.8	33.5	33.1	32.8	32.9	33.3	33.7	34.1	
		Vertical distance from track to NGR	49.8	49.6	48.9	47.9	47.4	47.7	47.7	47.6	47.2	43.4	42.3	39.2	36.0	34.4	51.6	53.0	51.8	51.2	50.6	50.3	50.5	50.1	48.1	45.6	43.5	38.3	35.7	34.5
		View angle (α)	0.080	0.099	0.147	0.310	0.454	0.907	1.303	0.500	0.243	0.159	0.031	0.055	0.019	0.089	0.308	0.123	0.161	0.304	0.550	1.300	0.940	0.447	0.252	0.157	0.082	0.043	0.017	
		View angle (α) (degree)	4.565	5.681	8.398	17.290	25.991	50.745	74.625	28.655	13.845	8.905	1.807	3.025	0.307	5.160	16.00	7.022	9.214											

D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong

Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

RNS

Floor G	Parameters:	Segment (Northbound)													Segment (Southbound)																
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14			
Leq24	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9			
	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536			
	Horize distance from track to NSR	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6			
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9			
	ground mPD + floor height	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6			
	Vert distance from track to NSR	5.7	4.9	3.7	2.4	1.2	0.6	0.3	0.0	-0.4	-0.5	-0.3	0.0	0.6	5.6	5.2	4.5	3.6	2.4	1.1	0.4	0.1	-0.3	-0.5	-0.5	-0.1	0.4	0.7			
	Slant distance	43.8	44.2	44.4	44.3	44.4	44.0	42.4	37.1	30.2	27.9	20.4	10.5	0.7	46.8	48.8	48.0	47.9	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.9			
	View angle (a)	0.136	0.178	0.302	0.737	1.363	1.015	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.917	0.419	0.262	0.170	0.115	0.054	0.021	0.001			
	View angle (a) (degree)	7.814	10.195	17.302	42.202	78.112	58.162	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	52.526	24.003	15.008	9.747	6.561	3.105	1.210	0.086			
	View angle (a) (degree)	0.010	0.069	0.176	0.693	0.450	0.205	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.028	0.155	0.074	0.045	0.026	0.007	0.003	0.000			
	Average Speed	0.597	3.979	10.069	39.693	25.762	11.757	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	15.94	8.859	4.241	2.562	1.483	0.405	0.145	0.009			
	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	15.0	10.0	10.0				
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3			
	Corr for distance, -10log(d/dref), dB(A)	-2.4	-2.5	-2.5	-2.5	-2.5	-2.5	-2.3	-1.7	-0.8	-0.5	0.9	3.8	15.8	-2.7	-2.9	-2.8	-2.8	-2.9	-2.8	-2.5	-2.0	-1.3	-0.7	1.8	5.3	14.4	10.4			
	Corr for view angle, 10log(p/a)/180*cos2(a/6)	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7			
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0			
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4			
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
	Leq 24hr for each train, dB(A)						48.4	41.5											49.8	33.5											
Leq 24hr for all train						52.6																									
Leq0.5 Day/Evening	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13			
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1			
	Corr for distance, -10log(d/dref), dB(A)	-2.4	-2.5	-2.5	-2.5	-2.5	-2.5	-2.3	-1.7	-0.8	-0.5	0.9	3.8	15.8	-2.7	-2.9	-2.8	-2.8	-2.9	-2.8	-2.5	-2.0	-1.3	-0.7	1.8	5.3	14.4	10.4			
	Corr for view angle, 10log(p/a)/180*cos2(a/6)	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7			
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0			
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6			
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
	Leq 0.5hr for each train, dB(A)						48.7	41.9	33.4	18.8	8.4	2.7	0.2	-5.3	-39.7						50.1	33.9	32.3	19.7	12.0	3.3	-6.4	-12.0	-41.7		
	Leq 0.5hr for all train						53.0																50.1	34.2							
Leq0.5 Night	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8			
	Corr for distance, -10log(d/dref), dB(A)	-2.4	-2.5	-2.5	-2.5	-2.5	-2.3	-1.8	-0.9	-0.5	0.8	3.3	6.5	-2.8	-3.0	-2.9	-2.9	-2.9	-2.9	-2.8	-2.6	-2.0	-1.3	-0.7	1.6	4.4	6.4	6.4			
	Corr for view angle, 10log(p/a)/180*cos2(a/6)	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7			
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0			
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6			
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
	Leq 0.5hr for each train, dB(A)						48.6	41.8											50.1	33.8											
	Leq 0.5hr for all train						52.9																50.1	34.2							
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65			
	Corr for distance, -10log(d/dref), dB(A)	-2.5	-2.6	-2.6	-2.5	-2.5	-2.5	-2.3	-1.8	-0.9	-0.5	0.8	3.3	6.5	-2.8	-3.0	-2.9	-2.9	-2.9	-2.8	-2.6	-2.0	-1.3	-0.7	1.6	4.4	6.4	6.4			
	Correction for screening/absorption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	Corr for view angle, 10log(p/a)/180*cos2(a/6)	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7			
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-					

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
	Vert distance from track to NSR	13.9	13.1	11.9	10.5	9.3	8.7	8.4	8.2	7.8	7.7	7.9	8.2	8.7	13.8	13.4	12.7	11.8	10.6	9.3	8.6	8.3	7.9	7.6	7.7	8.1	8.5	8.9
	Slant distance	45.6	45.8	45.8	45.5	45.4	44.8	44.6	43.2	38.0	31.2	28.9	21.8	13.3	48.4	50.3	49.4	49.2	49.2	48.1	45.5	40.1	34.6	30.1	18.4	11.2	8.9	
	View angle (α)	0.136	0.178	0.302	0.737	1.363	1.015	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.917	0.419	0.262	0.170	0.115	0.054	0.021	0.001
	View angle (α) (degree)	7.814	10.095	17.302	42.202	78.112	58.162	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	52.526	24.003	15.008	9.747	6.561	3.105	1.210	0.086
	View angle (β)	0.010	0.069	0.176	0.693	0.450	0.205	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.028	0.155	0.074	0.045	0.026	0.007	0.003	0.000
	View angle (β) (degree)	0.597	3.979	10.069	39.693	25.762	11.757	14.378	5.368	2.543	1.594	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	1.594	8.859	4.241	2.562	1.483	0.405	0.145	0.009
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-2.6	-2.6	-2.6	-2.6	-2.6	-2.5	-2.4	-1.8	-1.0	-0.6	0.6	2.7	4.6	-2.9	-3.0	-3.0	-2.9	-2.9	-2.9	-2.8	-2.6	-2.0	-1.4	-0.8	1.3	3.5	4.5
	Corr for view angle, 10log(p/θ)/180-cos2α/nf	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)						48.3	41.5												49.7	33.5							
	Leq 24hr for all train	52.5																										
Leq0.5 Day/Evening	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-2.6	-2.6	-2.6	-2.6	-2.6	-2.5	-2.4	-1.8	-1.0	-0.6	0.6	2.7	4.6	-2.9	-3.0	-3.0	-2.9	-2.9	-2.9	-2.8	-2.6	-2.0	-1.4	-0.8	1.3	3.5	4.5
	Corr for view angle, 10log(p/θ)/180-cos2α/nf	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)						48.9	42.1													50.4	34.1						
	Leq 0.5hr for all train	53.2					78053.3	16305.2													109602.1	2594.0						
Leq0.5 Night	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-2.6	-2.6	-2.6	-2.6	-2.6	-2.5	-2.4	-1.8	-1.0	-0.6	0.6	2.7	4.6	-2.9	-3.0	-3.0	-2.9	-2.9	-2.9	-2.8	-2.6	-2.0	-1.4	-0.8	1.3	3.5	4.5
	Corr for view angle, 10log(p/θ)/180-cos2α/nf	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)						48.6	41.8													50.1	33.8						
	Leq 0.5hr for all train	52.8					72049.2	15051.0													101171.2	2394.5						
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65											

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	43.5	44.0	44.2	44.4	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6
	ground mPO + floor height + 1.2m	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	Vert distance from track to NSR	26.5	25.7	24.5	23.1	21.9	21.3	21.0	20.8	20.4	20.3	20.5	20.8	21.3	26.4	26.0	25.3	24.4	23.2	21.9	21.2	20.9	20.5	20.2	20.3	20.7	21.1	21.5
	Slant distance	50.9	50.9	50.6	49.9	49.5	48.9	47.3	42.5	36.5	34.5	28.9	23.3	21.3	53.4	55.0	54.0	53.6	53.3	53.0	51.9	49.3	44.3	39.3	35.5	26.5	22.3	21.5
	View angle (s)	0.136	0.178	0.302	0.737	1.363	1.015	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.917	0.419	0.262	0.170	0.115	0.054	0.021	0.001
	View angle (s) (degree)	7.814	10.195	17.302	42.202	78.112	58.162	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	52.526	24.003	15.008	9.747	6.561	3.105	1.210	0.086
	View angle (θ) (degree)	0.010	0.069	0.176	0.693	0.450	0.205	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.028	0.155	0.074	0.045	0.026	0.007	0.003	0.000
	Average Speed	0.597	3.979	10.069	39.693	25.762	11.757	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	15.94	8.859	4.241	2.562	1.483	0.405	0.145	0.009
		10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	15.0	10.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-3.1	-3.1	-3.1	-3.0	-2.9	-2.8	-2.3	-1.6	-1.4	-0.6	0.3	0.7	1.3	-3.3	-3.4	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-2.0	-1.5	-0.2	0.5	0.7	0.7
	Corr for view angle, 10log(θ/θ0)/180-cos2αinc	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(V/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)	47.9													49.4													
	Leq 24hr for all train	52.3													52.3													
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-3.2	-3.2	-3.2	-3.1	-3.1	-3.0	-2.9	-2.3	-1.6	-1.4	-0.6	0.3	0.7	-3.3	-3.4	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-2.0	-1.5	-0.2	0.5	0.7	0.7
	Corr for view angle, 10log(θ/θ0)/180-cos2αinc	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	48.1													49.6													
	Leq 0.5hr for all train	52.8													52.8													
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-3.1	-3.1	-3.1	-3.0	-2.9	-2.8	-2.3	-1.6	-1.4	-0.6	0.3	0.7	1.3	-3.3	-3.4	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-2.0	-1.5	-0.2	0.5	0.7	0.7
	Corr for view angle, 10log(θ/θ0)/180-cos2αinc	-39.1	-28.6	-20.0	-7.0	-5.7	-10.3	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-19.6	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	48.1													49.6													
	Leq 0.5hr for all train	52.6													52.6													
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
	Corr for distance, -10log(d/dref), dB(A)	-3.2	-3.2	-3.2	-3.1	-3.1	-3.0	-2.9	-2.5	-1.9	-1.6	-1.0	-0.2	0.1	-3.4	-3.5	-3.5	-3.4	-3.4	-3.4	-3.3	-3.1	-2.6	-2.1	-1.7	-0.6	0.1	0.1
	Correction for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0																						

Parameters:	Measured SEL	Segment (Northbound)												Segment (Southbound)															
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Leq24	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horiz distance from track to NSR	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6	
	ground mPO + track head (1.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	Ver distance from track to NSR	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	
	Stant distance	32.8	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.6	27.0	27.4	27.8	
	View angle (s)	0.136	0.178	0.302	0.737	1.363	0.881	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.730	0.419	0.262	0.170	0.115	0.054	0.021	0.001	
	View angle (s) (degree)	7.814	10.195	17.302	42.202	78.112	50.455	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	41.799	24.003	15.008	9.747	6.561	3.105	1.210	0.086	
	View angle (s) (degree)	0.010	0.069	0.176	0.693	0.450	0.474	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.402	0.155	0.074	0.045	0.026	0.007	0.003	0.000	
	Average Speed	0.597	3.979	10.069	39.693	25.762	27.171	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	23.045	8.859	4.241	2.562	1.483	0.405	0.145	0.009	
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-3.5	-3.5	-3.5	-3.4	-3.4	-3.3	-3.2	-3.0	-2.6	-2.1	-1.9	-1.3	-0.6	-0.4	-3.6	-3.7	-3.6	-3.6	-3.5	-3.4	-3.2	-2.8	-2.3	-2.0	-1.0	-0.5	-0.5	
	Corr for view angle, 10log(p/p0)/180*cos2asin	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7	
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)						47.6	43.6	32.3	17.5	6.8	1.0	-2.2	-10.0	-56.3						49.2	43.0	31.3	18.5	10.6	1.7	-9.5	-18.2	-56.9	
Leq 24hr for all train	52.7																												
Leq0.5	53.4																												
Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
Corr for distance, -10log(d/dref), dB(A)	-3.4	-3.4	-3.3	-3.2	-3.2	-3.0	-2.6	-2.1	-1.9	-1.3	-0.6	-0.4	-0.4	-3.6	-3.7	-3.6	-3.6	-3.5	-3.4	-3.2	-2.8	-2.3	-2.0	-1.0	-0.5	-0.5			
Corr for view angle, 10log(p/p0)/180*cos2asin	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7		
Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0		
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 0.5hr for each train, dB(A)						48.3	44.3	33.0	18.2	7.5	1.6	-1.6	-9.3	-55.6						49.8	43.7	31.9	19.2	11.3	2.3	-8.9	-17.5	-56.2	
Leq 0.5hr for all train	53.0																												
Leq0.5	53.0																												
Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8		
Corr for distance, -10log(d/dref), dB(A)	-3.4	-3.4	-3.3	-3.2	-3.2	-3.0	-2.6	-2.1	-1.9	-1.3	-0.6	-0.4	-0.4	-3.6	-3.7	-3.6	-3.6	-3.5	-3.4	-3.2	-2.8	-2.3	-2.0	-1.0	-0.5	-0.5			
Corr for view angle, 10log(p/p0)/180*cos2asin	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7		
Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0		
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 0.5hr for each train, dB(A)						47.9	43.9	32.7	17.8	7.1	1.3	-1.9	-9.7	-56.0						49.5	43.3	31.6	18.8	10.9	2.0	-9.2	-17.9	-56.6	
Leq 0.5hr for all train	53.0																												
Leq0.5	53.0																												
Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8		
Corr for distance, -10log(d/dref), dB(A)	-3.5	-3.5	-3.5	-3.4	-3.4	-3.3	-3.2	-3.0	-2.6	-2.1	-1.6	-1.1	-0.9	-3.7	-3.7	-3.7	-3.7	-3.7	-3.6	-3.5	-3.3	-3.0	-2.5	-2.2	-1.4	-1.0	-0.9.		

Floor	10	Segment (Northbound)												Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
	Leq24	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Total number of events	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6
	Horize distance from track to NSR	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0
	Vertical distance from track to NSR	38.1	38.3	37.1	35.7	34.5	32.9	31.4	29.9	28.3	26.7	25.1	23.4	21.9	39.0	38.6	37.9	37.0	35.8	34.5	33.8	33.5	33.1	32.8	32.9	33.3	33.7	34.1
	Slant distance	58.4	58.3	57.7	56.9	56.2	55.5	54.1	49.8	44.8	43.1	38.8	35.0	33.9	60.6	61.9	60.9	60.4	59.9	59.3	58.1	55.8	53.4	47.0	43.9	37.1	34.5	34.1
	View angle (a)	0.136	0.178	0.302	0.737	1.363	0.881	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.730	0.419	0.262	0.170	0.115	0.054	0.021	0.001
	View angle (a) (degree)	7.814	10.195	17.302	42.202	78.112	50.455	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	41.799	24.003	15.008	9.747	6.561	3.105	1.210	0.086
	View angle (b)	0.010	0.069	0.176	0.693	0.450	0.474	0.251	0.094	0.044	0.021	0.030	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.402	0.155	0.074	0.045	0.026	0.007	0.003	0.000
	View angle (b) (degree)	0.597	3.979	10.069	39.693	25.762	27.171	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	23.045	8.859	4.241	2.562	1.483	0.405	0.145	0.009
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-3.7	-3.7	-3.6	-3.6	-3.5	-3.5	-3.4	-3.0	-2.5	-2.4	-1.9	-1.5	-1.3	-3.8	-3.9	-3.9	-3.8	-3.8	-3.8	-3.7	-3.5	-3.1	-2.7	-2.4	-1.7	-1.4	-1.3
	Corr for view angle, 10log(p/d)/180*cos2(a) dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)						47.3	43.3	32.0	17.2	6.4	0.5	-2.9	-10.8	-57.2					48.9	42.8	31.0	18.2	10.2	1.2	-10.2	-19.0	-57.8
	Leq 24hr for all train	52.4																										
	Leq0.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Total number of events	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for no. of event, 10log(N), dB(A)	-3.7	-3.7	-3.6	-3.6	-3.5	-3.5	-3.4	-3.0	-2.5	-2.4	-1.9	-1.5	-1.3	-3.8	-3.9	-3.9	-3.8	-3.8	-3.8	-3.7	-3.5	-3.1	-2.7	-2.4	-1.7	-1.4	-1.3
	Corr for distance, -10log(d/dref), dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for view angle, 10log(p/d)/180*cos2(a) dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for screening/ absorption, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for Speed, dB(A)	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Corr for sound energy spread over 24 hr	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Facade correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Track wear correction, dB(A)																											
	Leq 0.5hr for each train, dB(A)						48.0	44.0	32.7	17.8	7.0	1.1	-2.2	-10.1	-56.5					49.6	43.4	31.7	18.9	10.9	1.8	-9.6	-18.4	-57.1
	Leq 0.5hr for all train	53.3																										
	Leq0.5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Total number of events	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for no. of event, 10log(N), dB(A)	-3.7	-3.7	-3.6	-3.6	-3.5	-3.5	-3.4	-3.0	-2.5	-2.4	-1.9	-1.5	-1.3	-3.8	-3.9	-3.9	-3.8	-3.8	-3.8	-3.7	-3.5	-3.1	-2.7	-2.4	-1.7	-1.4	-1.3
	Corr for distance, -10log(d/dref), dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for view angle, 10log(p/d)/180*cos2(a) dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for screening/ absorption, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for Speed, dB(A)	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Corr for sound energy spread over 24 hr	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Facade correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Track wear correction, dB(A)																											
	Leq 0.5hr for each train, dB(A)						47.6	43.6	32.3	17.5	6.7	0.8	-2.6	-10.5	-56.8					49.2	43.1	31.3	18.5	10.5	1.5	-9.9	-18.7	-57.5
	Leq 0.5hr for all train	52.8																										
	Leq0.5	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	Measured Lmax	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8	-3.8
	Corr for distance, -10log(d/dref), dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Correction for screening/ absorption	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5																

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Leq24	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
Horize distance from track to NSR	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6	
ground mPD + track head + 1.2m	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.1	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.5	14.2	14.1	13.7	13.3	12.9	
Vert distance from track to NSR	45.4	46.6	43.4	42.0	40.8	40.2	39.9	39.7	39.3	39.2	39.4	39.7	40.2	45.3	44.9	44.2	43.3	42.1	40.8	40.1	39.8	39.4	39.1	39.2	39.6	40.0	40.4	
Slant distance	62.8	62.6	61.5	61.0	60.3	59.6	58.2	54.3	49.6	48.1	44.3	41.0	40.2	64.8	66.0	65.0	64.5	63.9	63.2	62.0	59.8	55.6	51.6	48.8	42.9	40.7	40.4	
View angle (a)	0.136	0.178	0.302	0.737	1.363	0.881	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.730	0.419	0.262	0.170	0.115	0.054	0.021	0.001	
View angle (a) (degree)	7.814	10.195	17.302	42.202	78.112	50.455	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	41.799	24.003	15.008	9.747	6.561	3.105	1.210	0.086	
View angle (b)	0.010	0.069	0.176	0.693	0.450	0.474	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.627	0.402	0.155	0.074	0.045	0.026	0.007	0.003	0.000	
View angle (b) (degree)	0.597	3.979	10.069	39.693	25.762	27.171	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	23.045	8.859	4.241	2.562	1.483	0.405	0.145	0.009	
Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	10.0	10.0	15.0	10.0		
Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
Corr for distance, -10log(d/dref), dB(A)	-4.0	-4.0	-3.9	-3.9	-3.8	-3.8	-3.7	-3.4	-3.0	-2.8	-2.5	-2.2	-2.1	-4.1	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.5	-3.1	-2.9	-2.3	-2.1	-2.1	
Corr for view angle, 10log(p/0.180-cos2a) dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)						47.0	43.0	31.7	16.8	5.9	0.0	-3.4	-11.5	-57.9					48.6	42.5	30.7	17.9	9.8	0.7	-10.8	-19.8	-58.5	
Leq 24hr for all train	52.2																											
Leq0.5	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Corr for distance, -10log(d/dref), dB(A)	-4.0	-4.0	-3.9	-3.9	-3.8	-3.8	-3.7	-3.4	-3.0	-2.8	-2.5	-2.2	-2.1	-4.1	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.5	-3.1	-2.9	-2.3	-2.1	-2.1	
Corr for view angle, 10log(p/0.180-cos2a) dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)						47.7	43.7	32.4	17.5	6.6	0.7	-2.8	-10.8	-57.2					49.3	43.1	31.4	18.5	10.5	1.4	-10.2	-19.1	-57.8	
Leq 0.5hr for all train	52.8																											
Leq0.5	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Corr for distance, -10log(d/dref), dB(A)	-4.0	-4.0	-3.9	-3.9	-3.8	-3.8	-3.7	-3.4	-3.0	-2.8	-2.5	-2.2	-2.1	-4.1	-4.2	-4.2	-4.1	-4.1	-4.0	-3.9	-3.8	-3.5	-3.1	-2.9	-2.3	-2.1	-2.1	
Corr for view angle, 10log(p/0.180-cos2a) dB(A)	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train,																												

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	43.5	44.0	44.2	44.3	44.4	44.0	42.4	37.1	30.2	27.8	20.4	10.5	0.4	46.4	48.5	47.8	47.8	48.1	48.3	47.3	44.7	39.3	33.7	29.1	16.6	7.3	0.6
	vert mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9	65.9
	Vert distance from track to NSR	58.0	57.2	56.0	54.6	53.4	52.8	52.5	52.3	51.9	51.8	50.3	52.3	52.8	57.9	57.5	56.8	55.9	54.7	53.4	52.7	52.4	52.0	51.7	51.8	52.2	52.6	53.0
	Slant distance	72.4	72.1	71.3	70.3	69.5	68.7	67.5	64.1	60.1	58.8	55.8	53.3	52.8	74.2	75.2	74.2	73.5	72.8	72.0	70.8	68.8	65.1	61.7	59.4	54.7	53.1	53.0
	View angle (a)	0.136	0.178	0.302	0.737	1.363	0.881	0.491	0.271	0.160	0.117	0.073	0.033	0.001	0.150	0.180	0.218	0.318	0.633	1.272	0.730	0.419	0.262	0.170	0.115	0.054	0.021	0.001
	View angle (a) (degree)	7.814	10.195	17.302	42.202	78.112	50.455	28.132	15.553	9.185	6.689	4.164	1.887	0.056	8.593	10.340	12.464	18.248	36.280	72.891	41.799	24.003	15.008	9.747	6.561	3.105	1.210	0.086
	View angle (B)	0.010	0.069	0.176	0.693	0.450	0.474	0.251	0.094	0.044	0.021	0.010	0.004	0.000	0.020	0.027	0.053	0.148	0.477	0.621	0.402	0.155	0.074	0.045	0.026	0.007	0.003	0.000
	View angle (B) (degree)	0.597	3.979	10.069	39.693	25.762	27.171	14.378	5.368	2.543	1.194	0.569	0.225	0.010	1.143	1.536	3.051	8.498	27.304	35.926	23.045	8.859	4.241	2.562	1.483	0.405	0.145	0.009
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-4.6	-4.6	-4.6	-4.5	-4.4	-4.4	-4.3	-4.1	-3.8	-3.7	-3.5	-3.3	-3.2	-4.7	-4.8	-4.7	-4.7	-4.6	-4.5	-4.4	-4.2	-3.9	-3.8	-3.4	-3.3	-3.3	-3.3
	Corr for view angle, 10log(p/p0)/180*cos2(a)dB	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)					46.4	42.4	31.1	16.1	5.1	-0.9	-4.4	-12.6	-59.1						48.1	41.9	30.1	17.2	9.0	-0.1	-11.9	-20.9	-59.7
	Leq 24hr for all train	51.6																										
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.7	-4.7	-4.6	-4.5	-4.5	-4.3	-4.1	-3.8	-3.7	-3.5	-3.3	-3.2	-4.7	-4.8	-4.7	-4.7	-4.6	-4.5	-4.4	-4.2	-3.9	-3.8	-3.4	-3.3	-3.3	-3.3
	Corr for view angle, 10log(p/p0)/180*cos2(a)dB	-39.1	-28.6	-20.0	-7.0	-5.7	-7.5	-14.5	-23.7	-31.4	-37.5	-44.8	-55.7	-99.7	-35.5	-32.6	-28.0	-20.3	-9.7	-4.5	-9.5	-17.9	-25.0	-30.9	-36.7	-48.8	-61.5	-96.7
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)					46.7	42.7	31.4	16.4	5.4	-0.6	-4.1	-12.3	-58.8						48.4	42.2	30.4	17.5	9.3	0.2	-11.6	-20.6	-59.4
	Leq 0.5hr for all train	51.9																										
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.7	-4.7	-4.6	-4.5	-4.5	-4.3	-4.0	-3.9	-3.7	-3.5	-3.3	-3.2	-4.7	-4.8	-4.7	-4.7	-4.6	-4.5	-4.4	-4.2	-3.9	-3.8	-3.4	-3.3	-3.3	-3.3
	Correction for screening/absorption	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Lmax for each train, dB(A)					68.3	66.1	61.8	56.0	52.7	52.8	56.6	59.3	56.8					68.8	67.6	64.2	58.4	56.1	52.8	53.1	56.8	53.3	
	Lmax for all train	68.8																										

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9														

RN6

Floor	G	Segment (Northbound)													Segment (Southbound)															
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14		
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
		Horize distance from track to NSR	51.5	52.0	52.3	52.3	52.3	51.6	49.5	43.5	35.9	33.4	25.4	15.0	4.4	54.5	56.5	55.8	55.8	56.0	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.2	
		track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
		ground mPD + floor height	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	
		Vert distance from track to NSR	5.7	4.9	3.7	2.4	1.2	0.6	0.3	0.0	-0.4	-0.5	-0.3	0.0	0.6	5.6	5.2	4.5	3.6	2.4	1.1	0.4	0.1	-0.3	-0.5	-0.5	-0.1	0.4	0.7	
		Slant distance	51.8	52.2	52.4	52.4	52.4	51.6	49.5	43.5	36.0	33.4	25.4	15.0	4.4	54.8	56.7	56.0	55.9	56.1	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.3	
		View angle (a)	0.169	0.224	0.394	0.969	1.434	0.776	0.476	0.282	0.175	0.131	0.085	0.045	0.011	0.185	0.222	0.272	0.408	0.833	1.303	0.667	0.416	0.272	0.183	0.127	0.066	0.032	0.008	
		View angle (a) (degree)	9.712	12.827	22.562	55.510	82.183	44.447	27.259	16.164	9.999	7.479	4.899	2.558	0.644	10.589	12.725	15.563	23.404	47.742	74.632	38.217	23.812	15.381	10.477	7.276	3.761	1.806	0.454	
		View angle (a)	0.004	0.092	0.245	0.904	0.015	0.340	0.206	0.107	0.044	0.022	0.011	0.005	0.002	0.026	0.035	0.070	0.203	0.442	0.284	0.306	0.133	0.069	0.044	0.027	0.008	0.004	0.001	
		View angle (a) (degree)	0.774	5.271	14.033	51.823	0.882	19.468	11.812	4.965	2.539	1.245	0.631	0.290	0.112	1.472	1.985	4.030	11.632	36.781	16.260	17.505	7.618	3.953	2.535	1.541	0.465	0.206	0.043	
		Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0	
		Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
		Corr for distance, -10log(d/dref), dB(A)	-3.2	-3.2	-3.2	-3.2	-3.2	-3.1	-3.0	-2.4	-1.6	-1.3	-0.1	2.2	7.6	-3.4	-3.6	-3.5	-3.5	-3.5	-3.4	-3.2	-2.6	-2.0	-1.4	0.7	3.4	8.8		
Corr for view angle, 10log(p(a)/180-cos2a)in6	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2			
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0			
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4			
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0			
Leq 24hr for each train, dB(A)	1.0	17.8	34.8	49.7	33.2									4.3	7.0	11.9	26.0	44.2	45.9											
Leq 24hr for all train	52.2																													
Leq0.5 Day/Evening	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
		Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
		Corr for distance, -10log(d/dref), dB(A)	-3.2	-3.2	-3.2	-3.2	-3.2	-3.1	-3.0	-2.4	-1.6	-1.3	-0.1	2.2	7.6	-3.4	-3.6	-3.5	-3.5	-3.5	-3.4	-3.2	-2.6	-2.0	-1.4	0.7	3.4	8.8		
		Corr for view angle, 10log(p(a)/180-cos2a)in6	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
		Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
		Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
		Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
		Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
		Leq 0.5hr for each train, dB(A)	1.7	18.4	35.4	50.4	33.8									5.0	7.7	12.5	26.6	44.9	46.6									
		Leq 0.5hr for all train	52.8																											
		Leq0.5 Night	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
				Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
				Corr for distance, -10log(d/dref), dB(A)	-3.2	-3.2	-3.2	-3.2	-3.2	-3.1	-3.0	-2.4	-1.6	-1.3	-0.1	2.2	7.6	-3.4	-3.6	-3.5	-3.5	-3.5	-3.4	-3.2	-2.6	-2.0	-1.4	0.7	3.4	8.8
Corr for view angle, 10log(p(a)/180-cos2a)in6	-36.1			-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
Corr for screening/absorption, dB(A)	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Corr for Speed, dB(A)	-14.0			-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-32.6			-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)	2.5			2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)	1.3			18.0	35.0	49.4	33.0									4.6	7.3	12.2	26.2	44.5	46.2									
Leq 0.5hr for all train	52.5																													
Lmax	Measured Lmax			65	65	65	65	65	65	65																				

Parameters:	N1	N2	N3	N4	N5	Segment (Northbound)										Segment (Southbound)												
						N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events																											
	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	51.5	52.0	52.3	52.3	52.3	51.6	49.5	43.5	35.9	33.4	25.4	15.0	4.4	54.5	56.5	55.8	55.8	56.0	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.2	
	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8
	53.4	53.1	53.9	53.9	53.9	53.3	53.2	52.3	50.3	44.3	36.8	34.3	26.6	17.1	9.7	56.2	58.0	57.2	57.0	57.0	55.5	52.3	46.2	40.1	35.3	22.7	14.3	9.4
	0.169	0.224	0.394	0.969	1.434	0.776	0.476	0.282	0.175	0.131	0.085	0.045	0.011	0.185	0.222	0.272	0.408	0.833	1.303	0.667	0.416	0.272	0.183	0.127	0.066	0.032	0.008	0.001
	9.712	12.827	22.562	55.510	82.183	44.447	27.259	16.164	9.999	7.479	4.899	2.558	0.644	10.589	12.725	15.563	23.404	47.742	74.632	38.217	23.812	15.581	10.477	7.276	3.761	1.806	0.454	
	0.014	0.092	0.245	0.904	0.015	0.340	0.206	0.087	0.044	0.022	0.011	0.005	0.002	0.026	0.035	0.070	0.203	0.642	0.284	0.306	0.133	0.089	0.044	0.027	0.008	0.004	0.001	
	0.774	5.271	14.033	51.823	0.882	19.468	11.812	4.965	2.539	1.245	0.631	0.290	0.112	1.472	1.985	4.030	11.632	36.781	16.260	17.505	7.618	3.953	2.535	1.541	0.465	0.206	0.043	
	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	10.0	10.0	10.0	15.0	10.0	
	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	-3.3	-3.3	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-1.7	-1.4	-0.3	1.7	4.1	-3.5	-3.7	-3.6	-3.6	-3.6	-3.6	-3.5	-3.2	-2.7	-2.1	-1.5	0.4	2.4	4.2	
	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	-10.5	-14.0
	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	0.9	17.7	34.7	49.7	33.1																							
	52.1																											
Leq0.5 Day/Evening	Total number of events																											
	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	-3.3	-3.3	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-1.7	-1.4	-0.3	1.7	4.1	-3.5	-3.7	-3.6	-3.6	-3.6	-3.6	-3.5	-3.2	-2.7	-2.1	-1.5	0.4	2.4	4.2	
	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	-10.5	-14.0
	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	1.5	18.3	35.3	50.3	33.8																							
	52.8																											
Leq0.5 Night	Total number of events																											
	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	-3.3	-3.3	-3.3	-3.3	-3.3	-3.2	-3.0	-2.5	-1.7	-1.4	-0.3	1.7	4.1	-3.5	-3.7	-3.6	-3.6	-3.6	-3.6	-3.5	-3.2	-2.7	-2.1	-1.5	0.4	2.4	4.2	
	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	-10.5	-14.0
	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	1.2	18.0	35.0	50.0	33.4																							
	52.4																											
Lmax	Measured Lmax																											
	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65										

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horize distance from track to NSR	51.5	52.0	52.3	52.3	52.3	51.6	49.5	43.5	35.9	33.4	25.4	15.0	4.4	54.5	56.5	55.8	55.8	56.0	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.2	
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPD + floor height + 1.2m	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	
	Vert distance from track to NSR	32.8	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.6	27.0	27.4	27.8	
	Slant distance	61.0	61.0	60.6	60.0	59.5	58.5	56.6	51.2	44.8	42.7	36.9	30.9	27.9	63.6	65.0	64.1	63.7	63.3	62.9	61.3	58.3	52.8	47.5	43.5	34.3	29.7	27.9	
	View angle (s)	0.169	0.224	0.394	0.969	1.434	0.776	0.476	0.282	0.175	0.131	0.085	0.045	0.011	0.185	0.222	0.272	0.408	0.833	1.303	0.667	0.416	0.272	0.183	0.127	0.066	0.032	0.008	
	View angle (s) (degree)	9.712	12.827	22.562	55.510	82.183	44.447	27.259	16.164	9.999	7.479	4.899	2.558	0.644	10.589	12.725	15.563	23.404	47.742	74.632	38.217	23.812	15.581	10.477	7.276	3.761	1.806	0.454	
	View angle (θ)	0.004	0.092	0.245	0.904	0.015	0.340	0.206	0.087	0.044	0.022	0.011	0.005	0.002	0.026	0.035	0.070	0.203	0.642	0.284	0.306	0.139	0.069	0.044	0.027	0.008	0.004	0.001	
	View angle (θ) (degree)	0.774	5.271	14.033	51.823	0.882	19.468	11.812	4.965	2.539	1.245	0.631	0.290	0.112	1.472	1.985	4.030	11.632	36.781	16.260	17.505	7.618	3.953	2.535	1.541	0.465	0.206	0.043	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0	
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
	Corr for distance, -10log(d/dref), dB(A)	-4.0	-4.0	-4.0	-3.9	-3.9	-3.8	-3.7	-3.3	-2.7	-2.5	-2.0	-1.3	-0.9	-4.2	-4.2	-4.2	-4.1	-4.1	-4.0	-3.8	-3.4	-3.0	-2.6	-1.7	-1.2	-0.9		
	Corr for view angle, 10log(θ/θ180cos2αin6)	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0		
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4		
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)	0.3	17.1	34.1	49.2	32.6									3.7	6.4	11.3	25.4	43.7	45.4										
Leq 24hr for all train	51.6																												
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-4.0	-4.0	-4.0	-3.9	-3.9	-3.8	-3.7	-3.3	-2.7	-2.5	-2.0	-1.3	-0.9	-4.2	-4.2	-4.2	-4.1	-4.1	-4.0	-3.8	-3.4	-3.0	-2.6	-1.7	-1.2	-0.9		
	Corr for view angle, 10log(θ/θ180cos2αin6)	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	0.8	17.6	34.7	49.7	33.2									4.7	7.0	11.9	26.0	44.3	46.0									
	Leq 0.5hr for all train	52.2																											
	Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
		Corr for distance, -10log(d/dref), dB(A)	-3.9	-3.9	-3.8	-3.8	-3.8	-3.7	-3.3	-2.7	-2.5	-2.0	-1.3	-0.9	-0.5	-4.2	-4.2	-4.2	-4.1	-4.1	-4.0	-3.8	-3.4	-3.0	-2.6	-1.7	-1.2	-0.9	
		Corr for view angle, 10log(θ/θ180cos2αin6)	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
Corr for screening/absorption, dB(A)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)		0.5	17.3	34.3	49.4	32.8									3.9	6.6	11.5	25.6	43.9	45.6									
Leq 0.5hr for all train		51.8																											
Lmax		Measured Lmax	65	65	65																								

Floor	10	Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
	Leq24	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Total number of events	51.5	52.0	52.3	52.3	51.6	49.5	43.5	35.9	33.4	25.4	15.0	4.4	54.5	56.5	55.8	55.8	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.2	11.3	12.9	
	Horize distance from track to NSR	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPD + floor height + 1.2m	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	47.0	
	Vert distance from track to NSR	39.1	38.3	37.1	35.7	34.5	33.9	33.6	33.4	33.0	32.9	31.1	33.4	33.0	34.0	34.0	37.9	35.8	35.8	34.5	33.8	33.5	33.1	32.8	32.9	31.3	33.7	34.1	
	Slant distance	64.7	64.5	64.1	63.3	62.7	61.7	59.9	54.8	48.8	46.9	41.7	36.6	34.2	67.0	68.4	67.4	66.9	66.5	65.9	64.4	61.5	56.3	51.3	47.6	39.4	35.6	34.2	
	View angle (a)	0.169	0.224	0.394	0.969	1.434	0.776	0.476	0.282	0.175	0.131	0.085	0.045	0.011	0.185	0.222	0.272	0.408	0.833	1.303	0.667	0.416	0.272	0.183	0.127	0.066	0.032	0.008	
	View angle (a) (degree)	9.712	12.827	22.562	55.510	82.183	44.447	27.259	16.164	9.999	7.479	4.899	2.558	0.644	10.589	12.725	15.563	23.404	47.742	74.632	38.217	23.812	15.581	10.477	7.276	3.761	1.806	0.454	
	View angle (b)	0.014	0.092	0.245	0.904	0.015	0.340	0.206	0.087	0.044	0.022	0.011	0.005	0.002	0.026	0.035	0.070	0.203	0.642	1.294	0.306	0.133	0.069	0.044	0.027	0.008	0.004	0.001	
	View angle (b) (degree)	0.774	5.271	14.033	51.823	0.882	19.468	11.812	4.965	2.539	1.245	0.631	0.290	0.112	1.472	1.985	4.030	11.632	36.781	16.260	17.595	7.618	3.953	2.535	1.541	0.465	0.206	0.043	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	10.0	10.0	10.0	15.0	10.0	10.0
		Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
		Corr for distance, -10log(d/rref), dB(A)	-4.3	-4.2	-4.2	-4.2	-4.1	-4.0	-3.9	-3.6	-3.1	-2.9	-2.5	-2.0	-1.7	-4.4	-4.5	-4.4	-4.4	-4.4	-4.3	-4.2	-4.0	-3.7	-3.3	-3.0	-2.3	-1.9	-1.7
		Corr for view angle, 10log(p/r)/180-cos2a(inf)	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
		Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corr for Speed, 20log(v/vref), dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr		-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Leq 24hr for each train, dB(A)		-0.1	16.7	33.8	48.8	32.3									3.3	6.1	11.0	25.1	43.4	45.1									
Leq 24hr for all train		51.3																											
		Leq0.5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
		Total number of events	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
		Corr for no. of event, 10log(N), dB(A)	-4.1	-4.2	-4.2	-4.2	-4.1	-4.0	-3.9	-3.6	-3.1	-2.9	-2.5	-2.0	-1.7	-4.4	-4.5	-4.4	-4.4	-4.4	-4.3	-4.2	-4.0	-3.7	-3.3	-3.0	-2.3	-1.9	-1.7
		Corr for distance, -10log(d/rref), dB(A)	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
	Corr for view angle, 10log(p/r)/180-cos2a(inf)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for screening/absorption, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for Speed, dB(A)	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
	Corr for sound energy spread over 24 hr	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
	Facade correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
	Leq 0.5hr for each train, dB(A)	0.2	17.0	34.1	49.1	32.6									3.6	6.4	11.3	25.4	43.7	45.4									
	Leq 0.5hr for all train	51.9																											
		Leq0.5	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Total number of events	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
Corr for no. of event, 10log(N), dB(A)		-4.3	-4.2	-4.2	-4.2	-4.1	-4.0	-3.9	-3.6	-3.1	-2.9	-2.5	-2.0	-1.7	-4.4	-4.5	-4.4	-4.4	-4.4	-4.3	-4.2	-4.0	-3.7	-3.3	-3.0	-2.3	-1.9	-1.7	
Corr for distance, -10log(d/rref), dB(A)		-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2	
Corr for view angle, 10log(p/r)/180-cos2a(inf)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for screening/absorption, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for Speed, dB(A)		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6									

Parameters:	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	51.5	52.0	52.3	52.3	52.3	51.6	49.5	43.5	35.9	33.4	25.4	15.0	4.4	54.5	56.5	55.8	55.8	56.0	56.2	54.8	51.6	45.5	39.4	34.5	21.2	11.5	3.2
	ground mPD + floor height + 1.2m	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	Vert distance from track to NSR	54.8	54.0	52.8	51.5	50.3	49.7	49.4	49.1	48.8	48.7	48.8	49.1	49.7	54.7	54.3	53.6	52.7	51.5	50.2	49.5	49.2	48.8	48.6	48.7	49.0	49.5	49.8
	Slant distance	75.2	75.4	73.4	72.6	71.6	69.9	65.6	60.6	59.0	55.0	51.3	49.8	77.2	78.3	77.4	76.8	76.1	75.4	73.8	71.3	66.7	62.5	59.6	53.4	50.2	49.8	49.8
	View angle (°)	0.169	0.224	0.394	0.969	1.434	0.776	0.476	0.282	0.175	0.131	0.085	0.045	0.011	0.185	0.222	0.272	0.408	0.833	1.303	0.667	0.416	0.272	0.183	0.127	0.066	0.032	0.008
	View angle (°) (degree)	9.712	12.827	22.562	55.510	82.183	44.447	27.259	16.164	9.999	7.479	4.899	2.558	0.644	10.589	12.725	15.563	23.404	47.742	74.632	38.217	23.812	15.581	10.477	7.276	3.761	1.806	0.454
	View angle (°) (dB)	0.044	0.092	0.245	0.904	0.015	0.340	0.206	0.107	0.044	0.022	0.011	0.005	0.002	0.026	0.035	0.070	0.203	0.642	0.784	0.306	0.133	0.069	0.044	0.027	0.008	0.004	0.001
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	30.0	3.0	3.0	3.0	3.0	3.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.8	-4.7	-4.7	-4.6	-4.6	-4.5	-4.2	-3.8	-3.7	-3.4	-3.1	-3.0	-4.9	-5.0	-4.9	-4.9	-4.8	-4.8	-4.7	-4.6	-4.3	-4.0	-3.8	-3.3	-3.1	-3.0
	Corr for view angle, 10log(p/0.180-cos2a)in6	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)	-0.6	16.2	33.2	48.3	31.7									2.8	5.6	10.5	24.6	42.9	44.6								
	Leq 24hr for all train	50.8																										
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.8	-4.7	-4.7	-4.6	-4.6	-4.5	-4.2	-3.8	-3.7	-3.4	-3.1	-3.0	-4.9	-5.0	-4.9	-4.9	-4.8	-4.8	-4.7	-4.6	-4.3	-4.0	-3.8	-3.3	-3.1	-3.0
	Corr for view angle, 10log(p/0.180-cos2a)in6	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	0.1	16.9	33.9	48.9	32.4									3.5	6.3	11.1	25.3	43.6	45.3								
	Leq 0.5hr for all train	51.4																										
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.8	-4.7	-4.7	-4.6	-4.6	-4.5	-4.2	-3.8	-3.7	-3.4	-3.1	-3.0	-4.9	-5.0	-4.9	-4.9	-4.8	-4.8	-4.7	-4.6	-4.3	-4.0	-3.8	-3.3	-3.1	-3.0
	Corr for view angle, 10log(p/0.180-cos2a)in6	-36.1	-25.4	-16.3	-4.3	-20.2	-9.8	-15.6	-23.7	-30.7	-36.3	-42.9	-51.9	-68.0	-32.6	-29.7	-24.9	-16.9	-6.6	-7.8	-11.3	-18.6	-25.0	-30.3	-35.6	-46.6	-56.5	-75.2
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)	-0.3	16.5	33.6	48.6	32.1									3.1	5.9	10.8	24.9	43.2	44.9								
	Leq 0.5hr for all train	51.1																										
Lmax	Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	Corr for distance, -10log(d/dref), dB(A)	-4.8	-4.8	-4.7	-4.7	-4.6	-4.6	-4.5	-4.2	-3.8	-3.7	-3.4	-3.1	-3.0	-4.9	-5.0	-4.9	-4.9	-4.8	-4.8	-4.7	-4.6	-4.3	-4.0	-3.8	-3.3	-3.1	-3.0

Mitigated Case

RN1

		Segment (Northbound)													Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters:	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	
	Horize distance from track to NSR	8.9	9.4	9.7	9.7	9.8	9.1	7.3	1.6	5.5	7.9	15.6	25.5	35.8	11.9	13.9	13.2	13.2	13.5	13.6	12.4	9.5	3.8	2.0	6.7	19.5	28.8	36.7	
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
	ground mPD + floor height + 1.2m	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	
	Vert distance from track to NSR	10.7	9.9	8.7	7.4	6.2	5.6	5.3	5.0	4.7	4.6	4.7	5.0	5.6	10.6	10.2	9.5	8.6	7.4	6.1	5.4	5.1	4.7	4.5	4.6	4.9	5.4	5.7	
	Slant distance	13.9	13.6	13.0	12.2	11.5	10.7	9.0	5.3	7.2	9.2	16.5	26.0	36.2	16	17	16	16	15	15	14	11	6	5	8	20	29	37	
	View angle (m)	0.0209	0.040	0.075	0.371	1.400	0.209	0.083	0.012	0.029	0.083	0.055	0.079	0.096	0.040	0.054	0.064	0.099	0.275	1.506	0.204	0.087	0.025	0.010	0.026	0.063	0.082	0.094	
	View angle (in degree)	1.668	2.306	4.276	21.275	80.203	11.998	4.777	0.667	1.636	1.875	3.141	4.540	5.491	2.300	3.114	3.677	5.678	15.764	86.288	11.681	5.010	1.408	0.576	1.497	3.608	4.716	5.398	
	View angle (H)	0.002	0.017	0.049	0.544	2.186	0.153	0.045	0.004	0.008	0.006	0.007	0.009	0.017	0.006	0.009	0.017	0.053	0.295	2.413	0.135	0.033	0.007	0.003	0.006	0.008	0.010	0.009	
	View angle (H) (degree)	0.133	0.958	2.815	31.144	125.261	8.767	2.578	0.230	0.448	0.330	0.424	0.536	0.991	0.321	0.491	0.973	3.012	16.895	138.261	7.740	1.916	0.398	0.150	0.335	0.466	0.558	0.533	
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0	
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
	Corr for distance, -10log(d/dref), dB(A)	2.5	2.6	2.8	3.1	3.4	3.7	4.4	6.8	5.4	4.4	1.9	-0.2	-1.6	2.0	1.6	1.9	2.0	2.1	2.2	2.7	3.7	6.2	7.1	4.9	1.0	-0.7	-1.7	
	Corr for view angle, 10log(p/0.180-cos2alpha), dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8	
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	-0.7	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Leq 24hr for each train, dB(A)	-16.2	1.4	19.7	46.8	59.5	34.4	17.4	-14.0	-8.2	-9.4	-2.8	1.9	2.2	-10.2	-6.0	-1.3	13.6	38.1	59.3	34.1	18.1	-3.2	-16.8	-10.8	-5.6	-0.6	-4.2		
Leq 24hr for all train	62.5																												
Noise reduction	-4.0																												
		58.1																											
Leq0.5 Day/Evening	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
	Corr for distance, -10log(d/dref), dB(A)	2.5	2.6	2.8	3.1	3.4	3.7	4.4	6.8	5.4	4.4	1.9	-0.2	-1.6	2.0	1.6	1.9	2.0	2.1	2.2	2.7	3.7	6.2	7.1	4.9	1.0	-0.7	-1.7	
	Corr for view angle, 10log(p/0.180-cos2alpha), dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8	
	Corr for screening/ absorption, dB(A)	0.0	0.0	0.0	0.0	-0.7	-0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6		
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
	Leq 0.5hr for each train, dB(A)	-15.5	2.0	20.3	47.5	60.1	35.0	18.0	-13.3	-7.5	-8.7	-2.2	2.5	2.9	-9.5	-5.4	-0.7	14.2	38.8	60.0	34.8	18.8	-2.6	-16.1	-10.1	-5.0	0.0	-3.6	
	Leq 0.5hr for all train	63.2																											
	Noise reduction	-4.0																											
			58.2																										
	Leq0.5 Night	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
		Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
		Corr for distance, -10log(d/dref), dB(A)	2.5	2.6	2.8	3.1	3.4	3.7	4.4	6.8	5.4	4.4	1.9	-0.2	-1.6	2.0	1.6	1.9	2.0	2.1	2.2	2.7	3.7	6.2	7.1	4.9	1.0	-0.7	-1.7
		Corr for view angle, 10log(p/0.180-cos2alpha), dB(A)	-59.0	-47.6	-37.5	-12.9	-0.3	-23.6	-36.9	-64.6	-53.9	-54.1	-48.5	-44.3	-40.0	-52.4	-48.0	-43.5	-34.8	-18.3	-0.1	-24.4	-37.9	-55.7	-67.7	-56.0	-46.9	-43.8	-42.8
Corr for screening/ absorption, dB(A)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Corr for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6						

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Parameters		Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Leq24	Measured SEL	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horize distance from track to NSR	16.8	17.4	17.7	17.8	18.0	18.2	17.4	13.5	7.9	5.9	0.7	9.5	18.7	19.8	22.0	21.2	21.2	21.6	22.0	21.8	20.1	16.0	11.4	7.4	3.7	12.0	19.2
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
	Vert distance from track to NSR	17.0	16.2	15.0	13.7	12.5	11.9	11.6	11.3	11.0	10.9	11.0	11.3	11.9	16.9	16.5	15.8	14.9	13.7	12.4	11.7	11.4	11.0	10.8	10.9	11.2	11.7	12.0
	Slant distance	23.9	23.8	23.2	22.4	21.9	21.7	20.9	17.6	13.5	12.3	11.0	10.8	22.1	36	28	26	26	25	23	19	16	13	12	17	17	23	
	View angle (a)	0.049	0.064	0.103	0.257	0.764	1.236	0.361	0.132	0.051	0.028	0.003	0.03	0.055	0.059	0.075	0.087	0.122	0.244	1.077	0.833	0.284	0.138	0.069	0.034	0.014	0.038	0.054
	View angle (a) (degree)	2.800	3.645	5.920	14.718	43.772	70.840	20.690	7.552	2.917	1.631	0.168	1.908	3.177	3.379	4.289	4.968	6.991	13.975	61.720	47.730	16.253	7.900	3.966	1.925	0.779	2.198	3.111
	View angle (B)	0.003	0.023	0.054	0.155	0.848	1.393	0.304	0.060	0.017	0.006	0.000	0.004	0.011	0.007	0.010	0.019	0.051	0.126	1.528	0.879	0.156	0.051	0.022	0.009	0.002	0.005	0.006
	View angle (B) (degree)	0.199	1.307	3.075	8.878	48.591	79.803	17.400	3.464	0.980	0.338	0.026	0.254	0.635	0.418	0.588	1.109	2.917	7.212	87.539	50.347	8.920	2.895	1.255	0.500	0.114	0.290	0.338
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.3	-0.5	-0.6	-0.6	-0.8	-1.5	-2.7	-3.1	-3.6	-2.3	-0.5	-0.2	-0.4	-0.2	-0.2	-0.1	0.0	0.3	1.1	2.0	2.8	3.3	1.7	0.4	
	Corr for view angle, 10log(d/dref)/20cos2(a), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(V/Vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)	58.1			35.8	51.3	53.3	34.6	13.6	-2.5	-11.8	-38.7	-6.5	-2.3						31.0	55.3	50.7	31.7	15.3	4.1	-8.9	-22.7	-7.7	-8.8
Leq 24hr for all train	58.1			35.8	51.3	53.3	34.6	13.6	-2.5	-11.8	-38.7	-6.5	-2.3						31.0	55.3	50.7	31.7	15.3	4.1	-8.9	-22.7	-7.7	-8.8
Noise reduction	-4.0																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.3	-0.5	-0.6	-0.6	-0.8	-1.5	-2.7	-3.1	-3.6	-2.3	-0.5	-0.2	-0.4	-0.2	-0.2	-0.1	0.0	0.3	1.1	2.0	2.8	3.3	1.7	0.4		
Corr for view angle, 10log(d/dref)/20cos2(a), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 0.5hr for each train, dB(A)	59.8			36.5	51.9	53.9	35.3	14.3	-1.8	-11.1	-38.0	-5.8	-1.6						31.6	56.0	51.4	32.3	15.9	4.8	-8.3	-22.1	-7.0	-8.2
Leq 0.5hr for all train	59.8			36.5	51.9	53.9	35.3	14.3	-1.8	-11.1	-38.0	-5.8	-1.6						31.6	56.0	51.4	32.3	15.9	4.8	-8.3	-22.1	-7.0	-8.2
Noise reduction	-4.0																											
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Corr for distance, -10log(d/dref), dB(A)	-0.2	-0.2	-0.1	0.1	0.2	0.3	0.4	1.0	1.9	2.2	2.5	1.6	0.2	-0.5	-0.7	-0.6	-0.5	-0.4	-0.3	-0.2	0.0	0.7	1.4	2.0	2.3	1.2	0.1	
Corr for view angle, 10log(d/dref)/20cos2(a), dB(A)	-52.8	-42.3	-34.3	-21.9	-5.9	-1.6	-16.0	-31.7	-45.5	-55.2	-86.1	-55.1	-46.7	-47.9	-44.4	-40.4	-33.2	-23.2	-1.8	-5.2	-21.0	-32.1	-41.8	-52.0	-66.3	-53.3	-49.6	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5													

D01 ENVIRONMENTAL ASSESSMENT
Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

Parameters	Measured SEL	Segment (Northbound)												Segment (Southbound)														
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
		70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horizontal distance from track to NSR	22.0	22.5	22.9	22.9	23.3	23.8	23.4	20.2	15.3	13.4	7.2	1.1	9.8	24.9	27.2	26.4	26.4	26.8	27.3	27.6	26.4	22.9	18.8	15.1	4.6	3.3	10.2
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
	Vertical distance from track to NSR	20.2	19.4	18.2	16.8	15.6	15.0	14.7	14.5	14.1	14.0	14.2	14.5	15.0	20.1	19.7	19.0	18.1	16.9	15.6	14.9	14.6	14.2	13.9	14.0	14.4	14.8	15.2
	Slope distance	29.8	29.7	29.2	28.4	28.1	28.1	27.6	24.8	20.8	18.4	15.9	14.5	17.9	32.0	33.6	32.5	32.0	31.6	31.4	31.3	30.1	26.9	23.4	20.6	15.1	15.2	18.3
	View angle (a)	0.061	0.078	0.121	0.276	0.565	1.471	0.663	0.231	0.109	0.070	0.031	0.004	0.031	0.071	0.088	0.101	0.138	0.266	0.775	1.259	0.461	0.225	0.125	0.073	0.018	0.011	0.030
	View angle (a) (degree)	3.493	4.460	6.960	15.817	32.383	84.287	37.981	13.343	6.229	4.010	1.775	0.234	1.748	4.058	5.032	5.797	7.933	15.249	44.423	72.149	26.409	12.914	7.168	4.190	1.019	0.636	1.722
	View angle (b)	0.004	0.026	0.058	0.110	0.458	1.313	0.648	0.121	0.040	0.016	0.005	0.001	0.006	0.008	0.011	0.021	0.053	0.087	0.919	1.239	0.293	0.093	0.043	0.020	0.003	0.002	0.003
	View angle (b) (degree)	0.237	1.512	3.322	6.280	26.214	75.213	37.153	6.911	2.293	0.891	0.292	0.032	0.365	0.479	0.654	1.215	3.037	4.966	52.643	70.986	16.795	5.304	2.469	1.162	0.157	0.088	0.195
	Average Speed	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-0.8	-0.7	-0.7	-0.6	-0.5	-0.4	0.0	0.8	1.1	2.0	4.4	1.4	1.4	-1.1	-1.3	-1.1	-1.1	-1.0	-1.0	-1.0	-0.8	-0.3	0.3	0.8	2.2	2.2	1.4
	Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 24hr for each train, dB(A)				33.8	45.4	52.3	41.4	20.0	5.9	-1.7	-9.3	-33.5	-8.0					29.1	50.8	52.9	37.3	20.7	10.4	-0.5	-20.1	-23.2	-15.4
	Leq 24hr for all train	57.4			2412.0	34457.3	170778.4	13902.4	99.4	3.9	0.7	0.1	0.0	0.1					811.5	119993.2	196038.5	5349.9	118.3	11.1	0.9	0.0	0.0	0.0
	Noise reduction	-4.0																										
		53.4																										
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
	Corr for distance, -10log(d/dref), dB(A)	-0.8	-0.7	-0.7	-0.6	-0.5	-0.4	0.0	0.8	1.1	2.0	4.4	1.4	1.4	-1.1	-1.3	-1.1	-1.1	-1.0	-1.0	-1.0	-0.8	-0.3	0.3	0.8	2.2	2.2	1.4
	Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)				34.5	46.0	52.0	42.1	20.6	6.6	-1.1	-8.6	-32.8	-8.3					29.8	51.4	53.6	37.9	21.4	11.1	0.2	-19.4	-22.6	-14.8
	Leq 0.5hr for all train	58.0			2808.0	40114.5	198816.6	16184.9	115.7	4.5	0.8	0.1	0.0	0.1					944.8	139227.9	228223.9	6228.3	137.8	12.9	1.0	0.0	0.0	0.0
	Noise reduction	-4.0																										
		54.0																										
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8
	Corr for distance, -10log(d/dref), dB(A)	-0.8	-0.7	-0.7	-0.6	-0.5	-0.4	0.0	0.8	1.1	2.0	4.4	1.4	1.4	-1.1	-1.3	-1.1	-1.1	-1.0	-1.0	-1.0	-0.8	-0.3	0.3	0.8	2.2	2.2	1.4
	Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3																						

Parameters	Measured SEL	Segment (Northbound)													Segment (Southbound)													
		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
Leq24	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
Horizon distance from track to NSR	22.0	22.5	22.9	22.9	23.3	23.8	23.4	20.2	15.3	13.4	7.2	1.1	9.8	24.9	27.2	26.4	26.4	26.8	27.3	27.6	26.4	22.9	18.8	15.1	4.6	3.3	10.2	
track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9	
ground mPD + floor height + 1.2m	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	
Vertical distance from track to NSR	26.5	25.7	24.5	23.1	21.9	21.3	21.0	20.8	20.4	20.3	20.5	20.8	21.3	26.4	26.0	25.3	24.4	23.2	21.9	21.2	20.9	20.5	20.2	20.3	20.7	21.1	21.5	
Slope distance	34.4	34.1	33.5	32.6	32.0	31.9	31.4	29.0	25.5	24.3	21.7	20.2	23.3	36.2	37.6	36.5	35.9	35.4	35.0	34.8	33.6	30.7	27.6	25.3	23.2	21.4	23.8	
View angle (a)	0.061	0.078	0.121	0.276	0.565	1.471	0.663	0.231	0.109	0.070	0.031	0.004	0.031	0.071	0.088	0.101	0.138	0.266	0.775	1.259	0.461	0.225	0.125	0.073	0.018	0.011	0.030	
View angle (a) (degree)	3.493	4.460	6.960	15.817	32.383	84.287	37.981	13.243	6.229	4.010	1.775	0.234	1.748	4.058	5.032	5.797	7.933	15.249	44.423	72.149	26.409	12.914	7.168	4.400	1.019	0.636	1.722	
View angle (b)	0.004	0.026	0.058	0.110	0.458	1.313	0.648	0.121	0.040	0.016	0.005	0.001	0.006	0.008	0.011	0.021	0.053	0.087	0.919	1.239	0.293	0.093	0.043	0.020	0.003	0.002	0.003	
View angle (b) (degree)	0.237	1.512	3.322	6.280	26.214	75.213	37.153	6.911	2.393	0.891	0.292	0.032	0.365	0.479	0.654	1.215	3.037	4.966	52.643	70.998	16.795	5.304	2.469	1.162	0.157	0.088	0.195	
Average Speed	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	
Corr for distance, -10log(d/dref), dB(A)	-1.4	-1.4	-1.3	-1.1	-1.1	-1.1	-1.0	-0.6	-0.1	0.1	0.6	0.8	0.3	-1.6	-1.8	-1.6	-1.6	-1.5	-1.5	-1.4	-1.3	-0.9	-0.4	-0.1	0.7	0.7	0.2	
Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-42.6	-69.2	-57.1	
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)					33.2	44.8	51.8	40.9	19.3	5.0	-2.7	-10.6	-35.1	-10.1				28.6	50.3	52.5	36.8	20.2	9.7	-1.4	-21.6	-24.7	-16.6	
Leq 24hr for all train	56.9				2106.6	30218.2	150406.6	12216.9	85.3	3.2	0.5	0.1	0.0	0.1				725.4	107463.9	176673.7	4793.0	103.7	9.4	0.7	0.0	0.0	0.0	
Noise reduction	4.0																											
Leq 0.5hr for all train	52.9																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-1.4	-1.4	-1.3	-1.1	-1.1	-1.1	-1.0	-0.6	-0.1	0.1	0.6	0.8	0.3	-1.6	-1.8	-1.6	-1.6	-1.5	-1.5	-1.4	-1.3	-0.9	-0.4	-0.1	0.7	0.7	0.2
	Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-42.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)					33.9	45.5	52.4	41.5	20.0	5.7	-2.1	-10.0	-34.4	-9.5				29.3	51.0	53.1	37.5	20.8	10.4	0.7	-20.9	-24.0	-15.9
	Leq 0.5hr for all train	57.5				35179.3	175100.2	14222.6	99.3	3.7	0.6	0.1	0.0	0.1				844.5	125107.3	205679.8	5579.9	120.8	10.9	0.9	0.0	0.0	0.0	0.0
	Noise reduction	4.0																										
		53.5																										
Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
	Corr for no. of event, 10log(N), dB(A)	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
	Corr for distance, -10log(d/dref), dB(A)	-1.4	-1.4	-1.3	-1.1	-1.1	-1.1	-1.0	-0.6	-0.1	0.1	0.6	0.8	0.3	-1.6	-1.8	-1.6	-1.6	-1.5	-1.5	-1.4	-1.3	-0.9	-0.4	-0.1	0.7	0.7	0.2
	Corr for view angle, 10log(a)/180*cos2(a), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-42.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0		

7	Segment (Northbound)													Segment (Southbound)														
	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	
Parameters:																												
	Measured SEL																											
	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9	70.9
Leq24	Total number of events	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536	536
	Horizontal distance from track to NSR	22.0	22.5	22.9	21.9	23.3	23.8	23.4	20.2	15.3	13.4	7.2	1.1	9.8	24.9	27.2	26.4	26.4	26.8	27.3	27.6	26.4	22.9	18.8	15.1	4.6	3.3	10.2
	track mPD + track head (0.2m)	7.9	8.7	9.9	11.3	12.5	13.1	13.4	13.6	14.0	14.1	13.9	13.6	13.1	8.0	8.4	9.1	10.0	11.2	12.5	13.2	13.5	13.9	14.2	14.1	13.7	13.3	12.9
	ground mPD + floor height + 1.2m	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7	40.7
	Vert distance from track to NSR	32.8	32.0	30.8	29.4	28.2	27.6	27.3	27.1	26.7	26.6	26.8	27.1	27.6	32.7	32.3	31.6	30.7	29.5	28.2	27.5	27.2	26.8	26.5	26.6	27.0	27.4	27.8
	Slant distance	39.4	39.1	38.3	37.3	36.6	36.4	35.9	35.8	30.8	29.9	27.7	27.1	29.3	41.0	42.2	41.1	40.5	39.8	39.2	38.9	37.8	35.2	32.5	30.6	27.3	27.6	28.6
	View angle (α)	0.061	0.078	0.121	0.276	0.565	1.471	0.663	0.231	0.109	0.070	0.031	0.004	0.031	0.071	0.088	0.101	0.138	0.266	0.775	1.259	0.461	0.225	0.125	0.073	0.018	0.011	0.030
	View angle (α) (degree)	3.493	4.460	6.960	15.817	32.383	84.287	37.981	13.243	6.229	4.010	1.775	0.234	1.748	4.058	5.032	5.797	7.933	15.249	44.423	72.149	26.409	12.914	7.168	4.190	1.019	0.636	1.722
	View angle (β)	0.004	0.026	0.058	0.110	0.458	1.313	0.648	0.121	0.040	0.016	0.005	0.001	0.006	0.008	0.011	0.021	0.053	0.087	0.919	1.239	0.293	0.093	0.043	0.020	0.003	0.002	0.003
	View angle (β) (degree)	0.237	1.512	3.322	6.280	26.214	75.213	37.153	6.912	2.293	0.891	0.292	0.023	0.365	0.479	0.654	1.215	3.037	4.966	52.643	70.998	16.795	5.304	2.469	1.162	0.157	0.088	0.195
	Average Speed	10.0	20.0	50.0	70.0	65.0	50.0	30.0	15.0	10.0	10.0	15.0	20.0	15.0	10.0	10.0	10.0	20.0	50.0	70.0	60.0	40.0	20.0	15.0	10.0	10.0	15.0	10.0
	Corr for no. of event, 10log(N), dB(A)	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3	27.3
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-1.9	-1.9	-1.7	-1.7	-1.6	-1.6	-1.3	-0.9	-0.8	-0.4	-0.3	-0.7	-2.2	-2.3	-2.2	-2.1	-2.0	-2.0	-1.9	-1.8	-1.5	-1.1	-0.9	-0.4	-0.4	-0.7
	Corr for view angle, 10log((β/180)cos2α), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, 20log(v/vref), dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0	
Corr for sound energy spread over 24 hr	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	-49.4	
Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Leq 24hr for each train, dB(A)					32.6	44.2	51.2	40.3	18.6	4.2	-3.6	-11.7	-36.2	-11.1														
Leq 24hr for all train	56.3				1839.1	26416.8	131802.9	10681.4	73.2	2.6	0.4	0.1	0.1					645.1	95834.4	157798.8	4257.1	90.4	8.0	0.6	0.0	0.0	0.0	
Noise reduction	-4.0																											
	52.3																											
Leq0.5	Total number of events	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	
	Corr for no. of event, 10log(N), dB(A)	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-1.9	-1.9	-1.7	-1.7	-1.6	-1.6	-1.3	-0.9	-0.8	-0.4	-0.3	-0.7	-2.2	-2.3	-2.2	-2.1	-2.0	-2.0	-1.9	-1.8	-1.5	-1.1	-0.9	-0.4	-0.4	-0.7
	Corr for view angle, 10log((β/180)cos2α), dB(A)	-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
	Corr for screening/absorption, dB(A)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Corr for Speed, dB(A)	-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
	Corr for sound energy spread over 24 hr	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
	Facade correction, dB(A)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	Track wear correction, dB(A)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
	Leq 0.5hr for each train, dB(A)					33.3	44.9	51.9	40.9	19.3	4.9	-2.9	-11.0	-35.6	-10.4													
	Leq 0.5hr for all train	57.0				2141.1	30753.9	153442.2	12435.1	85.2	3.1	0.5	0.1	0.0	0.1				751.0	111568.4	183706.1	4956.0	105.3	9.3	0.7	0.0	0.0	0.0
	Noise reduction	-4.0																										
		53.0																										
	Leq0.5	Total number of events	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Corr for no. of event, 10log(N), dB(A)		10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	
Corr for distance, -10log(d/dref), dB(A)		-2.0	-1.9	-1.9	-1.7	-1.7	-1.6	-1.6	-1.3	-0.9	-0.8	-0.4	-0.3	-0.7	-2.2	-2.3	-2.2	-2.1	-2.0	-2.0	-1.9	-1.8	-1.5	-1.1	-0.9	-0.4	-0.4	-0.7
Corr for view angle, 10log((β/180)cos2α), dB(A)		-50.1	-39.9	-32.6	-22.8	-10.7	-1.5	-8.0	-23.9	-35.2	-43.2	-55.1	-82.2	-54.2	-45.8	-42.5	-38.6	-31.9	-24.2	-5.4	-2.0	-14.3	-25.3	-33.7	-41.6	-62.6	-69.2	-57.1
Corr for screening/absorption, dB(A)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Corr for Speed, dB(A)		-14.0	-8.0	0.0	2.9	2.3	0.0	-4.4	-10.5	-14.0	-14.0	-10.5	-8.0	-10.5	-14.0	-14.0	-14.0	-8.0	0.0	2.9	1.6	-1.9	-8.0	-10.5	-14.0	-14.0	-10.5	-14.0
Corr for sound energy spread over 24 hr		-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6	-32.6
Facade correction, dB(A)		2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Track wear correction, dB(A)		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Leq 0.5hr for each train, dB(A)						33.0	44.5	51.5	40.6	19.0	4.5	-3.3	-11.4	-35.9	-10.8													
Leq 0.5hr for all train		56.6				1976.4	2																					
Noise reduction		-4.0																										
		52.6																										
Lmax		Measured Lmax	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
	Corr for distance, -10log(d/dref), dB(A)	-2.0	-1.9	-1.9	-1.7	-1.7	-1.6	-1.6	-1.3	-0.9																		

Appendix F RESPONSES FROM MTR, EPD AND FSD

SMEC ASIA LIMITED
27/F Ford Glory Plaza,
37-39 Wing Hong Street,
Cheung Sha Wan,
Kowloon,
Hong Kong

Our ref: T&ESD/HKTS/E&IC/ES/EnvE/L1083

Date: 13 JUL 2021

Attention: Ms. Cleo Yip

By Post and Fax
(Fax no.: 3995 8101)

Dear Ms. Yip,

Re: Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group E)” (“E”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong Request for Light Rail Transit (“LRT”) Operation Details for Environmental Assessment (“EA”)

We refer to your letter dated 9 April 2021 (received on 18 June 2021) (ref.: 7076822/L27280/AW/CY/rw) requesting Light Rail Transit (LRT) operational information regarding the section near Ping Shan Stop.

Operational Frequency for LRT (Section between Tong Fong Tsuen Stop and Ping Shan Stop – Route 610, 614, 615 and 761P)

- The current peak train frequency during the period of 07:00-23:00 hours is about 26 trains per hour per direction.
- The current peak train frequency during the period of 23:00-07:00 hours is about 24 trains per hour per direction.

Please note that the Light Rail service frequencies are subject to change without prior notification due to future patronage growth. As such, please consider allowing a buffer on the assessment assumptions when estimating future possible environmental impacts.

Speed Profile

The current maximum train speed for the section of track between Tong Fong Tsuen Stop and Ping Shan Stop is 70 km/h for both directions.

Rail Head Levels

We suggest that you attend our office to check the respective drawings suitable for your study. You may contact our Acting Lead Environmental Manager to make the necessary arrangement.

Page 1 of 2



Our ref: T&ESD/HKTS/E&IC/ES/EnvE/L1083

Date: 13 JUL 2021

Train Length of Light Rail Vehicles

Two (2) compartments light rail vehicle is approximately 40m in length.

Light Rail Train Noise Data

We suggest that your organization conduct its own noise measurements to suit the relevant needs of your study, if necessary.

Please be reminded that any information that may come to your knowledge or come into your possession from MTR Corporation Limited shall only be used solely as reference for this captioned project. Further distribution and/or publication of the above information for purposes not connected with the captioned project are strictly prohibited without the prior consent of MTR Corporation Limited. Please also note that any such information is subject to change without prior notification.

Should you have any additional enquiries, please feel free to contact our Acting Lead Environmental Manager, Ms. Catherine Leung at 2993 4127.

Yours sincerely,

HK Chan
General Manager – Engineering & Innovation Centre

Page 2 of 2

Our ref: 7076822/L27278/AW/CY/rw

9 April 2021

Environmental Protection Department
Environmental Compliance Division
Regional Office (North), Yuen Long
10/F., Shatin Government Offices
No. 1 Sheung Wo Che Road
Sha Tin, N.T., Hong Kong

By Email (williamw@epd.gov.hk) & Post

Attn: Mr WONG Wai Lam, William

Dear Sir

**Section 12A Rezoning Application from "Village Type Development" ("V") zone and
"Comprehensive Development Area" ("CDA") zone to "Residential (Group E)" ("R(E)") zone for
Proposed Social Welfare Facility (Residential Care Home for the Elderly) and
Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong
Request for Information – Land Contamination Study**

It is planned to develop a Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at the Site as shown in the attached Site Location Plan in Ping Shan, Yuen Long, N.T.. In view of the proposed development, a rezoning application will be made under Section 12A of the Town Planning Ordinance ("TPO"). We have been commissioned by the Applicant of the aforementioned planning application to prepare an EA to support the planning application, which includes the review of land contamination issue.

In order to review potential contamination issue, we would appreciate if you could provide us with an updated list of any current/past licences for storage of Dangerous Goods ("DG"), registration of Chemical Waste Producers or records of incidents of chemical/chemical waste spillage / leakage from relevant authorities (e.g. FSD, EPD), etc. relating to the Site, if any.

Should you have any enquiries regarding the above, please feel free to contact the undersigned on 3995 8138 or to cleo.yip@smec.com or our Charls LIANG on 3995 8128 or to charls.liang@smec.com.

Thank you for your attention.

Yours faithfully



Cleo YIP
Senior Environmental Consultant

Encl.

cc Mr Thomas LUK – Aikon Development Consultancy Ltd

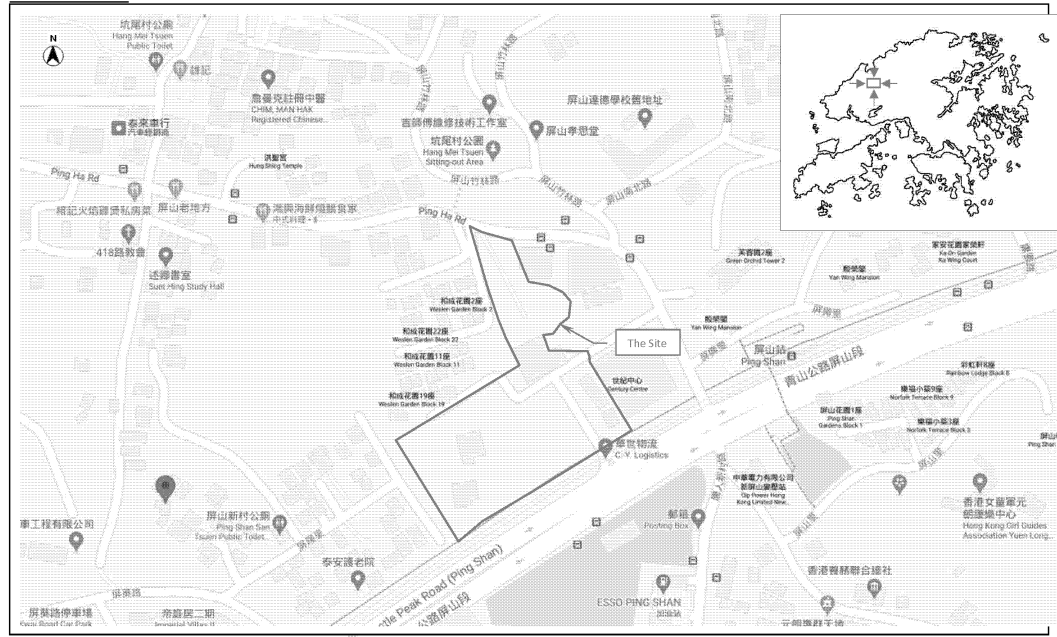
by email

SMEC ASIA LIMITED
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Site Location Plan



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Attachment Page 1 of 1

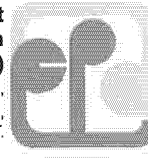
D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

本署檔案
OUR REF: () EP910/E6/1
來函檔案
YOUR REF: 7076822/L27278/AW/CY/rw
電話
TEL NO: 2158 5851
圖文傳真
FAX NO: 2685 1155
網址
HOMEPAGE: <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Shatin Government Offices,
1 Sheung Wo Che Road,
Shatin, N.T.



環境保護署
環保法規管理科
區域辦事處(北)
新界沙田上禾輦路1號
沙田政府合署10樓

(By Post)

22 Apr 2021

SMEC Asia Limited
27/F., Ford Glory Plaza, 37-39 Wing Hong Street,
Cheung Sha Wan,
Kowloon, Hong Kong
(Attn.: Cleo Yip)

Dear Cleo Yip,

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group E)" ("R(E)") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong
Request of Information - Land Contamination Study

We refer to your above letter under reference requesting for chemical spillage / incident record. Given no particular time period were mentioned in the letter, to avoid unnecessary wastage of resources, a search of 5 year records may be a reasonable choice.

For the records of Chemical Waste Producer Registration, a registry of chemical waste producers is available in our Territory Control Office. Should you like to view the records, you may approach Mr. Eric FUNG at 2835 1027 for making an appointment to view the records.

This Regional Office has no record of chemical spillage / leakage incident at the captioned locations in the past 5 years. Nonetheless, you may also need to check with other relevant parties / departments for such information as appropriate.

Yours faithfully,

(TSE Yuet-chuen)

for Director of Environmental Protection

Our ref: 7076822/L27279/AW/CY/rw

9 April 2021

Fire Services Department
Fire Services Headquarters Command
Management Group
9/F, Fire Services Headquarters Building
1 Hong Chong Road
Tsim Sha Tsui East, Kowloon

By Email (hkfsdenq@hkfsd.gov.hk) & Post

Attn: Mr TANG Wing Wah

Dear Sir

**Section 12A Rezoning Application from "Village Type Development" ("V") zone and
"Comprehensive Development Area" ("CDA") zone to "Residential (Group E)" ("R(E)") zone for
Proposed Social Welfare Facility (Residential Care Home for the Elderly) and
Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong
Request for Information – Land Contamination Study**

It is planned to develop a Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at the Site as shown in the attached Site Location Plan in Ping Shan, Yuen Long, N.T.. In view of the proposed development, a rezoning application will be made under Section 12A of the Town Planning Ordinance ("TPO"). We have been commissioned by the Applicant of the aforementioned planning application to prepare an EA to support the planning application, which includes the review of land contamination issue.

In order to review potential contamination issue, we would appreciate if you could provide us with an updated list of any current/past licences for storage of Dangerous Goods ("DG"), registration of DG licence, fire incidents and/or incidents of spillage/leakage of DG/chemicals, etc. relating to the Site, if any.

Should you have any enquiries regarding the above, please feel free to contact the undersigned on 3995 8138 or to cleo.yip@smec.com or our Charls LIANG on 3995 8128 or to charls.liang@smec.com

Thank you for your attention.

Yours faithfully



Cleo YIP
Senior Environmental Consultant

Encl.

cc Mr Thomas LUK – Aikon Development Consultancy Ltd

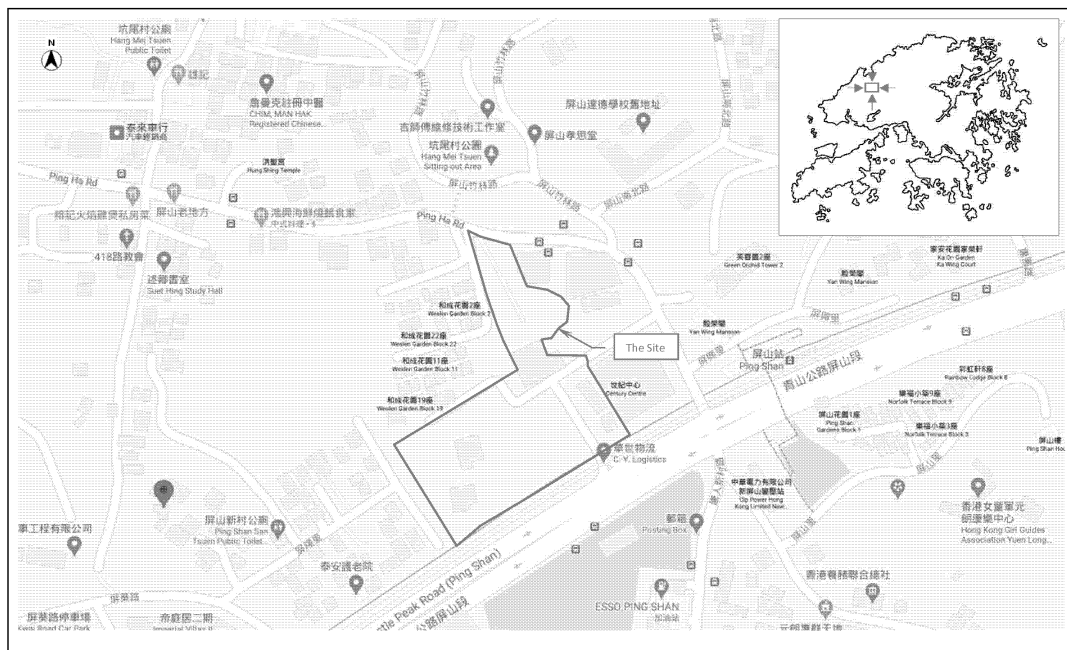
by email

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Site Location Plan



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Attachment Page 1 of 1

D01 ENVIRONMENTAL ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility and Residential Development, Ping Shan, Yuen Long, N.T., Hong Kong
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D01/01
11 March 2022

消防處
香港九龍尖沙咀東部康莊道1號
消防處總部大廈



FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS
BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 OUR REF. : (52) in FSD GR 6-5/4 R Pt. 33
來函檔號 YOUR REF. : 7076822/L27279/AW/CY/rw
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電話 TEL NO. : 2733 7741

26 April 2021

SMEC Asia Limited
27/F Ford Glory Plaza,
37-39 Wing Hong Street,
Cheung Sha Wan,
Kowloon, Hong Kong
(Attn: Mr. Cleo YIP, Senior Environmental Consultant)

Dear Mr. YIP,

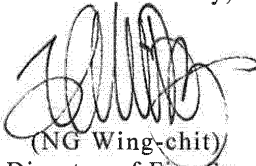
Section 12A Rezoning Application from “Village Type Development”(“V”) zone and “Comprehensive Development Area”(“CDA”) zone to “Residential (Group E)” (“R(E)”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 9.4.2021 subsequent letter of 20.4.2021 regarding the captioned request and reply below in response to your questions.

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,


(NG Wing-chit)
for Director of Fire Services

Ref. number and date should be quoted in reference to this letter
凡提及本信時請引述編號及日期

local people
global experience

SMEC is recognised for providing technical excellence and consultancy expertise in urban, infrastructure and management advisory. From concept to completion, our core service offering covers the life-cycle of a project and maximises value to our clients and communities. We align global expertise with local knowledge and state-of-the-art processes and systems to deliver innovative solutions to a range of industry sectors.



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Appendix VI
Sewerage Impact Assessment



D02 Sewerage Impact Assessment

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong

Document Control

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Project Name:	Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Project Number:	7076822 D02/01
Revision Number:	3

Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED BY
0.0	8 June 2021	Charls LIANG	Cleo YIP	Antony WONG
1	23 August 2021	Charls LIANG	Cleo YIP	Antony WONG
2	21 December 2021	Charls LIANG	Julie CHAN	Antony WONG
3	11 March 2022	Charls LIANG	Julie CHAN	Antony WONG

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SMEC Company Details

Approved by:	Alexi BHANJA		
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Email:	alexi.bhanja@smec.com	Website:	www.smec.com

The information within this document is and shall remain the property of: SMEC Asia Limited

Important Notice

This report is confidential and is provided solely for the purposes of supporting Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside. This report is provided pursuant to a Consultancy Agreement between SMEC Asia Limited (“SMEC”) and Applicant, under which SMEC undertook to perform specific and limited tasks for Applicant. This report is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

This report must be read as a whole. Any subsequent report must be read in conjunction with this report.

The report supersedes all previous draft or interim reports, whether written or presented orally, before the date of this report. This report has not and will not be updated for events or transactions occurring after the date of the report or any other matters that might have a material effect on its contents or which come to light after the date of the report. SMEC is not obliged to inform you of any such event, transaction or matter nor to update the report for anything that occurs, or of which SMEC becomes aware, after the date of this report.

Unless expressly agreed otherwise in writing, SMEC does not accept a duty of care or any other legal responsibility whatsoever in relation to this report, or any related enquiries, advice or other work, nor does SMEC make any representation in connection with this report, to any person other than Applicant. Any other person who receives a draft or a copy of this report (or any part of it) or discusses it (or any part of it) or any related matter with SMEC, does so on the basis that he or she acknowledges and accepts that he or she may not rely on this report nor on any related information or advice given by SMEC for any purpose whatsoever.

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1 INTRODUCTION

1.1 Project Background

- 1.1.1 With reference to the Policy Addresses in recent years including the latest one, Policy Address 2020, the key concerns include housing supply and elderly care service which is one of the improvements of people's livelihood. In order to address the aforementioned needs, it is planned to redevelop a land with an area of approximately 14,080m² comprising four lots in D.D. 121 and D.D. 122, and the adjoining government land of about 1,925m², Ping Shan, Yuen Long, New Territories, into Residential Care Home for the Elderly ("RCHE") and Residential Development ("the Site" or "the Proposed Development").
- 1.1.2 The Site is currently zoned "Village" ("V") and "Comprehensive Development Area" ("CDA") under the Draft Ping Shan Outline Zoning Plan ("OZP") No. S/YL-PS/19. For the Proposed Development comprising RCHE and Residential Development with three residential blocks, a rezoning application under Section 12A of the *Town Planning Ordinance* ("TPO") is required to rezone the Site from "V" and "CDA" zones to "Residential (Group B)2" ("R(B)2") zone under Column 1.
- 1.1.3 SMEC Asia Ltd ("SMEC") has been commissioned by the Applicant to conduct this Sewerage Impact Assessment ("SIA") to support the application.

1.2 Site Description

- 1.2.1 The Site is located in urban area at Ping Shan, Yuen Long, which is an existing logistic plant mainly used for storage and its northern part are open car park. As shown on **Figure 1-1**, Castle Peak Road (Ping Shan) section is located to the immediate south of the Site that runs along the east-west direction. Light Rail Transit ("LRT") is also located to south of the Site running along the Castle Peak Road (Ping Shan) section. Across the opposite site of Castle Peak Road (Ping Shan) Section, there are mainly residential blocks, playground and gardens. In addition, Ping Ha Road originates to the east of the Site. It runs along south-north direction. It further turns around and is connected to the north of the Site, and it subsequently runs along the east-west direction and connected to the Ping Shan Heritage Trail to the northwest of the Site. The Site is mainly surrounded by warehouse for storages, factories, and scattered residential premises to the east and north, and to the west of the Site. An abandoned Former Tat Tak Public School is located to the northeast of the Site.

1.3 Project Description

- 1.3.1 The Proposed Development will tentatively comprise a RCHE as a Social Welfare Facility and a residential development with the following components:
- Three Residential Buildings
 - One Club house
 - One Swimming Pool

1.4 Objective of the Report

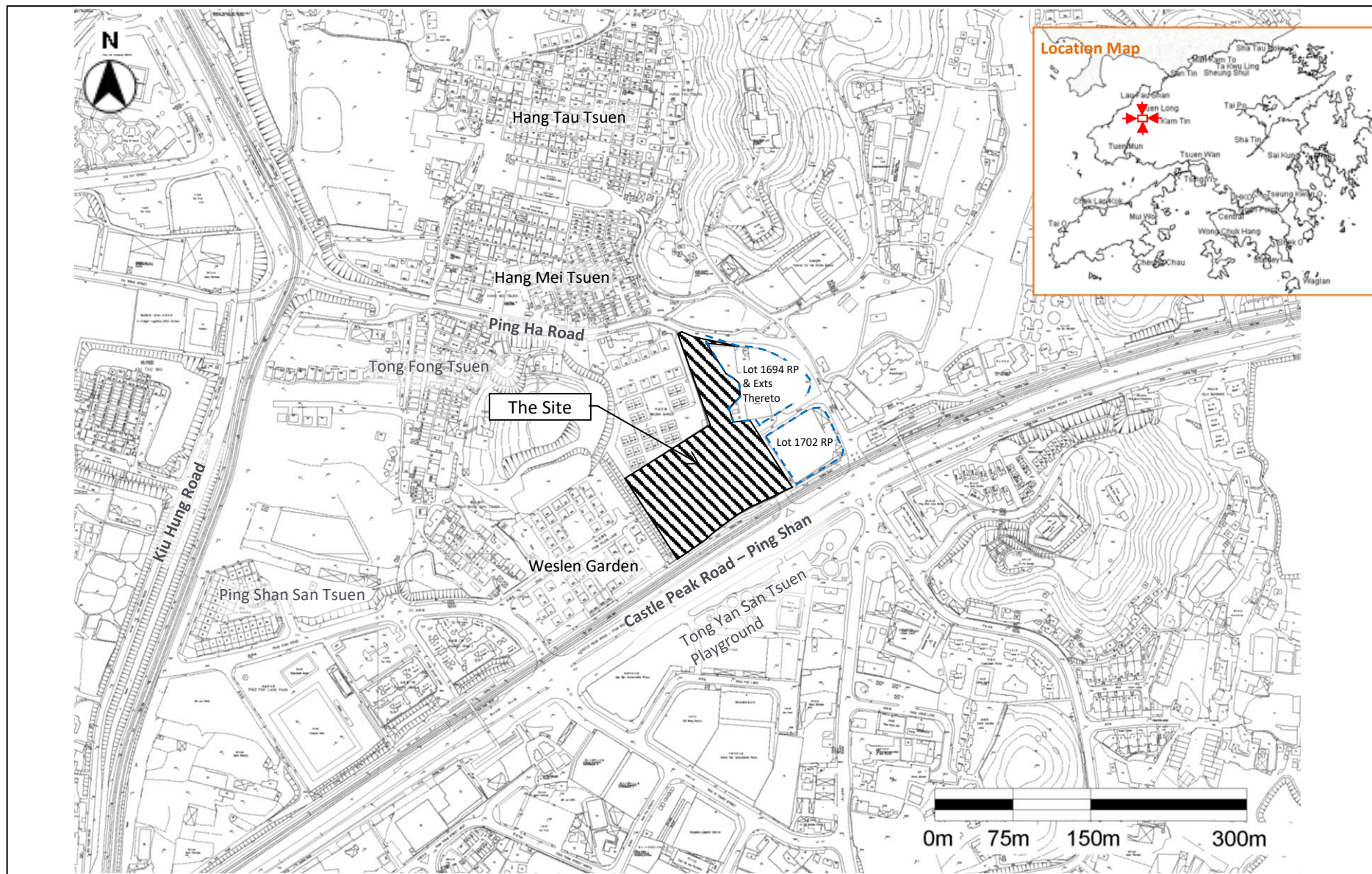
- 1.4.1 The objectives of this SIA are to:
- Assess the potential sewerage impacts arising from the Project.
 - Recommend the necessary mitigation measures to alleviate the impacts.

1.5 Reference Materials

1.5.1 In evaluating the sewerage impact arising from the Project, the following documents have been referred to:

- Magill's Medical Guide, 6th edition, publish by Salem Press, 2011.
- BEAM Plus New Building Version 1.2, published by BEAM Society, July 2012.
- Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0 (GESF), published by Environmental Protection Department (EPD), March 2005.
- Sewerage Manual – Key Planning Issues and Gravity Collection System., published by Drainage Services Department (DSD), May 2013.
- Layout plan for completed sewage works at Ping Shan (Sketch No. 6-NW-8D-3, 6-NW-8D-4, 6-NW-13B-1, and 6-NW-13B-2) obtained from DSD on 9 April 2021

Figure 1-1 Site Location and its Environs

**D02 SEWERAGE IMPACT ASSESSMENT**

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

SMEC Internal Ref.
11 March 2022

2 EXISTING ENVIRONMENT AND BASELINE CONDITIONS

2.1 Site Location

- 2.1.1 The Site with an area of approximately 14,080m² is located at Ping Shan, Yuen Long, in New Territories. The Site is mainly surrounded by residential areas of low-rise village houses, and industrial factories.

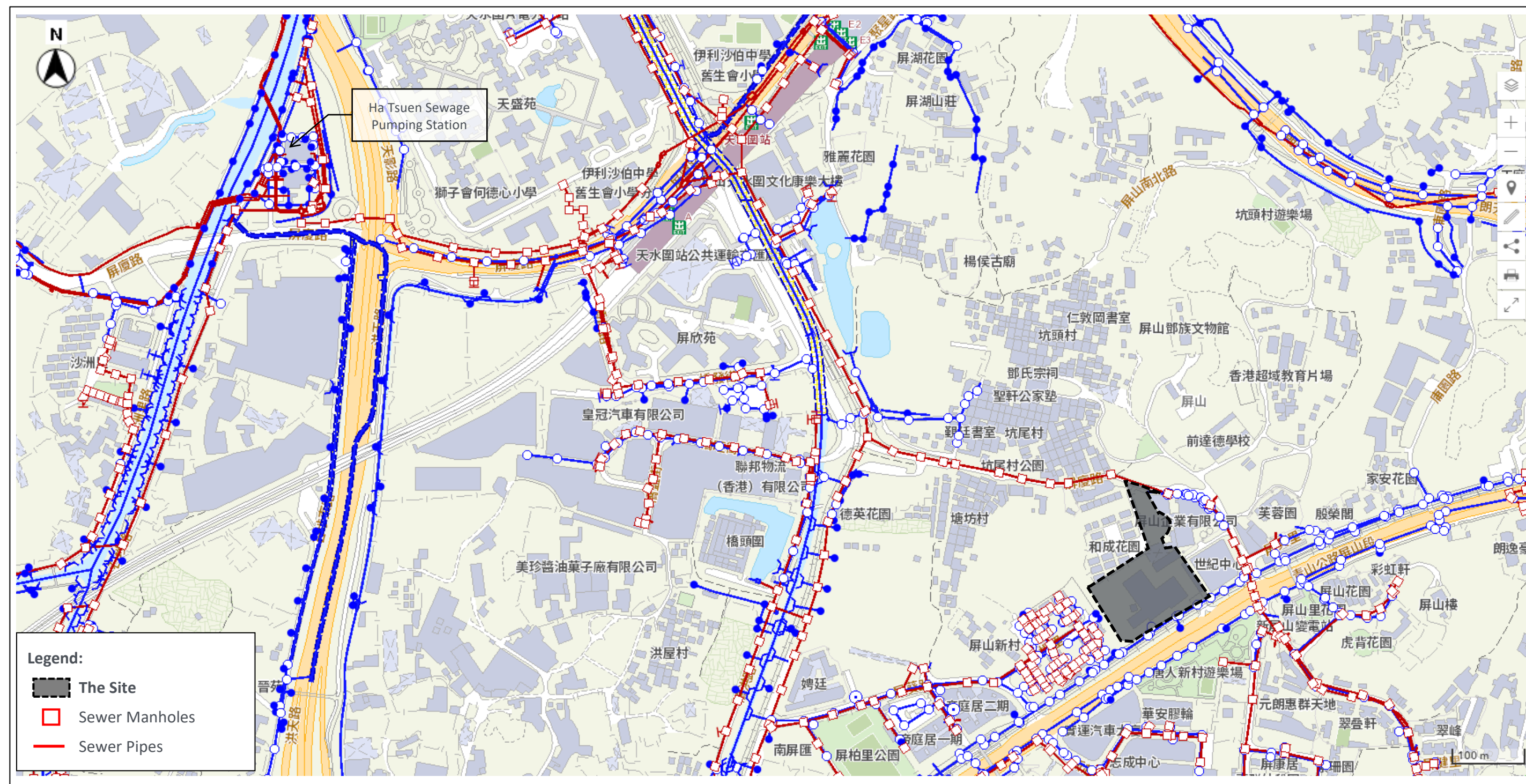
2.2 Existing Baseline Conditions

- 2.2.1 There is existing municipal sewerage system running from the east of the Site and then to the north of it, and leads to Ha Tsuen Sewage Pumping Station and eventually to San Wai STW. With reference to the sewerage layout plans as shown on **Figure 2-1** and **Figure 2-2**. The zoom-in sewerage layout plans which includes no. 6-NW-8D-3, 6-NW-8D-4, 6-NW-13B-1, and 6-NW-13B-2 was shown on **Figure 2-3**, the sewage generated from the Site can be discharged via Manhole FMH1023626 into a sewer with diameters of 1,050mm to the less than or equal to 275mm, which runs beneath **Ping Ha Road** from east to north along the Site.
- 2.2.2 Based on the site visit carried out on 13 April 2021, no industrial wastewater is generated from the existing logistic plant.

2.3 Sewerage Impact During Operation Phase

- 2.3.1 The intake year of the proposed development is tentatively in 2027. During the operation of the proposed development, the major sources of sewage will be wastewater generated by toilets from the staff for the Care Home for the Elderly, and those generated by the elderly who live in Care Home, the sewage generations by the residents and staff of the Proposed Development, as well as those generated from Swimming Pool in club house. The sewage generated from the nearby residential buildings including those from Welsen Garden, Hang Mei Tsuen, Hang Tau Tsuen, and Tong Fong Tsuen are **not** taken into account in the SIA estimation, **as there is no public sewerage system connected to the nearby residential areas.**

Figure 2-1 Existing Sewerage Layout Plan (The Site to Ha Tsuen Sewage Pumping Station)







3 SEWERAGE ANALYSIS

3.1 Review of Sewage Handling

- 3.1.1 Based on the current design and the areas of different parts of the Project, it is estimated that the total number of staff for Residential Development and the RCHE are about 54 and 90, respectively, during their operation. The major sources of wastewater will be sewage generated by the site staff of the RCHE, the elderly of RCHE and those generated by residents and staff of the residential development, e.g. wastewater generated from the washrooms, e.g. flushing, handwashing and micturition. All the sewage from the Proposed Development will be proposed to be discharged into Manhole FMH1023626.

3.2 Assumptions

- 3.2.1 In order to assess the acceptability of the sewerage impact arising from the proposed development, the sewage generation is estimated based on the assumption as shown in **Table 3-1**.

Table 3-1 Parameters for Estimating Wastewater Generation

PARAMETER	VALUE	JUSTIFICATION
GENERATION FROM STAFF OF CARE HOME FOR ELDERLY		
No of staff	54	As advised by the Applicant
Types of Staff and their number	Home Manager = 1 person Ancillary worker = 8 persons Care worker = 28 persons Health worker = 10 persons Nurse = 5 persons Additional employee = 2 persons	As estimated based on "Schedule 1 of CAP 459A Residential Care Homes (Elderly Persons) Regulation".
Unit Flow Factor (UFF) of staff	0.28 m ³ /day/person	Refer to "Commercial Employee" and "J11 Community, Social & Personal Services" of Table T-2 of GESF.
GENERATION FROM RESIDENTS OF THE ELDERLY OF CARE HOME		
No. of Elderly Residents	294	As advised by the Applicant
UFF of Elderly Residents	0.19m ³ /day/person	Refer to Unit flow factor for "Institutional and special class" in Table T-1 of GESF.
GENERATION FROM STAFF OF RESIDENTIAL DEVELOPMENT		
Total Gross Floor Area (GFA) of non-domestic portion of Residential Development	1,794 m ³	As advised by the Applicant
No of staff ^[Note 1]	90	As estimated from the GFA of non-domestic part.
UFF of staff	0.28 m ³ /day/person	Refer to "Commercial Employee" + "J11 Commercial, Social & Personal Services" of Table T-2 of GESF.
GENERATION FROM RESIDENTS OF THE PROPOSED DEVELOPMENT		
No. of Residents	2,520	As estimated from the total number of residential flat.

PARAMETER	VALUE	JUSTIFICATION
UFF of Residents	0.27	Unit flow factor for Private R2 type in Table T-1 of GESF.
GENERATION FROM TWO TOILETS AT RETAIL SHOPS		
Total Gross Floor Area (GFA) of Retail Shops	140 m ²	As advised by the Applicant
Estimated Maximum Total Frequency of Visitors using two Toilets each hour	40 visits/hour	Refer to worker density by All Type for Retail Trade as stated in Table 8 of "Commercial and Industrial Floor Space Utilization Survey"
UFF of workers and visitors	0.28 m ³ /visitor	Refer to "Commercial Employee" + "J4 Wholesale & Retail" of Table T-2 of GESF.
WASTEWATER GENERATED FROM THE SWIMMING POOL IN CLUBHOUSE		
Total Area of Swimming Pool	510m ²	The tentative design of the swimming pool is provided by the Applicant
Water depth of Swimming Pool	1.35m	As advised by the Applicant
Time for completely changing water	6 hours	CAP 132CA Swimming Pools Regulation.
Filtration rate	40 m ³ /m ² -hour	The average high rate filtration for domestic pool ^[Note 2]
Backwash rate	0.81 m ³ /m ² -min	The maximum typical backwash rate for combined air-water backwash ^[Note 3]
OTHERS		
Catchment Inflow Factor	1.0	Catchment inflow factor for Yuen Long is adopted as stated in Table 7-4 of GESF.
Peaking Factor	8 for contributing population <1,000 6 for contributing population from 1,000 to 5,000 5 for contributing population from 5,000 to 10,000	Peaking factor (including stormwater allowance) for sewers is adopted as stated in Table T-5 of GESF.

Note:

1. In general, the types of staff in Residential Development are security, property management, customer services staff, cleaning staff, etc. However, the number of staff for different type of job nature could not be estimated at this stage.
2. The average high rate filtration for domestic pool in Plumbing Engineering Services Design Guide - Domestic Swimming Pool
3. Wastewater Engineering - Treatment, Disposal, Reuse, 4th ed., Metcalf and Eddy

3.2.2 As mentioned in **Paragraph 3.1.1**, sewage from the Site is assumed to be discharged into manhole FMH1023626 which is located to the north of the Site as shown on **Figure 2-3**.

3.3 Methodology

3.3.1 To evaluate the ceiling unit flow rates for staff and drivers, the global unit flow factors recommended in EPD's *Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning* (GESF) have been used.

- 3.3.2 Sewage generated from the Site is currently collected and discharged to terminal manhole and then conveyed to the existing public sewerage system located underneath the access road to the north of the Site. The capacities of sewers have been calculated using Colebrook-White's Equation as below:

For partially full pipes or pipes with non-circular cross-sections,

$$V = -\sqrt{8gDs} * \log\left(\frac{ks}{3.7D} + \frac{2.51v}{R\sqrt{2gDs}}\right)$$

where V = Mean velocity (m/s)
 g = gravitational acceleration (m/s²)
 D = internal pipe diameter (m)
 K_s = hydraulic pipelines roughness (m)
 v = kinematic viscosity of fluid (m²/s)
 S = hydraulic gradient (energy loss per unit length due to friction)

- 3.3.3 If sewage generated from the project does not exceed the capacity of the existing sewerage system, there should be no unacceptable impact on the sewerage system resulting from the proposed conversion.
- 3.3.4 Since there are no public sewerage system connected to the nearby residential areas including Welsen Garden, Hang Mei Tsuen, Hang Tau Tsuen, Tong Fong Tsuen and Tak Ying Garden. Therefore, the sewerage generated from these areas are not included in this SIA calculation. The upstream and downstream sewage flows around the Proposed Development were included in the assessment to evaluate if the capacity of the existing sewerage system is sufficient to handle the sewage generated from both the proposed CBP together with these residential uses. The details for calculations of the peak sewage flow are presented in **Appendix A**.

3.4 Evaluation of Sewage Impact and Results

- 3.4.1 The detailed sewage generation from the Site and the nearby residential areas are presented in **Appendix A**. The results revealed that the Average Dry Weather Flow (ADWF) from the Site is estimated to be 778.0 m³/day. The peak sewage flow generated by the Site was estimated to be 0.054 m³/s and that from the swimming pool of the Site is 0.000188 m³/s. All sewage flow will be discharged via the sewer located to the north of the Site with diameters of 1050mm. The peak discharge from the Proposed Development (i.e. 0.0540m³/s) and with that of upstream catchments occupies about 60.6% of the capacity of existing pipeline between manholes FMH1023626 and FMH1023625 (i.e. 2.87m³/s) which is insignificant to the existing pipeline capacity.
- 3.4.2 The capacity of the sewage network between terminal manhole to Manhole FMH1023626, from Manholes FMH1023630 to FMH1018722 were estimated as presented in **Appendix B**, which demonstrates that the contributions of the Site the upstream and downstream catchments to the existing sewerage systems range from 51.3% to 90.5% of the sewerage capacity without any exceedances. The utilisation between terminal manhole to manhole FMH1023626 would be 87.2%.
- 3.4.3 Overall, therefore, the sewerage analysis indicated that there will be no adverse impact in the existing sewerage system due to the Proposed Development.

4 CONCLUSION

- 4.1.1 Potential sewerage impacts arising from the Proposed Development including the Residential Development and the Residential Care Home for the Elderly (RCHE) have been assessed. It is proposed that all the sewage generated from the Proposed Development will be collected at terminal manhole and discharged the nearest Manhole FMH1023626 of the existing public sewerage system that is located to the north of the Site. The SIA results indicated that there is no exceedances of the existing sewer capacity, hence no significant impacts from sewage impacts is anticipated.
- 4.1.2 The total estimated Average Daily Dry Weather (ADWF) flow from the Proposed Development is about (i.e. 778.0m³/day). The peak sewage flow generated by the Site was estimated to be 0.0540 m³/s and that from the swimming pool of the Site is 0.000188 m³/s. Sewerage Impact Assessment (SIA) was conducted to estimate whether the capacity of existing sewerage system is sufficient to handle the sewage generated from the Proposed Development, together with sewage flows from upstream and downstream around the Site. The results indicated that the capacity of the existing sewerage system is sufficient to handle the sewage generated from the operation of the Site and from the nearby residential uses. Therefore, there should be no adverse impact on the existing sewerage system resulting from the addition of the Site.

Appendix A **CALCULATION OF SEWAGE GENERATION DURING OPERATION OF THE PRPOSED DEVLOPMENT**

D02 SEWERAGE IMPACT ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

SMEC Internal Ref.
11 March 2022

Calculation of Sewage Generation from the Proposed Development, Upstream and Downstream Catchments				Remarks/ Justification
Catchment 1 (A+B): Sewerage generated from the Project				
A. Sewage generated by the Residential Care Home for Elderly (RCHE)				
1) Sewage generated by the Residents of RCHE				
Maximum Number of Residents	=	294	Person	As advised by the Applicant
Unit Flow Factor (UFF) per person	=	0.19	m ³ /day/Person	Unit flow factor for "Institutional and special class" in Table T-1 of Ref 1.
Estimated Average Daily Dry Weather Flow (ADWF) from Residents	=	55.86	m ³ /day	
2) Sewage generated by the Staff of RCHE				
<u>Employee</u>				
Home Manager	=	1	Person	Required for care and attention home of Ref. 2
Ancillary worker	=	8	Person	1 ancillary worker for every 40 residents or part thereof, between 7 a.m. and 6 p.m. for care and attention home of Ref. 2
Care worker (07:00 - 15:00)	=	15	Person	1 care worker for every 20 residents or part thereof, between 7 a.m. and 3 p.m. for care and attention home of Ref. 2
Care worker (15:00 - 20:00)	=	8	Person	1 care worker for every 40 residents or part thereof, between 3 p.m. and 10 p.m. for care and attention home of Ref. 2
Care worker (20:00 - 07:00)	=	5	Person	1 care worker for every 60 residents or part thereof, between 10 p.m. and 7 a.m. for care and attention home of Ref. 2
Health worker	=	10	Person	Unless a nurse is present, 1 health worker for every 30 residents or part thereof, between 7 a.m. and 6 p.m. for care and attention home of Ref. 2
Nurse	=	5	Person	Unless a health worker is present, 1 nurse for every 60 residents or part thereof, between 7 a.m. and 6 p.m. for care and attention home of Ref. 2
Additional Employee	=	2	Person	As an additional requirement for a care and attention home or an aged home, any 2 persons being a home manager, an ancillary worker, a care worker, a health worker or a nurse shall be on duty between 6 p.m. and 7 a.m. of Ref. 2
Total No. of Employees required in Ref. 2	=	54	Person	
Unit Flow Factor (UFF) per person	=	0.28	m ³ /day/Person	Unit flow factor for "Commercial Employee" and "Community, Social & Personal Services" in Table T-2 of Ref. 1.
Total Sewage Generation by Staff of Care Home for Elderly	=	15.1	m ³ /day	
Total Sewage Generation by Staff and Residents of Care Home for Elderly	=	71.0	m ³ /day	A1 + A2
B. Sewage generated by the Residential Development				
1) Sewage generation by Staff the Residential Development				
Total Gross Floor Area (GFA) of non-domestic portion of Residential Development	=	1,794	m ²	As advised by the Applicant
Occupancy Factor	=	20	m ² /person	Worker density for "Business Use" is 20 - 25 m ² /staff as stated in Table 2 of Ref 3.
No. of onsite staff (e.g. security, management office, etc.)	=	90	staff	
Unit Flow Factor (UFF) per staff	=	0.28	m ³ /day/staff	Refer to "Commercial Employee" + J11 "Commerical, Social & Personal Services" of Table T-2 of Ref 1.
Total Sewage Generation by Staff of Residential Development	=	25	m ³ /day	
2) Sewage generated by Residents of the Proposed Development				
No. of Flats	=	840	flats	As advised by the Applicant.
Total population in Proposed Residential Development	=	2,520	persons	As advised by the Applicant
Unit Flow Factor (UFF) per resident	=	0.27	m ³ /day/person	Unit flow factor for Private R2 type in Table T-1 of Ref. 1
Total Sewage Generation by the Residents of the Proposed Development	=	680.4	m ³ /day	
Total Sewage generation by staff and residents for the proposed residential development Catchment 1B(1) + 1B(2)	=	706	m ³ /day	

3) Sewerage generated by Visitors from the toilets of the convenient stores/retail shops of the non-domestic part of the Residential Development			
Total Area	=	140 m ²	Worker density by All Type for Retail Trade is 3.5 staff in 100m ² as stated in Table 8 of Ref. 4.
	=	29 m ² /staff	
	=	5 visit/hour	
Unit Flow Rate	=	0.2800 m ³ /person/visit	Refer to "Commercial Employee" + J4 Wholesale & Retail" of Table T-2 of Ref 1.
Total Sewage Generation by Visitors	=	<u>1.400</u> m ³ /day	
4). Wastewater generated from the Swimming Pool in Clubhouse			
Approximate Volume of Swimming Pool		510 m ³	The minimum turnover time in ref. 5.
Water Depth of Swimming Pool		1.35 m	
Approximate Size of Swimming Pool		689 m ²	
Time for Completely Changing Water		6 hours	The average high rate filtration for domestic pool in ref. 6.
Turnover Rate		115 m ³ /hour	
Filtration Rate		40 m ³ /m ² -hour	
Filter Area		2.869 m ²	The maximum typical backwash rate for combined air-water backwash in Table 11-12 of ref. 7. 7 minutes for cleaning the filter by backwashing water excluding the air scouring time is recommended in B8.5.5 of ref. 8.
Backwash Rate		0.81 m ³ /m ² -min	
Estimated flow from the Swimming Pool/Fish Tank/Water Feature		0.000188 m ³ /s	
Total Sewage Generated from the Site Catchment 1A + 1B			
Estimated Average Dry Weather Flow (ADWF)	=	<u>778.0</u> m ³ /day	Contributing Population estimated with reference to Section 12 of Ref 1, the contribution population factor is equal to ADWF divided by 0.27.
	=	32.42 m ³ /hour	
Contributing population	=	2881.4	
Flow peaking factor	=	6	Flow peak factor based on Table T-2 of Ref 1 for population between 1,000 - 5,000 For Yuen Long
Catchment Inflow Factor	=	1	
Estimated total peak flow	=	194.52 m ³ /hour	
	=	4668.48 m ³ /day	To be discharged into manhole "FMH1023626".
	=	0.0540 m ³ /s	

Note:

- 1 Environmental Protection Department (EPD) publication Guidelines for Estimating Sewage Flows (GESF) for Sewage Infrastructure Planning Version 1.0, March 2005.
- 2 Schedule 1 of CAP 459A Residential Care Homes (Elderly Persons) Regulation.
- 3 Hong Kong Planning Standard Guidelines, Chapter 5 - Industry, March 2007.
- 4 Commercial and Industrial Floor Space Utilization Survey, Planning Department, 2005
- 5 CAP 132CA Swimming Pools Regulation
- 6 Plumbing Engineering Services Design Guide - Domestic Swimming Pool
- 7 Wastewater Engineering - Treatment, Disposal, Reuse, 4th ed., Metcalf and Eddy
- 8 General Specification for Swimming Pool Water Treatment Installation in Government Buildings of HKSAR, 2012 ed., Architectural Services Department

Appendix B **CALCULATION OF FLOW CAPACITY**

Pipe Segment between Manholes		Sewer ID	Length m	Level (In) mPD	Level (Out) mPD	d m	r m	A _w m ²	P _w m	R m	s -	k _s mm	V m/s	Q _c m ³ /s	Q _p m ³ /s	Catchment	Is Q _c > Q _p ? Y/N	% of capacity %
Terminal Manhole	FMH1023626	N/A	30.7	7.41	6.91	0.250	0.125	0.049	0.785	0.062	0.016	3	1.404	0.0619	0.05403	Project (Catchment 1)	Y	87.2%
FMH1023630	FSH1000442	FWD1025073	34.0	8.23	8.04	1.050	0.525	0.866	3.299	0.263	0.006	3	2.109	1.6440	1.64399	Full bore flow (included Catchment 2 and 3)	Y	100.0%
FSH1000442	FMH1023628		24.3	8.03	7.83	1.050	0.525	0.866	3.299	0.263	0.008	3	2.560	1.9956	1.64399		Y	82.4%
FMH1023628	FSH1000443	FWD1025070	32.5	7.82	7.42	1.050	0.525	0.866	3.299	0.263	0.012	3	3.132	2.4408	1.64399	Same as upstream (included Catchment 2 and 3)	Y	67.4%
FSH1000443	FMH1023626	FWD1025071	48.6	7.41	6.91	1.050	0.525	0.866	3.299	0.263	0.010	3	2.863	2.2313	1.64399		Y	73.7%
FMH1023626	FMH1023625	FWD1025069	57.7	6.90	5.92	1.050	0.525	0.866	3.299	0.263	0.017	3	3.679	2.8676	1.69821		Y	59.2%
FMH1023625	FMH1023624	FWD1025068	24.8	5.92	5.63	1.050	0.525	0.866	3.299	0.263	0.012	3	3.052	2.3790	1.69821		Y	71.4%
FMH1023624	FMH1023623	FWD1025067	37.6	5.62	4.77	1.050	0.525	0.866	3.299	0.263	0.023	3	4.245	3.3086	1.69821	Same as upstream (included Catchment 2 and 3)+	Y	51.3%
FMH1023623	FMH1023622	FWD1025066	31.1	4.76	4.19	1.050	0.525	0.866	3.299	0.263	0.018	3	3.822	2.9789	1.69821	Project (Catchment 1) + Backwash from Swimming	Y	57.0%
FMH1023622	FMH1023621	FDW1025064	60.0	4.18	3.12	1.050	0.525	0.866	3.299	0.263	0.018	3	3.753	2.9247	1.69821	Pool	Y	58.1%
FMH1023621	FMH1018723	FDW1025061	15.0	3.11	2.89	1.050	0.525	0.866	3.299	0.263	0.015	3	3.419	2.6646	1.69821		Y	63.7%
FMH1018723	FMH1018722	FWD1019898	30.2	2.85	2.63	1.050	0.525	0.866	3.299	0.263	0.007	3	2.409	1.8773	1.69821		Y	90.5%

Legend

d = pipe diameter, m

r = pipe radius (m) = 0.5d

A_w = wetted area (m²) = (r²/2) (b + sinα)

P_w = wetted perimeter (m) = br

s = Slope of the total energy line

R = Hydraulic radius (m) = A_w/P_w

s = Slope of the total energy line

k_s = hydraulic pipeline roughness, mm

V = Velocity of flow calculated based on Colebrook-White Equation, m/s

Q_c = Flow Capacity (10% sedimentation incorporated), m³/s

Q_p = Estimated total peak flow from the Site during peak season, m³/s

P_c = Contributing Population = ADWF/0.27

P = Peaking Factor (including stormwater allowance) for facility with existing upstream sewerage

ADWF = Total average dry weather flow, m³/day

Note

1. Whilst sewage generation from the Site is estimated based on the "Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0" (published by the Environmental Protection Department (EPD), 2005) using the best available information, the flow capacities of pipe segments are calculated based on Colebrook-White Equation.
2. The roughness value is referred to Table 5 of the "Sewerage Manual, Key Planning Issues and Gravity Collection System" published by the Drainage Services Department (DSD). It is assumed that the materials adopted for the sewer pipe is concrete with velocity when flowing half full approximately of 1.2 m/s in poor condition, therefore the roughness values K_s = 3 mm.
3. The invert and outlet level is indicative only, it would subject to Drainage Proposal in the detailed design stage.

D02 SEWERAGE IMPACT ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

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11 March 2022

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Appendix VII
Visual Impact Assessment

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1.0 INTRODUCTION

- 1.1 This Visual Impact Assessment (VIA) is prepared as part of the S.12A planning application for a proposed amendment to the Draft Ping Shan Outline Zoning Plan No. S/YL-PS/19 ("Approved OZP") to enable for the flat and social welfare facility (RCHE) uses ("the Site"). The proposed amendment is to rezone the Site from "Village Type Development" zone ("V") and "Comprehensive Development Area" zone ("CDA") to "Residential (Group B) 2" zone ("R(B)2").
- 1.2 This VIA is prepared with reference to the Town Planning Board Guidelines No. 41 on Submission of Visual Impact Assessment for Planning Applications to the Town Planning Board (TPG PG-No. 41) published by the BOARD in July 2010. According to the Guidelines, a VIA is required if:
- (f) the proposal involves upzoning or rezoning of a site from non-development use to development use which will result in loss of visual openness on-site or off-site from key public points;
- 1.3 It evaluates the anticipated visual impacts of the proposed development on public viewers relevant to the Site and concludes with recommendation on mitigation measures if necessary.

2.0 OUTLINE OF THE VISUAL IMPACT ASSESSMENT

- 2.1 The outline for the VIA is set out below:
- Section 3 outlines the visual context of the Site and its Surrounding Area, the Statutory Planning Parameters of the Site;
 - Section 4 describes the Proposed Development;
 - Section 5 identified the Assessment Area;
 - Section 6 provides an analysis of the selected Viewpoints ("VPs");
 - Section 7 assesses the visual impacts of the Proposed Development; and
 - Section 8 concludes the VIA.

3.0 VISUAL CONTEXT AND VISUAL ELEMENT

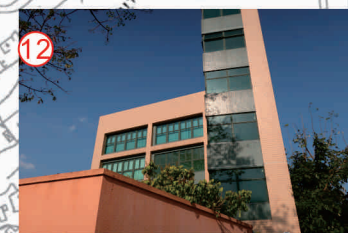
3.1 Local Context

- 3.1.1 The land use pattern within the vicinity of the Site contains sporadic R(A)1, R(E)2, CDA, GB, within the largely Village Type Development. It is bounded by village type development, e.g. Welsen Garden, Tong Fong Tsuen, Ping Shan San Tsuen (zoned V) to its west while some vacant factory buildings (zoned CDA) along Ping Ha Road are located to the east and northeast side of the Site. To the immediate southern side of the Site is the Castle Peak Road – Ping Shan Section and Light Rail Transit.
- 3.1.2 The Site, with an area of about 14,080 m², of which about 1,925m² of the Government Land is included.

- 3.1.3 The Application Site involves two sites, i.e. Site A at the southern portion and Site B at the northern portion. Site A is currently occupied by a warehouse being used for storage of animal feeds, while Site B is used for an open carport.
- 3.1.4 Majority of the area is covered by concrete and few trees were identified to the north of the Site. They are generally in semi-mature size and exhibited fair tree form and health conditions. It is confirmed that no OVT or protected species has been identified within the Site in accordance with the DEVB TCW No. 5/2020 – Registration and Preservation of Old and Valuable Trees (OVT) and the Forests and Countryside Ordinance. However, 2 nos. of potential OVT, i.e. **T07 & T09** in accordance with the DEVB TCW No. 5/2020 have been identified outside the site boundary and both of them will not be affected by the proposed development.

3.2 Wider Context and Visual Elements

- 3.2.1 The locality of the Site is considered as urban fringe landscape character, predominantly surrounded by low-rise residential blocks, village developments, warehouses, open storages and industrial uses. The V portion of the Site is part of a larger V zone bounded by Ping Ha Road (north), Castle Peak Road (South) and Ping Kwai Road (West) while the CDA portion of the Site is part of a larger CDA zone bounded by "G/IC" zone (North), "V" zone (east) and Castle Peak Road (South).
- 3.2.2 According to para. 4.8 of the TPB PG No. 41, visual elements that are currently existing or planned within the assessment area should be identified, as it may affect the overall visual outlook. The key visual elements include major physical structures, visual resources or attractors (e.g. the harbor, natural coastline, ridgeline, mountain backdrop, woodland, streams, etc.) detractors or visual eyesores (e.g. pylons, sewage treatment plants, refuse collection points, ventilation shaft buildings, quarries, etc.). The visual elements may be enhanced, degraded or neutralized by the overall visual impact of the given development.
- 3.2.3 The key visual elements of an area is shaped by a combined composition of all the visual elements which come into sight of the viewers. Key visual elements in the surrounding context of the Site are included in **Figure 1** and summarized below:
- Immediately adjacent to the west are 3-storey village houses, i.e. Weslen Garden, Ping Shan San Tsuen. To the north of the Site is green hill knoll while some vacant factory building along Ping Ha Road is located to the immediate eastern and northeast side. To further south of the Site across Castle Peak Road, there is an open space – Tong Yan San Tsuen Playground to the south.
 - Further to the west of the villages and west of the Application Site is low-rise residential development, i.e. Imperial Villas, La Mansion while there is also low-rise residential development, namely Yan Wing Mansion, Green Orchid Towers, Ka On Garden to the further east of the Site.
 - To the southwest across the Castle Peak Road are some Industrial developments including Sat Win Automobile Plaza, Chi Shing Centre, Sagawa Logistic Centre. There is a green knoll where well-known Ping Shan Tang Clan Gallery Cum Heritage Trail Visitors Centre situates to the north of the Site.
- 3.2.4 The existing visual quality of the Application Site can be regarded as **medium** on average. Despite the Site is located against a large green backdrop (the green hill knoll to the north), the unattractive and monotonous outlook of nearby village houses as well as vacant industrial buildings, open storages and warehouses in the surrounding degrade the visual quality of the area.



REVISION 校訂	DESCRIPTION 內容摘要	DRAWN 繪圖	DATE 日期	CHECKED 審核	APPROVED 審批
					DO NOT SCALE FROM THIS DRAWING 勿按圖量比例 <div style="display: flex; justify-content: space-between;"> <div> PROJECT 工程項目 PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG </div> <div> SCALE 比例 N.T.S. DATE 日期 AUG 2021 </div> <div> DESIGNED 設計 TEL DRAWN 繪圖 CAD CHECKED 審核 TEL APPROVED 審批 TEL </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> DRAWING TITLE 圖紙名稱 Photos of Visual Elements in Surrounding Area </div> <div> REVISION 校訂 1:5000 DRAWING NUMBER 圖號 FIGURE 1 </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>LANDS LIMITED 景福設計有限公司</p> <p>LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION 景觀規劃及設計、景園環境構築</p> <p>FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG 香港灣仔道5-11號信邦商業大廈17樓A室</p> <p>TELEPHONE 2868 0980 FACSIMILE 2868 2203 電話:(八五二) 二八六八 零九八零 傳真:(八五二) 二八六八 二二零三</p> </div>

3.3 Statutory Zoning Context

- 3.3.1 The Application Site falls within an area at "V" zone (about 55.4%) and "CDA" zone (about 44.6%) on the Current OZP gazette on 7.5.2021. The proposed development is about flat and social welfare facility (RCHE) uses, which would not be compatible with the planning intentions. Hence, the Applicant submits this S.12A rezoning application to fasten the land development and housing supply so as to comply with the town planning requirements.

4.0 THE PROPOSED DEVELOPMENT

- 4.1 The development proposal comprises of residential flats (Site A) at **+13.60mPD** and RCHE (Site B) at **+12.6mPD** to the south and north of the Site respectively. In Site A, there are three residential towers ranging from 16-to19-storey (Tower 1), 12-to15-storey (Tower 2) and 8-to11-storey (Tower 3) high on top of a communal basement carpark, emergency vehicular access (EVA) and common landscape areas. Building height of these residential building ranges from **+40.80mPD** to **+79.45mPD**. In Site B, there are one 6-storey RCHE block (building height at **+39.35mPD** and **+42.85mPD**), carparks, EVA and common landscape areas. The typical floor plan and schematic section shall refer to drawings in same Rezoning Application.

4.2 Sensitive Design Measures

- 4.2.1 The Proposed Development adopts a series of sensitive design measures as follows:

- Low-rise blocks (Tower 3 at Site A) with top levels at **+40.80mPD to 54.25mPD** (8-11 storeys) and RCHE at Site B with top levels at **39.35mPD** and **+42.85mPD** (6-storeys) would be carefully positioned at the eastern and northern portion of the Site respectively while the medium-rise blocks (Tower 1 and 2 at Site A) ranging from **+59.7mPD to +79.45mPD** (12-15 storeys and 16-19 storeys) would be located at the western portion to achieve a distinct stepped building height profile descending from west to east and north.
- Underground car parking spaces and E&M facilities are provided at Site A to reduce overall building height and are hidden within the dense peripheral plantings.
- A 15m building separation is proposed between Tower 1 and Tower 3. A minimum separation distance of 12.5m has also been allocated, for instance, between Tower 2 and 3, and between Tower 1 and 2. Besides, void areas are provided on building elevation in these towers to enhance natural ventilation and visual permeability. The building design has strike a balance between the building separation and building height. If more building separation is provided among buildings, the height of the buildings will increase substantially which will cause further visual intrusion of the Development.
- A 6-storey RCHE is proposed at Site B at **12.60mPD** with top levels at **39.35mPD** and **+42.85mPD**. It is strategically located to the north of the Site which is more compatible with the low-rise village development at adjacent areas.
- Edge planting strips with minimum 1.5m wide are proposed along the boundary to form a soft-planted edges along the periphery of Site A and Site B. Ornamental tree and shrub planting along the site boundary will also help to screen the buildings. No building development is envisaged in these buffer planting areas.

- There are mature trees growing along the south and west outside the Application Site Boundary. The building footprint has been recessed from these boundaries and no major works are proposed in these areas in order to preserve the important landscape sources, including mature trees nos. T01 to T07, T09, T19 and T23. They will help to retain the existing visual amenity on Site and alleviate the visual intrusion of the Development during and after construction stages.

5.0 ASSESSMENT AREA

- 5.1 An initial assessment boundary or a visual envelope is delineated for the VIA in accordance with TPB PG-No. 41 based on ground inspection as shown on **Figure 2**. Given the existing topography, surrounding screen plantation and buildings, and lack of publicly accessible areas, the visual envelop is identified. This is evidenced by the Photographs from VPs 6, 8 and 9 located outside the visual envelope and from which the proposed development will not be visible (refer to **Figure 3**).
- 5.2 Another seven (7) VPs, i.e. VPs 1 to 5, 7 and 10 selected are considered to be representative for the VIA. The VP's selected include a popular public congregation point i.e. Ping Shan Tin Shui Wai Public Library, Ping Shan Lane Park, Junction of Ping Kwai Road and Ping Yeung Lane, footbridges (to east and west of the Site) across Castle peak road – Ping Shan Section, Tong Yan San Tsuen Road, which is frequented by members of the public visitors.



VP 6: San Fui Street



VP 8: Castle Peak Road - Hung Shui Kui Section



VP 9: Ping Shan Tang Clan Gallery Cum Heritage

REVISION 校訂	DESCRIPTION 內容摘要	DRAWN 繪圖	DATE 日期	CHECKED 審核	APPROVED 審批	DO NOT SCALE FROM THIS DRAWING 勿按圖量比例			COPYRIGHT RESERVED 保留版權		
A	GENERAL AMENDMENT	CADD	15/12/2021	TEL	ANK	PROJECT 工程項目 PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG	SCALE 比例 N.T.S.	DESIGNED 設計 TEL	<div>LanDes</div>		
						DATE 日期 AUG 2021	DRAWN 繪圖 CAD				
						DRAWING TITLE 圖紙名稱 Unsuitable Selected Viewing Points (VP 6, VP 8 and VP 9) for VIA	REVISION 校訂 A	CHECKED 審核 TEL			
						DRAWING NUMBER 圖號 FIGURE 3	APPROVED 審批 TEL				
						LANDS LIMITED 景觀設計有限公司 LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION 景觀規劃設計及設計, 景觀建築 FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG 香港灣仔彌敦道5-11號信邦商業大廈17樓A座 TELEPHONE 2868 0980 FACSIMILE 2868 2203 電話:(八五二) 二八六八 零九八零 傳真:(八五二) 二八六八 二二零三					
									CAD FILENAME : FIGURE 3		

6.0 VIEWPOINTS ANALYSIS

- 6.1 As per para. 4.5 of TPB PG NO.-41, the VIA should focus on public views and local vantage points as these areas are easily accessible and popular to the public. The Visually Sensitive Receivers (VSRs) will also assess the impact on sensitive public viewers from the most influenced viewing points. This may include pedestrian passers-by in surrounding neighborhood and users of nearby parks/ open spaces. A range of public VPs are selected to effectively represent the public views in relation to the proposed development. **Seven (7)** public VPs have been selected for the VIA and are discussed below.
- 6.2 When selecting VPs, priority shall be given to major public open space, public focal points, existing/future pedestrian nodes, key pedestrian/ vehicular corridor, and existing major vistas will be considered as major visual sensitive viewpoint.
- 6.3 A brief evaluation of the identified VPs is outlined as below:

Viewpoint 1 – Ping Shan Tin Shui Wai Public Library (about 630m to the northwest of the Site)

- 6.3.1 This VP is selected to represent to the view of VSR 1 (users of the Library) and other potential VSRs from Tin Shui Wai West Rail Station. This VP is taken on the footbridge where is the main pedestrian path to the Library and to the adjacent development. This view captures the view of the green hill knolls and the village houses. The VSRs are the passengers of TSW West Rail Station and users of TSW Public Library. In light of its far distance to the Site and is transient in nature, the visual sensitivity is regarded as **Low**.

Viewpoint 2 – Ping Pak Lane Park (about 400m to the west of the Site)

- 6.3.2 Ping Pak Lane is an open space in the district with both active and passive recreational facilities including basketball courts and sitting-out area. This VP is taken from the children play area within the Park at a distance of about 400m to the west of the Site. This VP captures the view of the peripheral plantings of the Park and adjoining low-rise Imperial Villas. The visual sensitivity of this VP is **Medium**.

Viewpoint 3 – Junction of Ping Kwai Road and Ping Yeung Lane (about 200m to the west of the Site)

- 6.3.3 VP3 is taken at the junction of Ping Kwai Road and Ping Yeung Lane and is about 200m away from the Subject Site. This VP is selected to review the potential visual impact of the VSRs such as road users, cyclists and pedestrians. As this VP is very close in proximity to the Subject Site and there are moving vehicular traffic on Ping Kwai Road, the visual sensitivity of this VP is **Medium to High**.

Viewpoint 4 – Existing Footbridge (East) across Castle Peak Road – Ping Shan Section (about 150m to the east of the Site)

- 6.3.4 VP4 was taken from an existing footbridge over Castle Peak Road. The major VSRs are the occasional pedestrians who use this footbridge to and from their nearby destinations. VP4 is about 150m east of the Subject Site. In light of its transient nature, The visual sensitivity is regarded as **Medium**.

Viewpoint 5 – Tong Yan San Tsuen Road (about 150m to the south of the Site)

- 6.3.5 VP5 was taken at Tong Yan San Tsuen Road and is about 150m south of the Subject Site. This VP is selected to review the potential visual impact of the VSRs such as divers, pedestrian and users of Tong Yan San Tsuen Playground to the north of this VP. The visual sensitivity is regarded as **Medium to High** due to the transient nature of the VSRs.

Viewpoint 7 – Existing Footbridge (West) across Castle Peak Road – Ping Shan (about 270m to the southwest of the Site)

- 6.3.6 VP7 was taken from an existing footbridge over Castle Peak Road. It is frequently used by the general public and this VP is kinetic one. VP7 is about 270m west of the Subject Site. In view of the far distance, the visual sensitivity is regarded as **Medium**.

Viewpoint 10 – Hang Mei Tsuen Park

- 6.3.7 VP10 was taken at Hang Mei Tsuen Park which is a public viewing point for users of the Park and Ping Shan Heritage Trail. This VP captures the view of the village houses in the first tier and panoramic sky view. It is located approximate 150m to the northwest of the Site. In light of its close distance, the visual sensitivity of this VP is **Medium**.

Table1.0 Viewpoints Representing Identified VSRs

Viewpoints (VPs)	Represented VSRs	Distance/ Direction	Nature of VP	Popularity by Public	Visual Sensitivity
VP1: <i>Ping Shan Tin Shui Wai Public Library</i>	VSR 1	Approx. 630m/ northwest	Transient	Frequent	Low
VP2: <i>Ping Pak Lane Park</i>	VSR 2	Approx. 400m/ west	Active and Passive Recreation	Occasional	Medium
VP3: <i>Ping Kwai Road and Ping Yeung Lane</i>	VSR 3	Approx. 200m/ west	Transient	Frequent	Medium to High
VP4: <i>Existing Footbridge (East) across Castle Peak Road</i>	VSR 4	Approx. 150m/ east	Transient	Occasional	Medium
VP5: <i>Tong Yan San Tsuen Road</i>	VSR 5	Approx. 150m/ south	Transient	Frequent	Medium to High
VP7: <i>Existing Footbridge (West) across Castle Peak Road</i>	VSR 7	Approx. 270m/ southwest	Transient	Frequent	Medium
VP10: <i>Hang Mei Tsuen Park</i>	VSR10	Approx. 150m/ northwest	Passive Recreation	Frequent	Medium

7.0 ASSESSMENT OF VISUAL IMPACTS

7.1 This Section evaluates the visual impact of the Proposed Development. Reference is made to TPB PG-No. 41 and the following **Table 2.0** summarize the relevant appraisal components. In general, the visual appraisal has been carried out on the basis of visual composition, visual obstruction, effect on public viewers and effect on visual resources.

Table 2.0 Appraisal Components

Appraisal Components	Major Considerations
Visual Composition	Visual composition is the total visual effect of all the visual elements due to their variation in location, massing, height, disposition, scale, form, proportion and character vis-a-viz the overall visual backdrop. Visual composition may result in visual balance, compatibility, harmony, unity or contrast. The appraisal should have due regard to the overall visual context and character within the wider and local contexts.
Visual Obstruction	A development may cause views in its foreground or background to be intercepted or blocked. The appraisal should assess the degree of visual obstruction and loss of views or visual openness due to the proposed development from all key public viewing points within the assessment area.
Effect on Public Viewers	The effects of visual changes from key public viewing points with direct sightlines to the proposed development should be assessed and demonstrated in the VIA. The changes in views to the existing and future public viewers should be compared before and after the proposed development. The effects of the visual changes can be graded qualitatively in terms of magnitude as substantial, moderate, slight or negligible.
Effect on Visual Resources	The condition, quality and character of the assessment area may change positively or negatively as a result of a development. The applicant should appraise if the proposed development may improve or degrade the condition, quality and character of the assessment area, and appraise any on-site and off-site visual impact such as that on the visual resources, visual amenities, area of special character, natural and built heritage, sky view, streetscape, townscape and public realm related to the development.

- 7.2 TPB PG-No. 41 sets out the classifications of visual impact and its associated description. The classifications are tabulated below (**Table 3.0** refers) to appraise the Overall Visual Resultant Impact of the Proposed Development on the VPs (Para 4.11 of the HKPSG refers). This Section evaluates the visual impact of the Proposed Development as compared with the existing condition.

Table 3.0 Classification of Overall Resultant Visual Impact

Classification of Overall Resultant Visual Impact	Description
Enhanced	If the proposed development in overall term will improve the visual quality and complement the visual character of its setting from most of the identified key public viewing points.
Partly Enhanced/Partly Adverse	If the proposed development will exhibit enhance visual effects to some of the identified key public viewing points and at the same time, with or without mitigation measures, exhibit adverse visual effects to some other key public viewing points.
Negligible	If the proposed development will, with or without mitigation measures, in overall terms have insignificant visual effects to most of the identified key public viewing points, or the visual effects would be screened or filtered by other distracting visual elements in the assessment area.
Slightly Adverse	If the proposed development will, with or without mitigation measures, result in overall terms in some negative visual effects to most of the identified key public viewing points.
Moderately Adverse	If the proposed development will, with or without mitigation measures, result in overall terms in negative visual effects to most of the identified key public viewing points.
Significantly Adverse	If the proposed development will in overall terms cause serious and detrimental visual effects to most of the identified key public viewing points even with mitigation measures.

- 7.3 Photomontages have been prepared for VP1, VP2, VP3, VP4, VP5, VP7 and VP10 and are further assessed below. Please refer to **Figure 4 to 10** which illustrate the existing condition compared to the Proposed Development.

7.4 Viewpoint 1 – Ping Shan Tin Shui Wai Public Library

Visual Composition

- 7.4.1 VP 1 is located to the north of the Site and it represents the view from the users of the Ping Shan Tin Wai Public Library and Tin Shui Wai West Rail Station. This VP captures the view of village houses in the foreground while green hill knoll and the ridgeline are seen in the background. Although majority of the proposed development will be screened by the village houses and green hill knoll, the upper part of the building blocks will be visible at this VP. Though with this new visual element, the view will remain as an ordinary townscape. The proposed Development will not change the visual composition of this VP.

Visual Obstruction

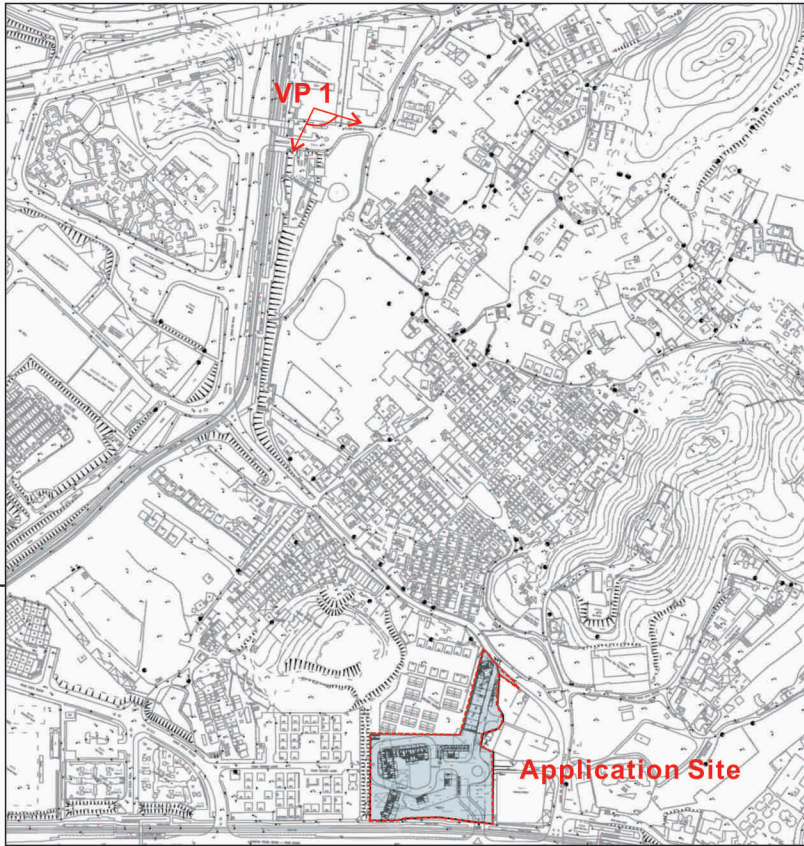
- 7.4.2 VSRs at this VP would have a panoramic view of low-rise village development and sky view but **Figure 4** captures the view towards the south only. As shown in **Figure 4**, the upper part of the residential Tower 1 & Tower 2 at Site A will become part of the visual elements in the background. Although the proposed Development will partially block the ridgeline of Tai Lam Country Park, the stepping height profile will help to add the visual interest to the Development. The visual obstruction due to the Proposed Development is **slight**.

Effect on Public Viewers

- 7.4.3 Given that the VP is a transient/kinetic one, the VSRs will only have an exposed view to the proposed development for a very short period of time and their visual sensitivity would be low. VSRs from this VP can still enjoy a good quality ridgeline and skyline and the proposed development will be viewed as part of the townscape of Ping Shan. The effect on the visual experience of the VSRs is **slightly adverse**.

Effect of Visual Resources

- 7.4.4 The existing village development in Ping Shan and the skyline are the major visual resources for VSRs at this VP. The proposed development will only form part of the townscape in harmony with surrounding developments. There would be **slight change** to the quality and character of the assessment area.



Key Plan



VP 1: View looking towards the Subject Site from Ping Shan Tin Shui Wai Public Library (Existing Situation)



VP 1: View looking towards the Subject Site from Ping Shan Tin Shui Wai Public Library (with Proposed Scheme)

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						DATE 日期 AUG 2021	DRAWN 繪圖 CAD					
						DRAWING TITLE 圖紙名稱 Viewpoint 1: Ping Shan Tin Shui Wai Public Library	REVISION 校訂 A	CHECKED 審核 TEL				
						DRAWING NUMBER 圖號 FIGURE 4	APPROVED 審批 TEL					
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										CAD FILENAME : FIGURE 4		

7.5 Viewpoint 2 – Ping Pak Lane Park

Visual Composition

- 7.5.1 VP2 is located to the west of the Site and it represents the view from the users of the Park. This VP captures the view of the children play equipment, planting within the Park and Imperial Villas in the first tier, and proposed Tower 1 at Site A of the proposed development in the background. The lower portion of building blocks at Site A and RCHE in Site B are largely screened off by the existing vegetation as shown in the photomontage presented in **Figure 5**. At present, the proposed Development is considered visually compatible with the surrounding environment. The proposed Development will not affect the visual composition of this VP.

Visual Obstruction

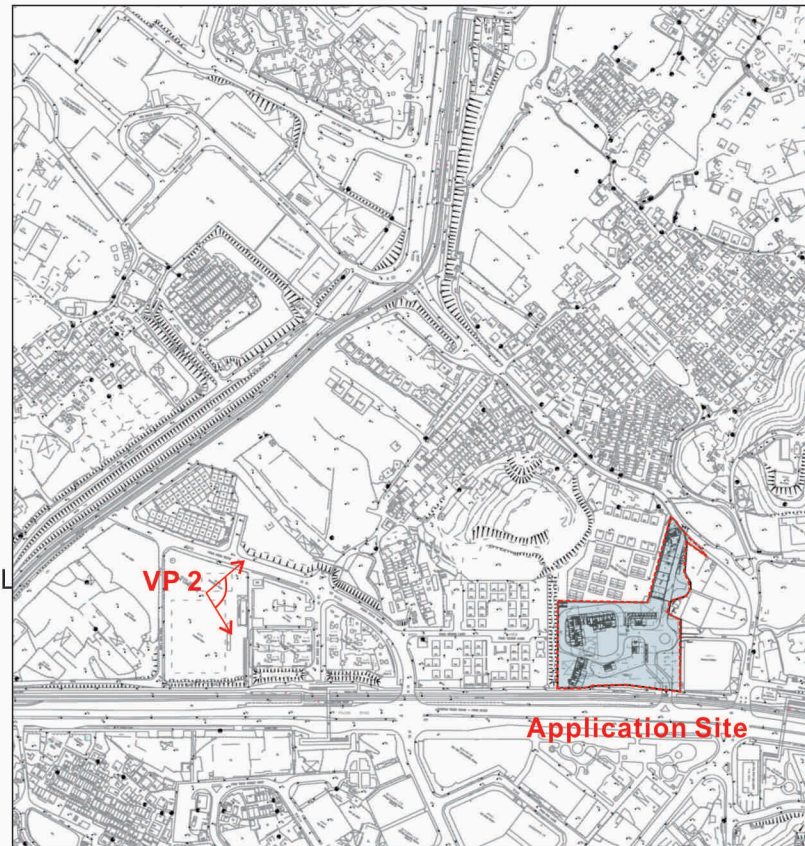
- 7.5.2 VSRs at this VP are currently enjoying an open sky view towards the Site. As observed in **Figure 5**, the existing vegetation would effectively screen off the majority of the proposed Development from this VP and the visual openness and sky view of this VP will only not be affected. The building height profile will not be visually incompatible with the surrounding context.

Effect on Public Viewers

- 7.5.3 It is observed that the Ping Pak Lane Park attracts a limited number of users on normal days. The number of users would increase during weekends. Their visual sensitivity is considered to be Medium as VSRs only involve a transient stay when staying, playing and gathering. Viewing from a medium distant, the potential visual impact associated with the proposed Development is **slight**.

Effect of Visual Resources

- 7.5.4 **Figure 5** shows the likely visual effect of the proposed development at this VP. As only minor upper parts of the proposed residential development could be viewed at this VP at a normal horizontal human eye level. As the proposed Development will form part of the townscape view which is in harmony with the surrounding context, the overall resultant visual impact due to the proposed development at this VP will be **slightly adverse**.



Key Plan



VP 2: View looking towards the Subject Site from Ping Pak Lane Park (Existing Situation)



VP 2: View looking towards the Subject Site from Ping Park Lane Park (with Proposed Scheme)

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						<div>LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG TELEPHONE 2868 0980 FACSIMILE 2868 2203</div> <div>LANDSES LIMITED 景藝設計有限公司 景觀規劃設計部 香港灣仔康翠庭5-11號低層商業大廈17樓A座 電話:(八五二) 二八六八 零九八零 傳真:(八五二) 二八六八 二二三三</div>	CAD FILENAME : FIGURE 5

7.6 Viewpoint 3 – Junction of Ping Kwai Road and Ping Shan Ping Yeung Lane

Visual Composition

- 7.6.1 In the photomontage shown in **Figure 6**, the visual composition of this VP is dominant by existing village houses, i.e. Pin Shan San Tsuen and mature trees at the first tier as well as sky view in the background. The proposed residential towers will become a new visual element, although large portion of Tower 1 at Site A and RCHE at Site B were screened, overall visual composition to this VP is affected.

Visual Obstruction

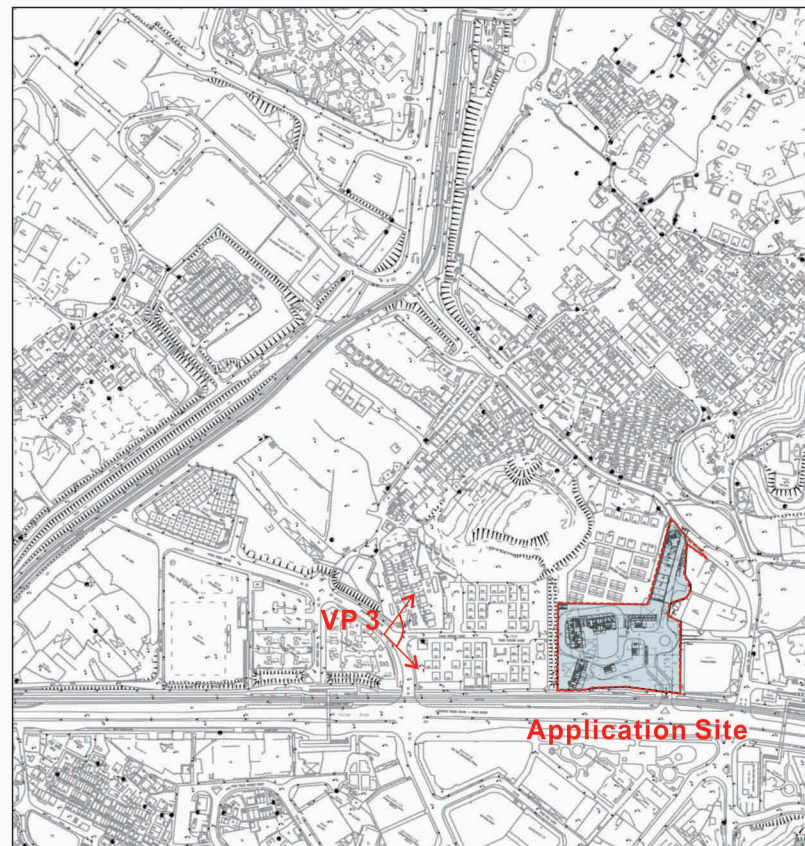
- 7.6.2 From this VP, VSRs are currently enjoying an open view towards the Site. As observed in **Figure 6**, the presence of the proposed development will inevitably affect the visual openness of the VP. The proposed Development has adopted a stepping height profile and building void in order to visual bulk of the building. RCHE in Site B is screened by the existing village house. Besides, the view that would be blocked by the proposed Development is just a normal open view without any special or prominent visual resources. The visual obstruction due to proposed Development is **Moderate**.

Effect on Public Viewers

- 7.6.3 VSRs at this VP only involve a transient stay when waiting for, boarding or alighting the bus or taxi. The VSRs would experience **moderate** visual changes as the visual openness will be affected.

Effect on Visual Resources

- 7.6.4 The proposed Development will change the skyline of the VP. With the stepping height profile which reduces the perceived visual mass, the proposed development would still have **Moderately adverse** impact on the visual resources.



Key Plan



VP 3: View looking towards the Subject Site from Junction of Ping Kwai Road & Ping Yeung Lane (Existing Situation)



VP 3: View looking towards the Subject Site from Junction of Ping Kwai Road & Ping Yeung Lane (with Proposed Scheme)

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<div> <div>LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION</div> <div>FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG</div> <div>TEL: 2868 0980 FAX: 2868 2203</div> </div> <div> <div>LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION</div> <div>香港灣仔彌敦道5-11號怡和商業大廈17樓A室</div> <div>電話:(八五二) 二八六八 零九八八 傳真:(八五二) 二八六八 二二二三</div> </div>						CAD FILENAME : FIGURE 6	

7.7 Viewpoint 4 – Footbridge (to the East of the Site) across Castle Peak Road – Ping Shan Section

Visual Composition

- 7.7.1 VP4 was taken on elevated footbridge across Castle Peak Road to the east of the Site. VSRs at this VP are occasional passer-by. VSRs at this VP has a panoramic sky view and ridgeline of Yuen Tau Shan. The upper part of the proposed Development could be view behind the existing building blocks along Castle Peak Road and it will become a new and major visual element.

Visual Obstruction

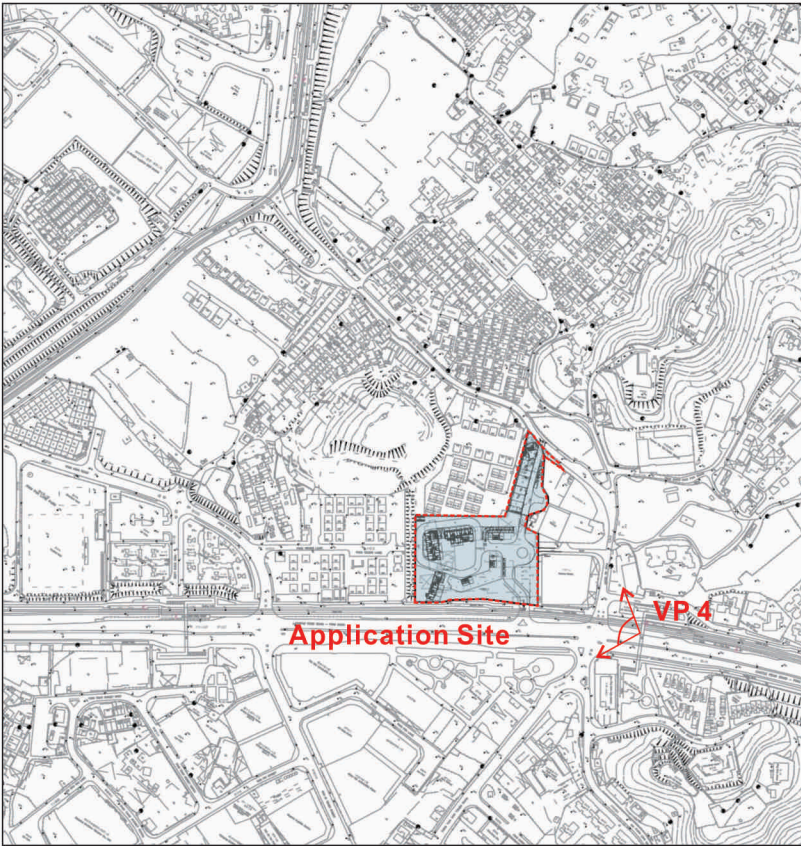
- 7.7.2 Yet, the building heights of Tower 1 to 3 at Site A ranging from **+43.95mPD** to **+79.45mPD** and RCHE at **+39.35mPD** at Site B, step gradually downward from West to east and north to respect the local topography. As observed in **Figure 7**, the proposed Development will inevitably affect the existing open view at this VP. The sky view and ridgeline of Yuen Tau Shan will be affected and the visual openness will be reduced.

Effect on Public Viewers

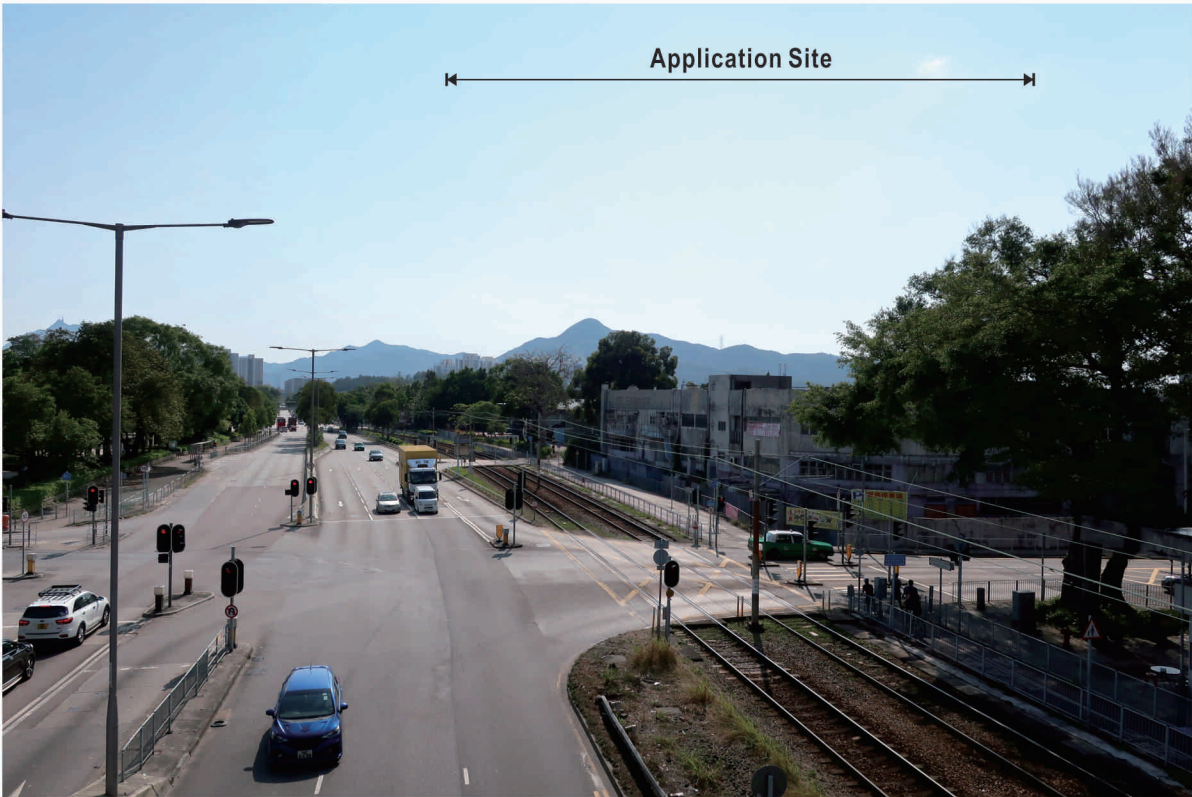
- 7.7.3 Their visual sensitivity is considered Medium as VSRs at this VP only involve a transient stay. The building blocks at Site A will be exposed to this VSR while the RCHE at Site B will be largely shielded by the Century Centre and existing roadside vegetation. By preserving the existing mature roadside vegetation and new tree planting within the Site, the visual impact at pedestrian level will be alleviated. Besides, the green boulevard along Castle Peak Road will be maintained. This visual change brought about by the proposed development would be **Moderate** as the visual openness will be affected.

Effect on Visual Resources

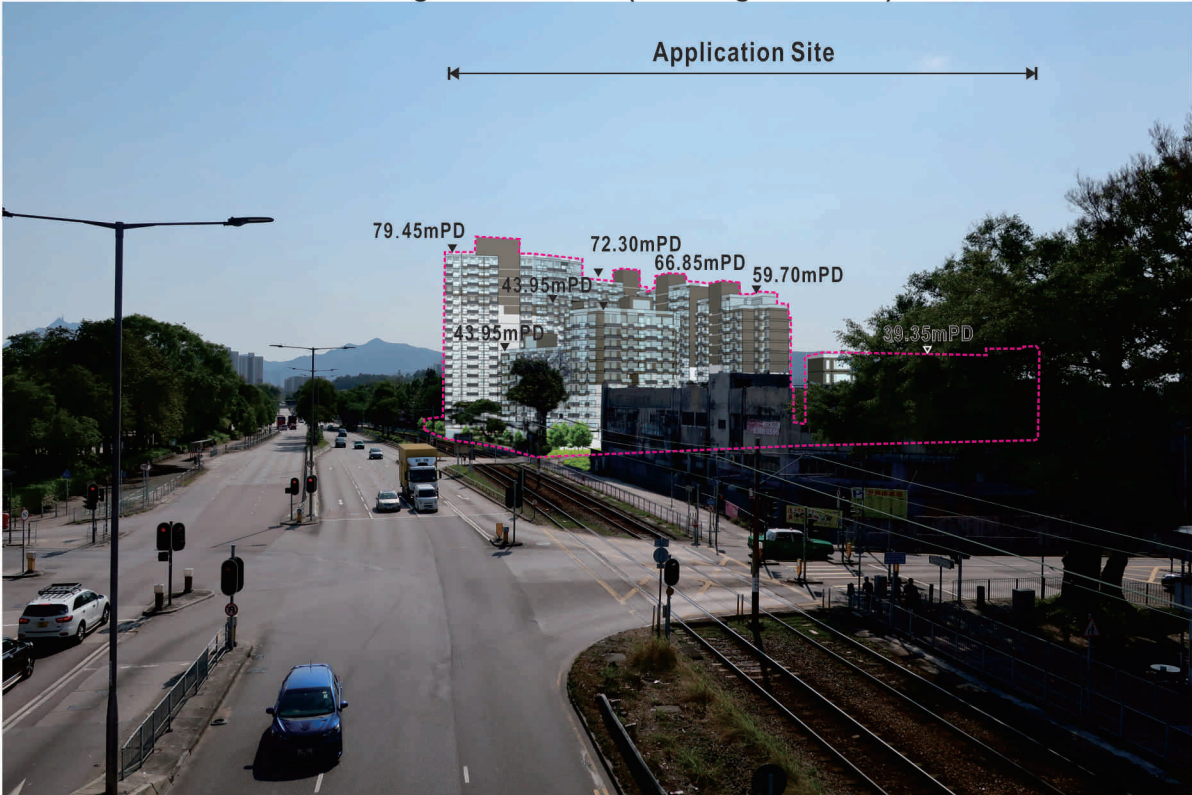
- 7.7.4 The stepping height of building, building voids and peripheral planting is important to reduce the perceived visual mass. The overall resultant visual impact due to the proposed development in this VP will be **Moderately adverse**.



Key Plan



VP 4: View looking towards the Subject Site from Footbridge (to the East of the Site) across Castle Peak Road - Ping Shan Section (Existing Situation)



VP 4: View looking towards the Subject Site from Footbridge (to the East of the Site) across Castle Peak Road - Ping Shan Section (with Proposed Scheme)

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						DATE 日期 AUG 2021	DRAWN 繪圖 CAD				
						DRAWING TITLE 圖紙名稱 Viewpoint 4: Footbrige Across Castle Peak Road - Ping Shan Section	REVISION 校訂 A	CHECKED 審核 TEL			
						DRAWING NUMBER 圖號 FIGURE 7	APPROVED 審批 TEL				
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						LANDES LIMITED 景鄺設計有限公司 景鄺規劃(及)設計, 景鄺建築 香港灣仔彌敦道5-11號信邦商業大廈17樓A室 電話: (八五二) 二八六八 零九八零 傳真: (八五二) 二八六八 二二零三			CAD FILENAME : FIGURE 7		

7.8 Viewpoint 5 – Tong Yan San Tsuen Road

Visual Composition

- 7.8.1 In the photomontage shown in **Figure 8**, the proposed development with building heights ranging from 8 to 19 storeys at **+39.35mPD** to **+79.45mPD** will stand behind the lush vegetation of Tong Yan San Tsuen Playground, fuel depot and Castle Peak Road in the foreground while high-rise Ping Yan Court and the skyline will be formed as a backdrop. The proposed Development will become a new visual element to the visual composition of this VP.

Visual Obstruction

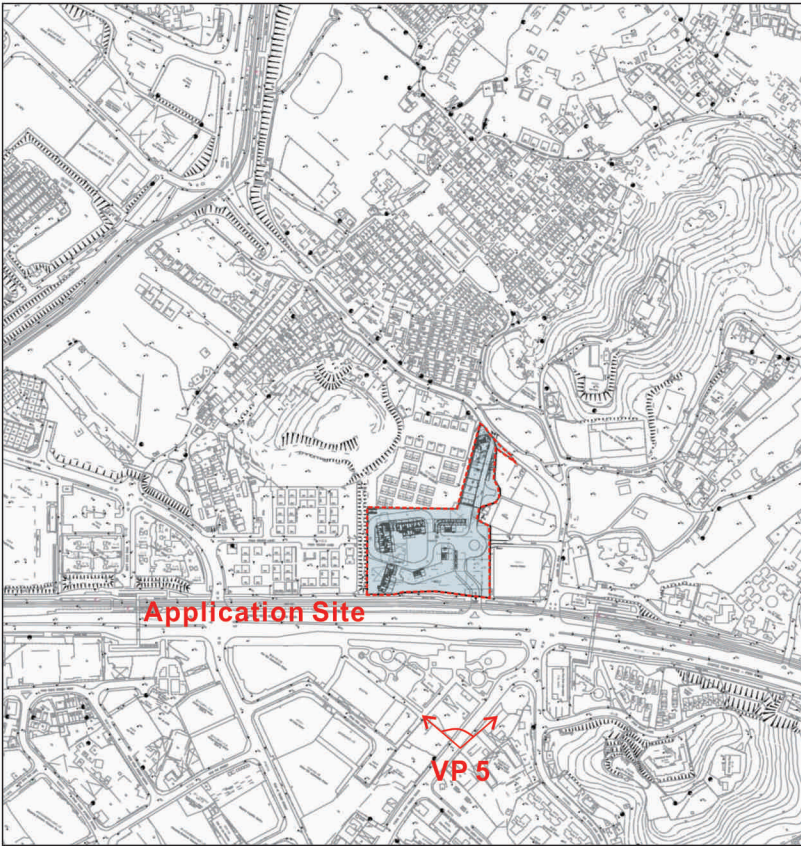
- 7.8.2 Yet, the building heights of Tower 1 to 3 at Site A ranging from **+43.95mPD** to **+79.45mPD** and RCHE at **+39.35mPD** at Site B, step gradually downward from west to east and north to reduce the visual bulkiness of the buildings. As observed in **Figure 8**, the proposed Development will inevitably affect the existing open view at this VP. The sky view will be affected and the visual openness will be reduced. Nevertheless, the view that would be blocked by the proposed Development is just a normal open view without any special or prominent visual resources.

Effect on Public Viewers

- 7.8.3 The existing VP is characterized by a panoramic sky view. This VP would represent the VSRs which are the pedestrian, vehicle drivers, users of Tong Yan San Tsuen Park and the duration over which the proposed Development would remain visible to them is short. Although the proposed Development will be viewed as part of the surrounding townscape, the VSRs would experience **Moderate** visual change as the visual openness will be affected.

Effect on Visual Resources

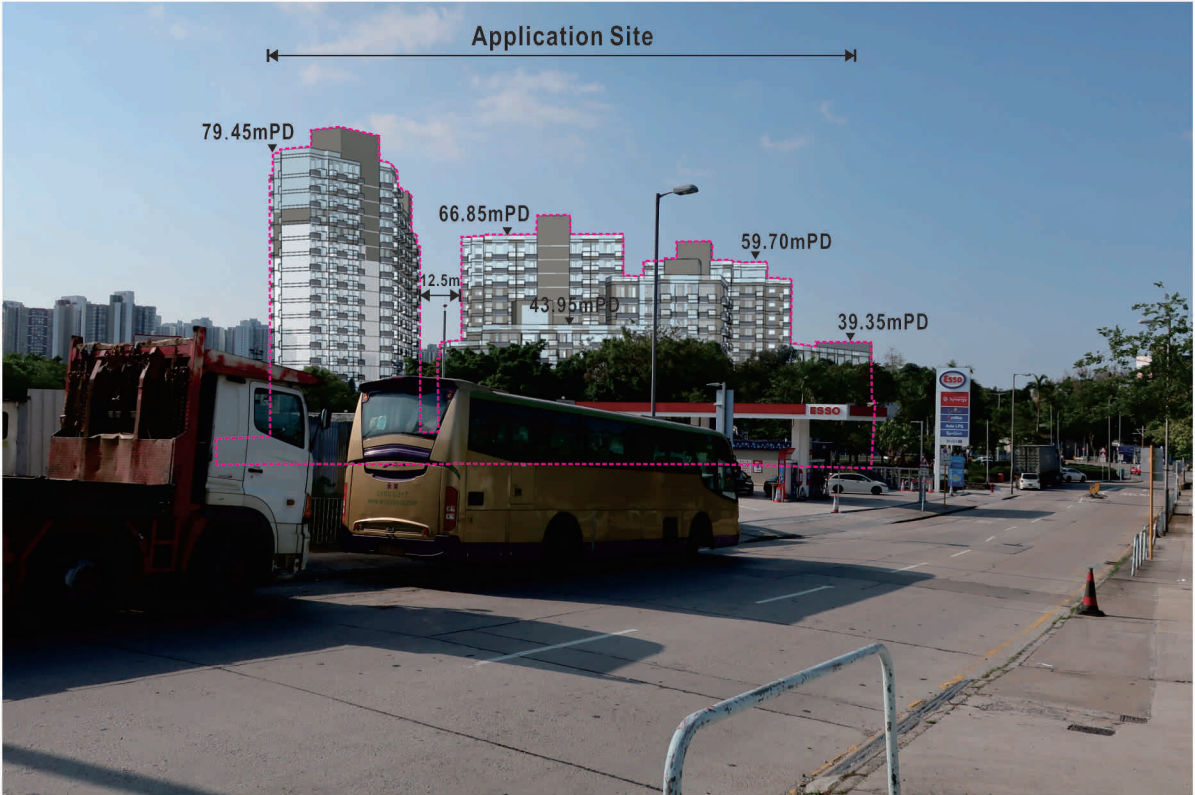
- 7.8.4 The proposed Development will block the sky view of the VP and affect the visual openness. With the stepping height profile, 12.5m building separation between Tower 1 & 2 and void areas at building blocks that reduces the perceived visual mass, the proposed development would still have **moderately adverse** impacts on the visual resources.



Key Plan



VP 5: View looking towards the Subject Site from Tong Yan San Tsuen Road (Existing Situation)



VP 5: View looking towards the Subject Site from Tong Yan San Tsuen Road (with Proposed Scheme)

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						PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG	N.T.S.	TEL			
						DRAWING TITLE 圖紙名稱	DATE 日期	DRAWN 繪圖			
						Viewpoint 5: Tong Yan San Tsuen Road	AUG 2021	CAD			
						REVISION 校訂	A	CHECKED 審核			
						DRAWING NUMBER 圖號	FIGURE 8	APPROVED 審批			
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7.9 Viewpoint 7 – Existing Footbridge (West) across Castle Peak Road – Ping Shan

Visual Composition

- 7.9.1 The existing view comprises the Castle Peak Road, roadside greenery and industrial blocks to south of the Site in the first tier while the high-rise residential development and extensive sky view could be seen in the background. As shown in **Figure 9**, the upper part of the proposed Development could be view behind the existing roadside vegetation along Castle Peak Road and it will become a new visual element. There is slight change to the overall visual composition of the VP.

Visual Obstruction

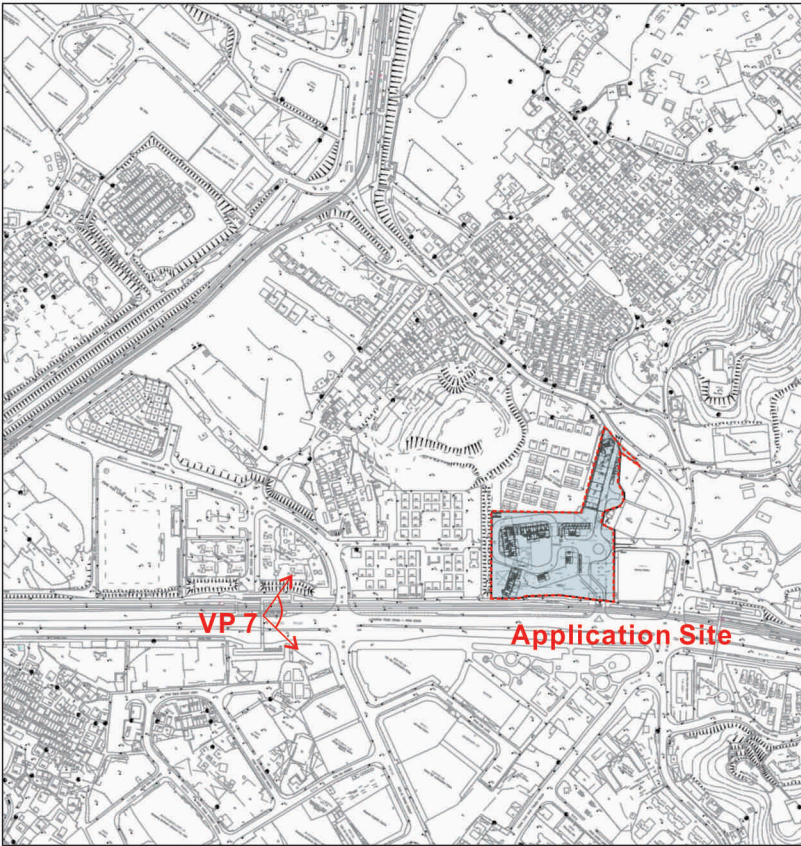
- 7.9.2 VSRs at this VP would have a panoramic view of low-rise buildings and sky view but **Figure 9** captures the view towards east only. The upper portion of proposed Tower 1 at Site A will be exposed to VSRs while the RCHE at Site B would be screened by existing roadside greenery and existing low-rise buildings. It is observed that the proposed Development will affect **slightly** the existing visual openness of VP7.

Effect on Public Viewers

- 7.9.3 The VSRs at this VP on footbridges are mainly pedestrian on two sides of Castle Peak Road in transient nature. The VSRs will only have an exposed view to the upper floors of proposed Tower 1 in a short period of time. The stepping building height and void areas on building has reduced the perceived visual change by the proposed development. The effect on the public viewers would be **Slight to Moderate**.

Effects of Visual Resources

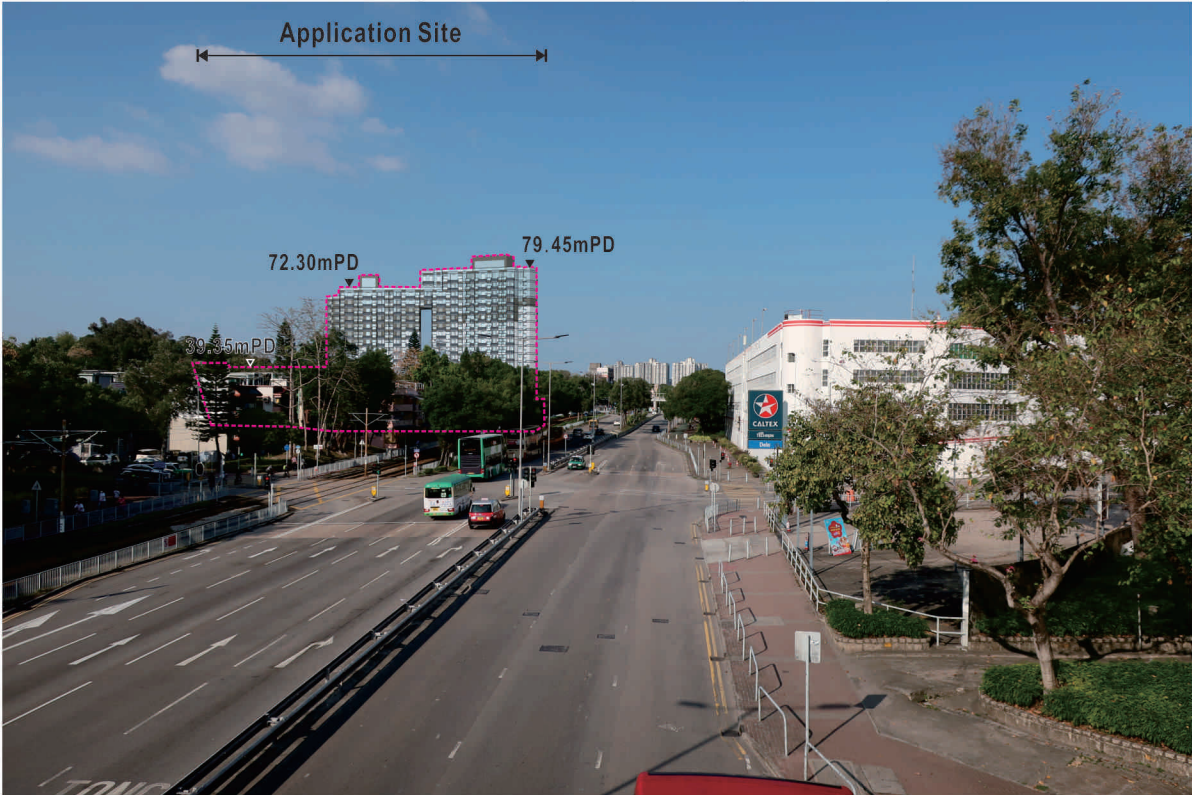
- 7.9.4 The proposed Development will form part of the townscape view which is compatible to the surrounding context. As the proposed Development will change the skyline of the VP slightly, there would be **Slight to Moderate adverse** change to the quality and character of the assessment area.



Key Plan



VP 7: View looking towards the Subject Site from Footbridge (to the West of the Site) across Castle Peak Road - Ping Shan Section (Existing Situation)



VP 7: View looking towards the Subject Site from Footbridge (to the West of the Site) across Castle Peak Road - Ping Shan Section (with Proposed Scheme)

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						DATE 日期 AUG 2021	DRAWN 繪圖 CAD				
						DRAWING TITLE 圖紙名稱 Viewpoint 7: Footbridge across Castle Peak Road - Ping Shan Section	REVISION 校訂 A	CHECKED 審核 TEL			
						DRAWING NUMBER 圖號 FIGURE 9	APPROVED 審批 TEL				
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									CAD FILENAME : FIGURE 9		

7.10 Viewpoint 10 – Hang Mei Tsuen Park

Visual Composition

- 7.4.1 VP 10 is located to the northwest of the Site and it represents the view from users of the Park and pedestrian to the north of the Development. This VP captures the view of village houses in the foreground and extensive sky view in the background. Although majority of the Site A development will be screened by the village houses, the upper portion of Tower 2 at Site A and RCHE at Site B will become a new visual element at this VP. There is slight change in nature of the view as it is.

Visual Obstruction

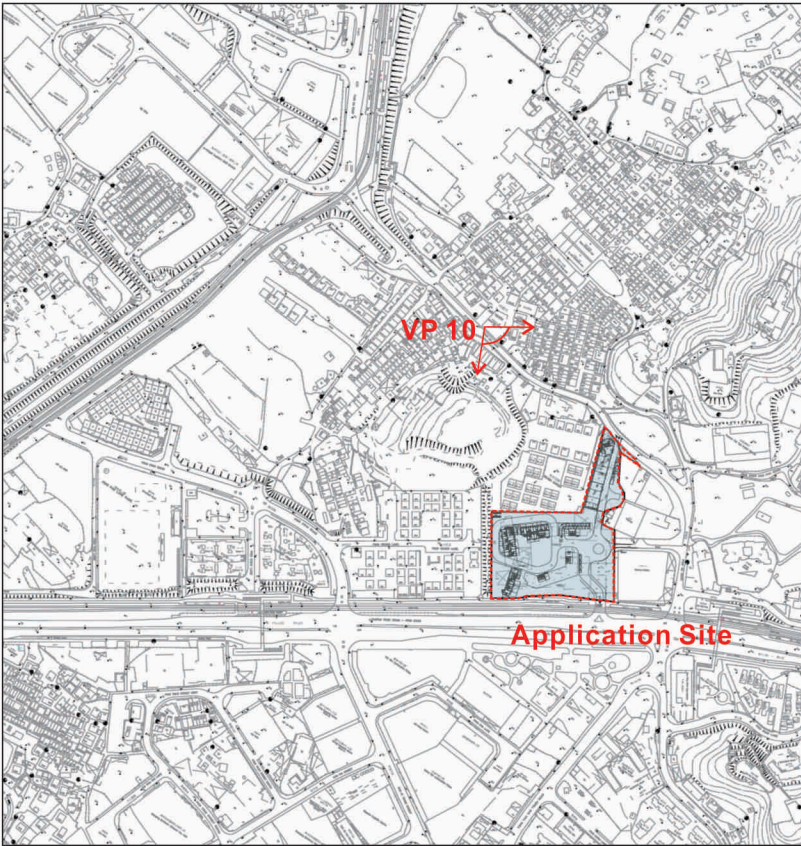
- 7.4.5 VSRs at this VP would have a panoramic sky view. As shown in **Figure 10**, the upper portion of the residential Tower 2 at Site A and RCHE at Site B will become part of the visual elements in the background. Although the proposed Development will partially block the sky view, the stepping height profile will minimize the visual intrusion of the Development. The visual obstruction due to the Proposed Development is slight.

Effect on Public Viewers

- 7.4.6 VSRs will be the users of the playground and their sensitivity will be medium. VSRs from this VP can still enjoy a good quality sky view and the effect on the visual experience of the VSRs is **Slightly adverse**.

Effect of Visual Resources

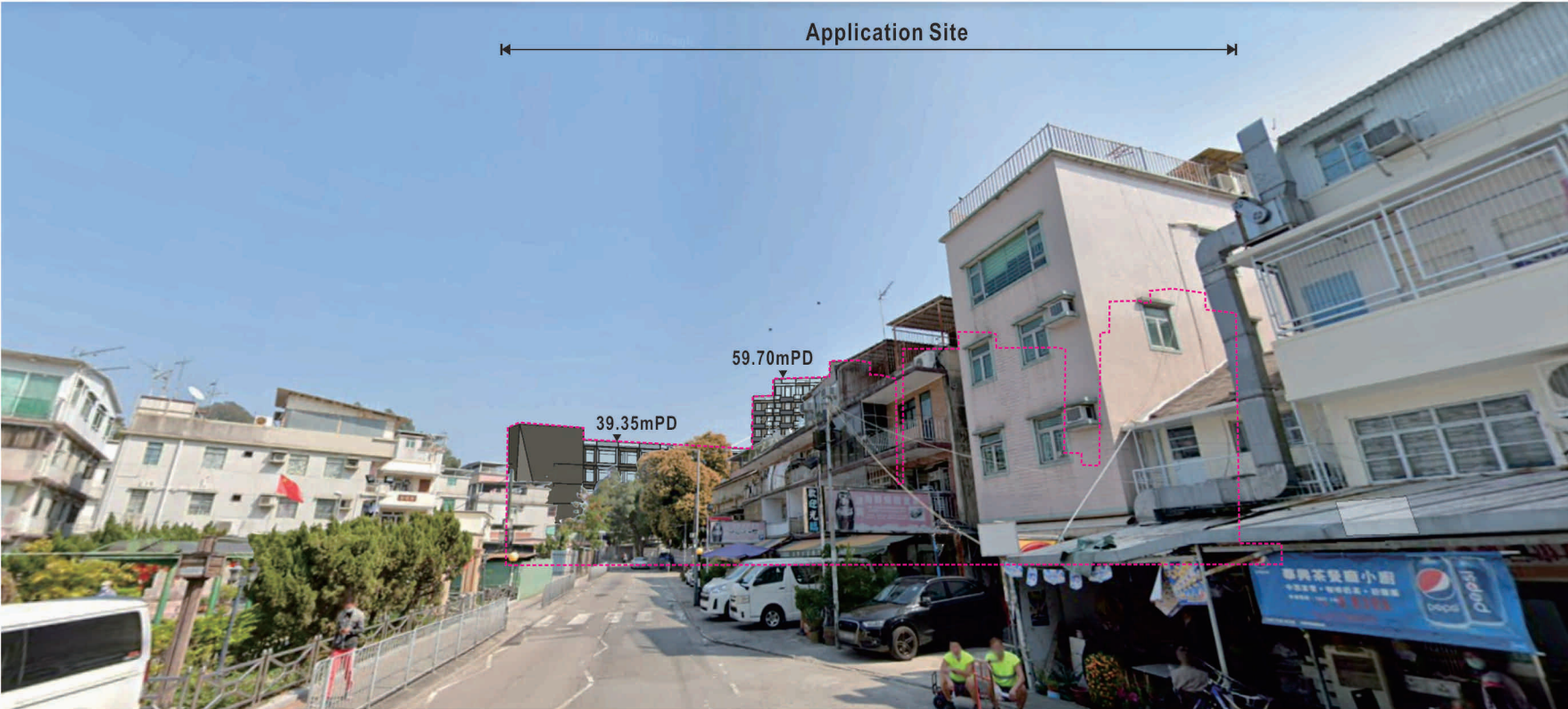
- 7.4.7 The existing villages and the skyline are the major visual resources for VSRs at this VP. The proposed development will only form part of the townscape in harmony with surrounding developments. There would be **slight change** to the quality and character of the assessment area.



Key Plan



VP 10: View looking towards the Subject Site from Hang Mei Tsuen Park (Existing Situation)



VP 10: View looking towards the Subject Site Hang Mei Tsuen Park (with Proposed Scheme)

REVISION 校訂	DESCRIPTION 內容摘要	DRAWN 繪圖	DATE 日期	CHECKED 審核	APPROVED 審批	DO NOT SCALE FROM THIS DRAWING 勿按圖量比例			COPYRIGHT RESERVED 保留版權		
A	GENERAL AMENDMENT	CADD	15/12/2021	TEL	ANK	PROJECT 工程項目 PROPOSED RESIDENTIAL DEVELOPMENT AND SOCIAL WELFARE FACILITY (RESIDENTIAL CARE HOME FOR THE ELDERLY) AT VARIOUS LOTS IN DD121 & DD122, PING SHAN, YUEN LONG	SCALE 比例 N.T.S.	DESIGNED 設計 TEL	<div>LanDes</div>		
						DATE 日期 AUG 2021	DRAWN 繪圖 CAD				
						DRAWING TITLE 圖紙名稱 Viewpoint 10: Hang Mei Tsuen Park	REVISION 校訂 A	CHECKED 審核 TEL			
						DRAWING NUMBER 圖號 FIGURE 10	APPROVED 審批 TEL				
<div>LANDSCAPE PLANNING, DESIGN AND CONSTRUCTION FLAT A, 17/F, SHUN PONT COMMERCIAL BUILDING, 5 - 11 THOMSON ROAD, WAI CHAI, HONG KONG TELEPHONE 2868 0980 FACSIMILE 2868 2203</div> <div>景園設計有限公司 景觀規劃及設計、景觀建築 香港灣仔彌敦道5-11號匯豐商業大廈17樓A室 電話:(八五二) 二八六八 零九八零 傳真:(八五二) 二八六八 二二零三</div>											
									CAD FILENAME : FIGURE 10		

8.0 CONCLUSION

- 8.1 Based on the analysis on the appraisal of visual impact on Visual Composition, Visual Obstruction, Effect on Public Views and Effect on Visual Resources, **Table 4.0** below presents the overall visual impact caused by the proposed development to the VSRs represented in each VP.

Table 4.0 Summary of Assessment of Visual Impact at the Viewpoints

Viewpoint	Location	Visual Impact due to Proposed Development Scheme
VP1	<i>Ping Shan Tin Shui Wai Public Library</i>	Slightly Adverse
VP2	<i>Ping Pak Lane Park</i>	Slightly Adverse
VP3	<i>Ping Kwai Road and Ping Yeung Lane</i>	Moderately Adverse
VP4	<i>Existing Footbridge (East) across Castle Peak Road</i>	Moderately Adverse
VP5	<i>Tong Yan San Tsuen Road</i>	Moderately Adverse
VP7	<i>Existing Footbridge (West) across Castle Peak Road</i>	Slightly to Moderately Adverse
VP10	<i>Hang Mei Tsuen Park</i>	Slight Adverse

- 8.2 The proposed development has provided sensitive mitigation measures like stepped building height, building voids, building separation with the surrounding development. This helps to improve the visual permeability and visual openness and enhance the visual experience of the VSRs.
- 8.3 The visual change to VSRs represent by VR1: *Ping Shan Tin Shui Wai Public Library*, VP2: *Ping Pak Lane Park* and VP10: *Hang Mei Tsuen Park* are **slightly adverse**. Besides, the proposed Development will affect the visual openness and obstruct the skyline for some of the VPs especially for VP3 – Ping Kwai Road and Ping Yueng Lane, VP4 – Existing Footbridge (East) across Castle Peak Road, VP5 – Tong Yan San Tsuen Road. The visual change for the VSR will be **moderately adverse**. VP7 is located in far distance and the VSRs is in transient nature, the visual impact to the VSRs is **Slightly to Moderately Adverse**.
- 8.4 This VIA therefore concludes that resultant overall visual impact of the proposed development at the Site would be **slight to Moderate adverse** in terms of visual impact. The proposed development will in overall terms have some negative visual effects to most of the identified key public view points.

A p p e n d i x V I I I
Quantitative Risk Assessment

Quantitative Risk Assessment for Proposed Flat and Residential Care Home Facility for the elderly at D.D. 121 Ping Shan







January 2022

Submitted to

On Billion International Limited.

Prepared By

Meinhardt Infrastructure and Environment Ltd

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1 INTRODUCTION

1.1 Background

The site at lots 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, and 525 S.B RP in D.D. 122 (the Site) were planned to be developed for residential use and care home for the elderly under Planning Application No. Y/YL-PS/4 (the Project) in 2027. Due to the change of proposed layout, a new planning application is submitted to the consideration of Town Planning Board. The Project Site occupies an area of about 14,080 m², abutting Castle Peak Road – Ping Shan.

There is an Liquefied Petroleum Gas (LPG) cum Petrol Filling Station near the Project Site – one filling station operating by ESSO. The locations of the Project Site and LPG cum petrol filling station are illustrated in **Figure 1**. The LPG cum Petrol Filling Station is classified as Notifiable Gas Installation (NGI) under the Gas Safety Ordinance Cap. 51.

On Billion International Limited, the latest occupant of the application site, is intended to solicit the planning permission from Town Planning Board to operate the applied use at the application site. This QRA is conducted to assess the risk level posed by the LPG cum Petrol Filling Station to the surrounding, including the proposed development, and to determine the compliance with the Hong Kong Risk Guidelines (HKRG) outlined in Chapter 12 of the Hong Kong Planning Standards and Guidelines (HKPSG), for the comments of DEMS.

1.2 Scope of Work

The objective of this study is to reassess the potential risks to the public in the vicinity of the LPG cum Petrol Filling Station in year 2027, with the operation of the proposed development.

The scope of the work of the QRA is set out as follows:

- a) To identify all potential hazardous scenarios associated with the LPG facilities of the LPG cum Petrol Filling Station and determine a set of relevant scenarios for the QRA;
- b) execute a QRA and express the off-site risks in terms of individual risk (IR) contours, and societal risk (SR) FN curves;
- c) compare the QRA results with the HKRG in future years; and
- d) where the HKRG cannot be met, identify and assess practicable and cost-effective risk mitigation measures.

In undertaking this study, it is necessary to set the following boundaries:

- The risk associated with the transportation of LPG by road tankers is not included in the scope of work;
- The risk assessment is limited to those potential events causing off-site fatalities.

1.3 Risk Criteria

1.3.1 Special Requirement Relevant to Petrol Filling Station with LPG Filling Facilities

Petrol cum LPG filling stations are classified as NGIs under the Gas Safety Ordinance Cap. 51. A QRA is required to ascertain that the off-site risk levels posed by the petrol cum LPG filling station is acceptable in accordance with the HKRG outlined in the HKPSG [1]. In general, the following separation distance of the LPG filling facilities from different land uses should apply:

- High-rise residential / education / hospital: 55m
- Commercial / recreational / industrial: 15m
- Low density residential / incidental dwelling: 15m

1.3.2 Hong Kong Risk Guidelines (HKRG)

Chapter 12.4 of the HKPSG [1] stipulates the risk guidelines to determine the acceptability of Potentially Hazardous Installation (PHI) in terms of individual and societal risks. These risk guidelines are also adopted to ascertain whether the risk levels posed by the NGIs are acceptable.

The individual and societal risk criteria for the risk assessment are described below:

- Individual Risk:** a measure of the frequency at which an individual at a specified distance from the hazardous installations is expected to sustain a specified level of harm from the realization of hazardous incident(s). The maximum level of off-site individual risk causing fatality of a person located 24 hours a day outside the facility of concern should not exceed 1×10^{-5} / year, i.e. 1 in 100,000 per year.
- Societal Risk:** a measure of the relationship between the frequency of an incident and the number of fatalities that will result. It is typically expressed graphically by an F-N curve showing the cumulative frequency (F) of incidents causing N or more fatalities. The societal risk criteria are presented graphically as in **Figure 2**. There are three regions as described below:
 - Acceptable: where the risk is low enough that no action is necessary;
 - Unacceptable: where the risk is very high that it should be reduced regardless of the cost or else the project of concern should not proceed; and
 - ALARP (As Low As Reasonably Practicable): where the risk associated with the facility of concern should be reduced to a level “as low as reasonably practicable”, in which the priority of measures is established on the basis of practicality and cost to implement versus the risk reduction achieved.

1.4 Methodology

1.4.1 Overall QRA Approach

The methodology of this study follows the HKRG stipulated in Section 4 of Chapter 12 of the HKPSG [1], the QRA Methodology for LPG Installations in Hong Kong [2], and relevant QRA studies of hazardous installations with LPG storage facilities. The overall QRA methodology is shown schematically in **Figure 3**.

The major phases in QRA includes:

- i. **Hazard Identification:** Identify hazard scenarios associated with the operation of the LPG filling station, and then determine a set of relevant scenarios to be included in a QRA.
- ii. **Frequency Assessment:** Assess the likelihood of occurrence of the identified hazard scenarios.
- iii. **Consequence Assessment:** Assess the consequences and impact to the surrounding population.
- iv. **Risk Summation and Assessment:** Evaluate the risk level, in terms of individual risk and societal risk. The risks will be compared with the criteria outlined in HKRG to determine their acceptability.
- v. **Identification of Mitigation Measures:** Identify and assess practicable and cost-effective risk mitigation measures if necessary. The risks of mitigated cases will then be reassessed to determine the level of risk reduction.

1.4.2 Case Considered

This QRA will consider two scenarios in future year, 2027, including:

- Case 1 – Base Case in Year 2027: elevating the risk level in year 2027 without proposed development;
- Case 2 – Operation Case in Year 2027: elevating the risk level in year 2027 with proposed development

2 PROJECT DATA

2.1 The Project

The Project is located at Castle Peak Road – Ping Shan. The site area is approximately 14,080m² and is zoned as "Village Type Development" and "Comprehensive Development Area" under the "V" and "CDA" Zone on the Outline Zoning Plan (OZP) of Ping Shan. A Planning Statement is submitted to the Town Planning Board to rezone the Site to "Residential (Group B) 2" on the OZP for proposed flat and social welfare facility (The proposed development).

The proposed development involves the development of three residential blocks ranging from 11 to 19 storeys comprising 840 flats and a 6-storey Residential Care Home for Elderly (RCHE) comprising 294 beds. The layout plan of the Project is given in **Figure 4**.

2.2 Hazardous Storage and Operation

2.2.1 Location

The ESSO LPG cum Petrol Filling Station is located at Tong Yan San Tsuen Road as shown in **Figure 1**. The ESSO LPG cum Petrol Filling Station is located to the south east of the site with a distance of about 110m.

2.2.2 Operation of LPG cum Petrol Filling Station

ESSO LPG cum Petrol Filling Station, shown in **Figure 5**, consists of one underground LPG storage vessel with water capacity of 31.5kL (equivalent to 15 tonnes LPG inventory, taking into account the ullage requirement of not filling more than 85% of the vessel volume).

Vessel in ESSO LPG cum Petrol Filling Station is installed in a concrete chamber, filled with washed sand and each shall be designed, manufactured and tested in accordance with the requirements of the Electrical and Mechanical Services Department (EMSD) and is covered with corrosion protection coating, 100% radiography tested and fully stress relieved.

Site survey was conducted in July 2021 and confirmed that there are four LPG dispensers with eight dispensing nozzles installed in ESSO LPG cum Petrol Filling Station.

2.2.3 LPG Delivery and Transfer

LPG storage vessel replenishment is made by LPG road tankers of 9 tonnes capacity at dedicated LPG road tanker unloading bay. According to the site survey, sixty-three LPG vehicles were identified in ESSO filling station during peak hour (4:00pm – 5:00pm). Based on observation in site survey, the LPG delivery frequency is conservatively estimated as 2-3 road tankers deliveries per day in Esso LPG cum Petrol Filling. The delivery may take place at both day time and night time. The residence time of the LPG road tankers in the LPG cum Petrol Filling Station is assumed 120 minutes.

Fire & gas safety provision at the LPG Filling Station includes the following:

- Dry powder fire extinguishers, sand buckets and fire hydrant should be provided for firefighting purpose;

- Manually / remotely operated isolation valves should be installed for LPG storage vessels and dispensers to cut off and isolate the leakage;
- Leak detection system with alarm should be provided with gas detectors that installed near the LPG unloading bay, LPG storage vessels, LPG dispensers and office;
- The LPG storage, unloading and refueling should be stopped and isolated by the emergency shutdown (ESD) system, which is activated by ESD switches installed in the closed vicinity of the LPG unloading bay, LPG dispensers and office;
- Water spray system is provided, which is automatically activated by leak alarm detection system as well as the manual push handle;
- The operator of the LPG cum Petrol Filling Station should have developed its own emergency plans; and

Emergency plans shall be formulated in accordance with the Code of Practice for Hong Kong LPG Industry by the operator of the LPG filling station. There is no known further development / modification planned for the existing LPG filling station.

A summary of the LPG filling station facilities and operations is presented in **Table 1**.

Table 1 LPG cum Petrol Filling Station Facilities and Operation

Item	ESSO LPG cum Petrol Filling Station
LPG storage vessel	<ul style="list-style-type: none"> 1 × 31.5kL underground vessel Filled up to 85% of its maximum capacity under normal operation
LPG dispensers	<ul style="list-style-type: none"> 4 LPG dispensers with 8 nozzles
LPG road tanker	<ul style="list-style-type: none"> 9 tonnes
LPG road tanker delivery	<ul style="list-style-type: none"> 775 deliveries per year both day-time and night-time delivery residence time of 120 minutes
Vehicle refueling	<p>LPG vehicles:</p> <ul style="list-style-type: none"> 63 per hour (peak hour) 15.75 per hour (non-peak hour) Estimated as 472.5 per day <p>Petrol vehicles:</p> <ul style="list-style-type: none"> Estimated as 495 per day
Fire & gas safety provision	<ul style="list-style-type: none"> Dry powder fire extinguishers, sand buckets and fire hydrant; Manually / remotely operated isolation valves; Leak detection system with alarm; ESD system; Water spray system; Emergency plans

Note

1. Assume each LPG taxi and LPG light bus is refueled to 85% of a 95.5L fuel tank and a 122L fuel tank, respectively, 818 LPG vehicles is estimated for the consumption rate of 6 road tanker delivery.

3 BACKGROUND INFORMATION OF STUDY

3.1 Study Area

A study area of 200m radius from the center of the LPG cum petrol filling station is adopted in this study as shown in **Figure 6**.

3.2 Population

3.2.1 Population in the Vicinity

Population close to the hazardous installations may be impacted by hazardous events arising from the accidental LPG release from the LPG facilities. As QRA is aimed to assess the off-site risk to life, staff operating the filling station or drivers of vehicles using the filling station are regarded as voluntary takers of risk and are not considered in this study.

Population information was collected from desktop research and site survey. There is no additional residential development planned within the study area.

The future population within the study areas is estimated based on site observation and up-to-date data published by the Government Departments. The following information and assumptions were adopted in the estimation:

- Average residential household size of 2.8 in Town Planning Unit (TPU) 519 as per 2016 Population By-Census [3];
- Conservative assumption of annual population growth of 0% as per population statistics in TPU 519 in 2016 Population By-Census [3] and the Projections of Population Distribution 2021 – 2029 [4]; and
- Conservative assumption of worker density of 25m²/worker for industrial building and 700m²/work for warehouse.

The population groups considered within the study area are illustrated in **Figure 6**. The population data are summarized in **Table 3**.

3.2.2 Transient Population

Transient population includes passengers of road transport (traffic population) as well as pedestrians along road sections.

The traffic population is estimated from the flow data of Annual Traffic Census 2019 [5] and the Traffic Impact Assessment provided by the client using the following formula:

$$\text{Traffic Population (ppl)} = \frac{\text{Traffic Flow (veh/hr)} \times \text{ppl/veh}}{\text{Speed (km/hr)}} \times \text{Road length (km)}$$

A 430m long section of Light Rail Transit (LRT) falls into study zone, located in southern direction of the Project Site and denoted as LR1 in **Figure 6**. There are currently four lines running along the rail, namely 761P, 615, 610 and 614. The number of passengers on LRT is estimated based on the train capacity, using the equation below:

$$\text{Rail Population (ppl)} = \frac{\text{Train Capacity (ppl/hr)} \times \text{Loading \%}}{\text{Average Train Speed (km/hr)}} \times \text{Rail Section Length (km)}$$

3.2.3 Temporal Variation of Population

To reflect the temporal changes in population within a week, the corresponding population proportion of the time periods are assumed based on observation from site survey and with reference to the approved EIA reports [6][7][8].

Day time is defined as 07:00 to 19:00 and night time from 19:00 to 07:00 next day. The temporal changes of different population category are provided in **Table 2**.

Table 2 Temporal Change of Population within a Week

Category	Weekday Day (WDD)	Weekday Night (WDN)	Weekend Day (WED)	Weekend Night (WEN)
Car Park ⁽¹⁾	100%	10%	50%	10%
Commercial ⁽²⁾	100%	10%	40%	5%
Filling Station ⁽¹⁾	100%	50%	100%	50%
Industrial ⁽²⁾	100%	10%	40%	5%
Organization	25%	25%	100%	25%
Rail	41%	8%	35%	16%
Recreational ⁽²⁾⁽³⁾	50%	5%	100%	5%
Residential ⁽²⁾	25%	100%	70%	100%
Restaurant ⁽¹⁾	25%	50%	100%	100%
Road	100%	100%	100%	100%
Rural ⁽¹⁾	0%	0%	0%	0%
Workshop ⁽¹⁾	100%	10%	100%	10%
RCHE ⁽¹⁾	100%	29%	100%	29%

Notes:

- (1) Based on site survey and judgement
- (2) Reference to HATS Stage 2A EIA [6]
- (3) Reference to SEKD CFS EIA [8]

3.2.4 Indoor and Outdoor Ratio

Building structures can offer some protection from fires for the occupants inside. An indoor ratio of 95% is applied to the population in residential, commercial and industrial buildings, while the remaining 5% of population is assumed to be outdoor, accounting for outdoor activities and walking on pathways.

Population in workshops is assigned with indoor ratio of 10% based on worker's activity. Car park and parks are considered 100% outdoor. Passengers in vehicles / LRT are

considered as 100% outdoors population although vehicles / LRT may provide certain protection.

Table 3 Population Data Within Study Area

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
01	Car Services Centre	Workshop	10	100%	10%	100%	10%	10%	By site survey
02	Bungalow	Workshop	10	100%	10%	100%	10%	10%	By site survey
03	Bungalow	Residential	10	25%	100%	70%	100%	95%	By site survey
04	Shell Petrol Filling Station	Filling Station	10	100%	50%	100%	50%	95%	By site survey
05	2-Storey House	Residential	12	25%	100%	70%	100%	95%	Two 2-storey houses. Assume 1 flat per storey with average household of 2.8.
06	Temporary Storage	Workshop	10	100%	10%	100%	10%	10%	By site survey
07	Chong Hing Marble	Industrial	20	100%	10%	40%	5%	95%	By site survey
08	China Win Automobile Plaza	Industrial	50	100%	10%	40%	5%	95%	By site survey
09	Chi Shing Centre	Industrial	20	100%	10%	40%	5%	95%	By site survey
10	Central Fabric Ltd	Industrial	30	100%	10%	40%	5%	95%	By site survey
11	Vacant	Rural	0	0%	0%	0%	0%	0%	By site survey

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
12	Wah On Tyres Retreading Company	Industrial	100	100%	10%	40%	5%	95%	Site area of ~7100m ² . Assume 1 floor as industrial factory / office, remaining as storage warehouse or carpark. Estimate by worker density 25m ² /worker for industrial and 700m ² /worker for warehouse. (Rounded to nearest 10.)
13	Set Win Automobile Plaza	Industrial	100	100%	10%	40%	5%	95%	Site area of ~19000m ² . Assume 10% as office, remaining as storage warehouse. Estimate by worker density 25m ² /worker for industrial and 700m ² /worker for warehouse. (Rounded to nearest 10.)
14	Tong Yan San Tsuen Playground	Recreational	10	50%	5%	100%	5%	0%	By site survey
15	Restaurant	Restaurant	50	25%	50%	100%	100%	95%	By site survey
16	Carpark	Car park	15	100%	10%	50%	10%	0%	By site survey

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
17	Warehouse	Industrial	5	100%	10%	40%	5%	95%	By site survey
18	Bungalow	Residential	4	25%	100%	70%	100%	95%	By site survey
19	Yuen Long Wai Kwan Land	Recreational	20	50%	5%	100%	5%	0%	By site survey
20	3-Storey Houses	Residential	70	25%	100%	70%	100%	95%	Total 25 flats. Assume average household of 2.8.
21	New Territories Assemblies of God Church	Organization	60	25%	25%	100%	25%	95%	By site survey
22	Bungalow	Residential	4	25%	100%	70%	100%	95%	By site survey
23	3-Storey House	Residential	17	25%	100%	70%	100%	95%	Two 3-storey houses. Assume one flat per storey and average household of 2.8.
24	Amber of Vera	Residential	9	25%	100%	70%	100%	95%	One 3-storey houses. Assume one flat per storey and average household of 2.8.
25	Workshop	Workshop	10	100%	10%	100%	10%	10%	By site survey
26	2-Storey House	Residential	12	25%	100%	70%	100%	95%	By site survey
27	Evergreen Place	Residential	247	25%	100%	70%	100%	95%	Total 88 flats. Assume average household of 2.8.

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
28	Coral Garden	Residential	135	25%	100%	70%	100%	95%	Total 48 flats. Assume average household of 2.8.
29	3-Storey Houses	Residential	269	25%	100%	70%	100%	95%	32 3-storey houses. Assume one flat per storey and average household of 2.8.
30	Century Centre	Commercial	30	100%	10%	40%	5%	95%	By site survey
31	Lok Kui Lau	Residential	28	25%	100%	70%	100%	95%	Total 10 flats. Assumed average household of 2.8 according 2016 Population By-Census
32	Store	Commercial	10	100%	10%	40%	5%	95%	By site survey
33	Ping Shan Enterprise Co. Ltd.	Industrial	10	100%	10%	40%	5%	95%	By site survey
34	CLP Substation	Commercial	5	100%	10%	40%	5%	95%	By site survey
35	Ping Shan Lane Park	Recreational	10	50%	5%	100%	5%	0%	By site survey
36	Ping Shan Garden	Residential	28	25%	100%	70%	100%	95%	Total 10 flats. Assume average household of 2.8
37	Ping Shan District Vegetable Marketing Cooperative Society	Organization	10	25%	25%	100%	25%	95%	By site survey

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
38	Hong Kong Pig Farm Society	Organization	10	25%	25%	100%	25%	95%	By site survey
39	Bungalow	Residential	4	25%	100%	70%	100%	95%	By site survey
40	SinoPec Filling Station	Filling Station	10	100%	50%	100%	50%	95%	By site survey
R01	Castle Peak Road	Road	47	100%	100%	100%	100%	0%	From traffic station 6049
R02	Tong Yan San Tsuen Road	Road	16	100%	100%	100%	100%	0%	From traffic station 6626
R03	Ma Fung Ling Road	Road	8	100%	100%	100%	100%	0%	From traffic station 6626
R04	San Hi Tsuen Road	Road	6	100%	100%	100%	100%	0%	From traffic station 6626
LR1	Light Rail Train	Rail	53	100%	47%	76%	38%	0%	
PD01	Proposed Development	Residential	2814	25%	100%	70%	100%	95%	Total 840 flats and 294 beds. Information provided by client.

ID	Population Name	Population Category	Population in Year 2027	Temporal Population Change				Indoor Ratio	Remarks
				WDD	WDN	WED	WEN		
PD02	Proposed Development	RCHE	21	100%	29%	100%	29%	95%	Rounded 294 beds to 300 and calculated minimum requirement of staffs according to Code of Practice for Residential Care Homes (Elderly Persons). Assume Care-and-attention home conservatively.
PD03	Proposed Development	Commercial	10	100%	10%	40%	5%	95%	Staff of retail store. By Conservative assumption.

3.3 Source of Ignition

Flammable gas cloud from an accidental release can be ignited and led to fire or explosion if there are ignition sources present in the close proximity or along the dispersion path of the cloud. If the gas cloud is diluted outside flammable concentration range (i.e. below Lower Flammable Limit), or in the absent of ignition source, no fire hazard is expected. The energy level, timing, location and ignition effectiveness of ignition sources in the vicinity of hazardous installations affect the extent of gas cloud dispersion and its potential impacts.

Three types of ignition sources are defined in the SAFETI model:

- **Population sources:** account for human activities such as smoking, cooking, and using electrical appliances and are assigned implicitly to all population group by SAFETI.
- **Line source – transportation route segments:** account for the moving vehicles on roads. The ignition probabilities are calculated from traffic density, average vehicle speed, vehicle ignition efficiency and total length of the roads. Vehicle ignition efficiency is taken as 0.4 per 60 seconds [9].
- **Line source – electrical line segments:** account for the electrical rail transmission line. Probability of ignition is taken as 0.2 per 100 m [9].

3.4 Meteorological Information

Meteorological conditions affect the consequences of gas release, in particular wind direction, speed and stability which influences the direction and degree of turbulence of gas dispersion. Meteorological data from Wetland Park Weather Station (Year 2020) was collected from the Hong Kong Observatory and adopted in the consequence model to determine the various gas dispersion, fire and explosion effects [10]. In accordance with TNO Purple Book [9], all data collected will be rationalized into a set of weather classes. The meteorological data can be expressed in combination of wind speed and Pasquill stability classes. Pasquill classes (A to F) represent the atmospheric turbulence with class A being the most turbulent class while class F being the least turbulent class.

The six most dominant sets of wind speed-stability classes combination for both day-time and night-time are summarized in **Table 4** and **Table 5**. The average ambient temperature adopted in the analysis is 23°C and relative humidity is 78%.

Table 4 Day Time Wind Direction Frequency at Wetland Park Weather Station (Year 2020)

Direction	WEATHER CLASS						Total
	2.5B	1.5D	3.5D	6.5D	2.5E	1.5F	
0 – 30	5.21	1.59	0.15	0.00	0.27	2.83	10.04
30 – 60	7.84	1.84	0.55	0.00	0.50	1.36	12.08
60 – 90	14.04	3.08	1.22	0.00	0.77	2.46	21.55
90 – 120	4.71	1.91	1.02	0.00	0.57	1.41	9.62
120 – 150	2.78	0.79	0.42	0.00	0.30	0.74	5.03
150 – 180	7.42	1.26	1.81	0.00	0.40	1.61	12.50
180 – 210	6.42	0.87	1.14	0.00	0.32	0.57	9.33

Direction	WEATHER CLASS						Total
	2.5B	1.5D	3.5D	6.5D	2.5E	1.5F	
210 – 240	3.37	0.27	0.30	0.00	0.05	0.22	4.22
240 – 270	1.81	0.27	0.00	0.00	0.05	0.17	2.31
270 – 300	2.18	0.52	0.00	0.00	0.00	0.10	2.80
300 – 330	4.02	0.40	0.00	0.00	0.00	0.22	4.64
330 – 360	4.24	0.57	0.05	0.00	0.10	0.92	5.88
All	64.04	13.37	6.65	0	3.32	12.62	100

Table 5 Night Time Wind Direction Frequency at Wetland Park Weather Station (Year 2020)

Direction	WEATHER CLASS						Total
	2.5B	1.5D	3.5D	6.5D	2.5E	1.5F	
0 – 30	0.00	0.51	0.13	0.00	1.15	18.04	19.83
30 – 60	0.00	0.48	0.86	0.00	2.70	6.98	11.02
60 – 90	0.00	0.40	0.54	0.00	2.25	8.46	11.64
90 – 120	0.00	0.45	0.64	0.00	2.22	9.42	12.74
120 – 150	0.00	0.08	0.37	0.03	1.04	5.24	6.77
150 – 180	0.00	0.05	0.62	0.00	5.33	15.04	21.03
180 – 210	0.00	0.00	0.56	0.00	2.76	7.41	10.73
210 – 240	0.00	0.03	0.08	0.00	0.48	0.45	1.04
240 – 270	0.00	0.00	0.00	0.00	0.03	0.21	0.24
270 – 300	0.00	0.03	0.00	0.00	0.05	0.37	0.45
300 – 330	0.00	0.03	0.03	0.00	0.03	0.78	0.86
330 – 360	0.00	0.21	0.05	0.00	0.35	3.02	3.64
All	0.00	2.27	3.88	0.03	18.38	75.43	100.00

4 HAZARD IDENTIFICATION

4.1 Properties of LPG

LPG supplied in Hong Kong is a pressurized mixture of propane and butane (3:7 in mole ratio). Upon release to the ambient environment, it vaporizes and mixes with air, forming a dense flammable gas cloud which tends to flow and disperse closed to the ground. The gas cloud may extend over a long distance until it becomes too diluted or encounters ignition sources.

4.2 Event Leading to an Accidental LPG Release

The main hazard associated with the LPG filling facilities is an accidental uncontrolled release of LPG resulting in a fire or explosion upon ignition. Historical accident records such as MHIDAS database and previous risk assessment reports have been reviewed [6][7][8]. The initial events leading to an LPG release could be one of the following:

- Spontaneous failure of pressurized LPG equipment due to material / design / construction defect, fatigue, corrosion, erosion, etc;
- Loading operation failure, i.e. an LPG release occurs as a direct result of the road tanker unloading operation or vehicle refueling operation; and
- External events

A schematic diagram of LPG filling facilities is shown in **Figure 7**. A photo of typical unloading operation of an LPG road tanker in one of the LPG Filling Station in Hong Kong is shown in **Figure 8**.

4.2.1 LPG Storage vessel failure

Failure of the LPG storage vessel includes cold catastrophic failure and partial failure (25mm hole), which may be resulted from:

- Spontaneous failure;
- Loading failure due to overfilling / over-pressurization of storage vessel; and
- External events such as earthquake

Considering the content in vessel varies in time due to consumption and refilling, the vessel is assumed nominally at full load inventory (i.e. 85% of maximum capacity) for 20% of the time and at low inventory level with 60% maximum capacity for the rest of time. In case of failure of storage vessel due to overfilling, the release inventory is assumed to be 100% of maximum capacity.

4.2.2 LPG Road Tanker failure

Failure of the LPG road tanker includes cold catastrophic failure and partial failure (25mm hole), which may be resulted from:

- Spontaneous failure; and
- Accidents during unloading caused by collision by another vehicle.

Similar to the case of storage vessel that the content of a LPG road tanker varies with time, road tanker is modelled to have full inventory for 20% of the time and 50% of maximum capacity for 80% of time.

4.2.3 Pipework failure

LPG pipework failure in filling station includes guillotine failure and partial failure (hole size of 10% of diameter) of the follows:

- Liquid inlet pipework for LPG unloading to the LPG storage vessel;
- Liquid supply lines from LPG storage vessel to dispensers; and
- Vapour return lines from the dispensers to the storage vessel.

Most of the LPG pipework runs underground, the major cause of pipework failure is spontaneous failure, which may be due to material defects, corrosion, fatigue and erosion. Pipework may also fail in an earthquake.

As part of the liquid inlet pipework for LPG unloading to the LPG storage vessel is installed aboveground at road tanker unloading bay, such pipework may be subjected to failure due to impact of the LPG road tanker.

According to consequence modelling, LPG vapour release from the rupture of underground vapour return line can only impact 1m maximum from the point of release. This does not impose risk to the off-site population and thus failure of vapour return line is not further considered in the study.

4.2.4 Dispenser failure

A schematic diagram of a typical LPG dispenser is illustrated in **Figure 9**. Failure of the dispenser may be caused by spontaneous failure of the dispenser is possible due to material defects, corrosion, fatigue and erosion and the vehicle impact to the dispenser. This will result in a liquid leak from a nominal 20mm hole, equivalent to the diameter of the dispenser pipework. The rate of release will however be limited by the discharge rate of the submersible pump.

4.2.5 Flexible hose failure

An accidental release from the flexible hose may be caused by:

- Spontaneous failure, including material degradation, fatigue, corrosion and erosion; and
- Loading failures, including:
 - Hose misconnection error – an error where the driver / operator fails to properly connect the loading hose and the hose comes adrift during unloading / refueling;
 - Hose disconnection error – an error where the driver / operator inadvertently disconnects the hose while the valve is still open or has failed open;
 - LPG road tanker / vehicle drive-away error – an error where the driver inadvertently drives the LPG road tanker / vehicle away during unloading / refueling; and

- Impact to the refueling vehicle by another vehicle in the station, which causes movement of the refueling vehicle leading hose disconnection and hose damage.

4.2.6 Submersible pump failure

Leak from the submersible pump itself may result in a release of LPG back to the LPG storage vessel and therefore no hazard is expected. A release is possible from the flange associated with the fitting of the pump on the top of the LPG storage vessel. This may result in a liquid leak from a 25 mm hole, equivalent to the space between two bolt holes on a flanged joint.

4.2.7 LPG vehicle (taxi, minibus) failure

Failure of the LPG vehicle (taxi, minibus) may result from:

- Spontaneous failure; and
- Accidents during refueling caused by collision by another vehicle in the filling station.

The small inventory in LPG vehicle only sustains a short duration of the LPG release, resulting in insignificant impacts compared with releases from the pipework / hose connected to the LPG storage vessel / road tankers. Based on consequence modelling, the rupture of minibus LPG tank could affect 23m maximum.

With the separation distance of LPG facilities to the boundary of the filling station and radiation wall installed in the filling station, the hazards from LPG vehicle are unlikely to reach off-site population. The risk of LPG vehicle failure is considered negligible and is not further assessed in this study.

4.2.8 External Causes

An LPG release may occur due to external events and the consequence could be catastrophic failure or leak. The related external events are listed as follows:

- Earthquake;
- Aircraft crash;
- Car crash;
- Landslide;
- Severe environmental events;
- Lightning strike;
- Dropped object;
- Subsidence; and
- External fire.

4.3 Safety Provisions

4.3.1 Overview

Various safety provisions are installed in an LPG filling station in accordance with the Code of Practice for Hong Kong LPG Industry published by EMSD. These provisions can act in different combinations to prevent or mitigate the hazards due to an accidental LPG release.

4.3.2 Isolation System

The following safety provisions are provided on LPG road tanker and in the filling station to prevent uncontrolled release of LPG:

- **Non-return valve** installed on the LPG inlet pipework prevents back flow from the LPG storage vessel;
- **Excess flow valves** installed at the tanker, storage vessel and the dispenser stop the liquid flow when a large release occurs (e.g. guillotine failure of the pipe / hose);
- **Breakaway coupling** prevents LPG spillage due to road tanker/vehicle drive-away while the hose is still connected during unloading / refueling;
- **Double-check filler valve** installed at the LPG filling point prevents the release from the storage vessel. The design of the valve is essentially two non-return valves in series;
- **Pressure relief valve** installed on the LPG road tanker and LPG storage vessel protects against excessive pressure build-up due to overfilling or over-heating by fire;
- **Manual isolation valves** are installed on the LPG road tanker, storage vessel, dispensers and pipework for the operators / drivers to isolate the LPG installations in case of failure or for maintenance operation; and
- **Emergency shutdown (ESD) system** on the LPG storage vessel and LPG road tanker isolates the vessel / tanker and stops unloading operation or LPG supply to dispensers when activated that shown in **Figure 8**.

4.3.3 Firefighting / Fire Protection

The follow detection and firefighting systems are implemented on LPG road tanker and in the filling station to mitigate the hazards of accidental LPG release:

- **Leak detection system with alarm** is installed near the LPG filling point, LPG storage vessel, LPG dispensers and the office. Alarm will be raised upon detection of a flammable vapour cloud;
- **Chartek coating** on the LPG road tanker gives a protection and prevents formation of hot spots for at least 30 minutes in case of jet fire impingement [2]. The coating can prevent formation of hot spots on the LPG road tanker upon jet fire impingement, which induces thermal weakening of the LPG road tanker wall and leads to a boiling liquid expanding vapour explosion (BLEVE) event;
- **Fire service protection system** includes fire extinguishers, sand buckets and fire hydrant provided for general firefighting uses and also a water spray system which is automatically activated by leak alarm detection system as well as the manual push

handle. Fire brigade will be available within a few minutes upon an emergency call in case of fire;

- **Water spray system** can be automatically activated by the leak detection system as well as the manual push handle in case of fire;
- **Dry powder fire extinguishers, sand buckets and fire hydrant** are provided for general firefighting uses;
- **Emergency plans** are developed by the operator of LPG cum Petrol Filling Station which are formulated in accordance with the Code of Practice in Hong Kong LPG Industry;
- **Fire service** is available within a few minutes upon an emergency call in case of fire. BLEVE events could be prevented by effective firefighting measures by the well-trained firefighters

4.4 Escalation

Escalation refers to knock-on effect from a fire event. Hazard that can lead escalation include:

- Jet fire impinging on the road tanker; and
- Pool fires engulfing the road tanker.

4.4.1 Jet Fire Impingement

When jet fire impinges on the LPG road tanker over a period of time, it may cause the formation of hot spots on the LPG road tanker wall and subsequent structural failure leading to fire escalation to a Boiling Liquid Expanding Vapor Explosion (BLEVE) event. Road tanker BLEVE due to jet fire impingement is considered credible when:

- LPG release is failed to be isolated;
- Jet fire impinges in the direction of LPG road tanker; and
- Fire-fighting system are ineffective.

4.4.2 Pool Fire Engulfment

Pool fire may be possible in LPG cum petrol filling station in case of release of petrol from dispenser, tanker or underground storage vessel. Considering that petrol pool fires are more conventional in nature and are likely to be brought under control in short period of time. Road tanker BLEVE due to petrol pool fire engulfment in the LPG cum petrol filling station is not considered credible.

4.5 Outcome of an Accident LPG Release

The following outcomes could result from an accidental LPG release:

- Jet fire;
- Flash fire;

- Vapour cloud explosion (VCE);
- Fireball; and
- BLEVE.

Catastrophic failure of the LPG road tankers may lead to a fireball, flash fire or VCE. Potential fire escalation to a BLEVE event is considered if a jet fire impinges on LPG road tanker over a period of time, causing the formation of hot spots on LPG road tanker wall and subsequent structural failure.

The LPG storage vessels are buried underground in a concrete compartment filled with washed sand. Fireball and BLEVE are considered unlikely for underground LPG storage vessel.

A partial failure (leak) in LPG storage vessel / LPG road tanker, pipework / flexible hose failure may cause jet fire, flash fire or VCE.

If there is no ignition source in LPG vapour cloud or along the migration path of cloud with wind, the LPG vapour cloud will dissipate and cause no hazardous impact.

4.6 LPG Release Scenarios Considered

Representative LPG accidental release scenarios considered in this study are summarized in **Table 6**.

Table 6 Accidental LPG Release Scenarios Considered

Equipment	Failure Type	Release Type	Potential Hazardous Outcomes
LPG storage vessel	Catastrophic failure	Instantaneous	Flash fire, VCE
	Partial failure (leak)	Continuous	Jet fire, flash fire, VCE
LPG road tanker	Catastrophic failure	Instantaneous	Fireball, flash fire, VCE
	Partial failure (leak)	Continuous	Jet fire, flash fire, VCE
Liquid-inlet pipework	Guillotine failure	Continuous	Jet fire, flash fire, VCE, BLEVE
	Leak	Continuous	Jet fire, flash fire, VCE
Liquid supply line to dispenser	Guillotine failure	Continuous	Jet fire, flash fire, VCE
	Leak	Continuous	Jet fire, flash fire
Dispenser	Guillotine failure	Continuous	Jet fire, flash fire
Flexible hose to storage vessel	Guillotine failure	Continuous	Jet fire, flash fire
	Leak	Continuous	Jet fire, flash fire
Flexible hose to vehicle	Guillotine failure	Continuous	Jet fire, flash fire
Submersible Pump Flange	Leak	Continuous	Jet fire, flash fire, VCE

4.7 Hazard of Petrol / Diesel Filling Facilities

Petrol / diesel underground storage vessels and dispensers are also installed at the LPG cum Petrol Filling Station. Unlike LPG (a pressurized liquid which flashes upon release), petrol is a flammable liquid under ambient conditions. It is a mixture of low molecular weight hydrocarbons (C5 to C10) with a boiling point in the range of 40 – 180°C. Petrol is categorized as Category 5 Class 1 DGs. It is more difficult to be ignited than LPG.

Diesel contains higher molecular weight compounds (C13 to C25) than petrol and is even less volatile. Its boiling point ranges from 220 – 350°C. Diesel is categorized as Category 5 Class 3 DGs. Given its high boiling point and flash point, diesel is relatively more difficult to ignite than petrol and LPG.

Spillage of petrol / diesel from the delivery tankers or the multi-product dispensers (MPDs) could form a liquid pool on the ground and a pool fire if ignited by an ignition source in the closed vicinity (e.g. a smoking driver). The pool fire could be quickly put out by fire extinguishers, or cutting out its supply by emergency shutdown / manual isolation. The fire impact is limited to the local area near the release source. Previous Kai Tak Development EIA study showed the offsite risk (in terms of potential loss of life (PLL)) imposed by the petrol / diesel filling facilities is two to three orders of magnitude lower than that imposed by the LPG filling facilities [11]. Thus, hazards from the petrol / diesel spillage are not further considered in this study.

5 FREQUENCY ASSESSMENT

5.1 Overview

A frequency assessment involves analysis of likelihood of LPG containment failure leading to an accidental LPG release and subsequent outcome probabilities. The initiating failure probabilities are estimated from the historical accident statistics, published failure data report, industrial testing results and expert judgment.

Base failure frequencies of LPG facilities (vessels, pipework, etc.) are derived from the initiating failure events by applying failure analysis techniques such as fault tree analysis. Occurrences of subsequent hazardous outcomes in an accident are estimated by event tree analysis, taking into account severity of the release event and surrounding environment.

5.2 Spontaneous Failure

5.2.1 LPG storage vessel failure

Storage vessel failure refers to cold catastrophic failure leading to instantaneous release of the whole inventory or cold partial failure causing a continuous leakage. Failure rates of 1.8×10^{-7} per vessel year and 5.0×10^{-6} per vessel year [2] are adopted for cold catastrophic and partial failures, respectively as shown in **Table 7**. The vessel is assumed to be stress-relieved and 100% radiograph tested.

Table 7 Failure of LPG Storage Vessel

Item	Failure probability
Cold catastrophic failure	1.8×10^{-7} per vessel per year
Cold partial failure	5.0×10^{-6} per vessel per year

5.2.2 LPG road tanker failure

LPG road tanker can be regarded as a mobile LPG storage vessel. The cold spontaneous failure rate for LPG road tankers could be higher than for a fixed storage vessel. This is because of stresses experienced by the road tanker due to vibration during transportation, and cyclic loading associated with filling/unloading of the road tanker. The catastrophic and partial failure probabilities of an LPG road tanker are taken as 2.0×10^{-6} and 5.0×10^{-6} per year [2], respectively as shown in **Table 8**.

Table 8 Failure of LPG Road Tanker

Item	Failure probability
Cold catastrophic failure	2.0×10^{-6} per vessel per year
Cold partial failure	5.0×10^{-6} per vessel per year

5.2.3 Pipework failure

Failure of LPG pipework can be guillotine failure (full bore rupture) and partial failure (leak from pipe cracks). The generic guillotine failure rate of LPG pipework is taken as 1.0×10^{-6} per meter per year [2]. The rate of partial failure (equivalent to 10% pipe diameter) is taken as 3.3 times of the guillotine failure rate [9], i.e. 3.3×10^{-6} per meter per year as shown in **Table 9**.

Table 9 Failure of Pipework

Item	Failure probability
Guillotine failure	1.0×10^{-6} per metre per year
Partial failure	3.3×10^{-6} per metre per year

The failure of pipework may result in uncontrolled continuous release of LPG, if and only if, isolation fails, i.e. simultaneous failure of safety equipment (non-return valve, excess flow valve and ESD valve) and manual shut-off valves.

5.2.4 Dispenser failure

LPG from the storage vessel is pumped to the dispenser for vehicle refueling. Typical dispenser is a metering device consisting of a hose with self-sealing connector, four ball valves (with two flanges for each valve) and a certain length of rigid pipework. A schematic diagram of a typical LPG dispenser is illustrated in **Figure 9**.

As each LPG dispenser in the filling station has 2 nozzles instead, it is assumed to have an additional metering device and 2 ball valves for the connection of additional nozzle. Failure of the dispenser is estimated to be 1.2×10^{-4} per year by 'Parts Count' method as illustrated in **Table 10**. The pipework in the dispenser is assumed to have a diameter of 20 mm. Only significant leak is considered in the assessment.

Table 10 Determination of Dispenser Failure Frequency

Item	Quantity	Base failure rate, per year or per m.year	Fraction of significant leak (>0.2 D)	Failure rate, per year
Pipe ⁽¹⁾	2m	2.5×10^{-5}	15%	7.5×10^{-6}
Ball valve ⁽²⁾	6 no.	8.8×10^{-5}	6%	3.2×10^{-5}
Flange ⁽¹⁾	16 no.	5.0×10^{-6}	100%	8.0×10^{-5}
Total				1.2×10^{-4}

Note:

(1) Reference to HSE onshore [12].

(2) Reference to Lees [13] and E&P forum [14].

5.2.5 Flexible hose failure

Cold spontaneous failure of flexible hose may occur during the road tanker unloading or vehicle refueling operations. Likelihood of a guillotine failure is taken as 9.0×10^{-8} per hour [2]. With average times of 2 hours for road tanker unloading operation and 5 minutes for LPG vehicle refueling operation, the guillotine failure rates of the flexible hose are estimated

as 1.8×10^{-7} per road tanker unloading operation and 7.5×10^{-9} per vehicle refueling operation as shown in **Table 11**.

Table 11 Failure of Pipework

Item	Failure probability
Guillotine failure of the unloading flexible hose	1.8×10^{-7} per operation
Guillotine failure rate of the flexible hose for vehicle refueling	7.5×10^{-9} per visit

Similar to pipework failure, the frequency of partial failure of flexible hose is assumed to be 3.3 times the guillotine failure rate.

5.2.6 Release from Submersible Pump Flange

The submersible pump flange may leak due to fitting arrangement. Failure frequency of 5.0×10^{-6} per year is applied to the study [12].

5.2.7 Drain Valve Failure

Leakage from drain valve may occur if the drain valve is left open due to human error. Drain valve only operates when the LPG is abnormally contaminated and LPG vessel is emptied for maintenance. There is no operation of the drain valve during normal operation of the LPG cum petrol filling station. Therefore, the likelihood of release from the drain valve is negligible and not considered in the study.

5.3 Loading Operation Failure

5.3.1 Hose misconnection error

A misconnection error may occur if the hose is improperly connected to the filling point, including failure to open manual isolation valve. A failure rate of 3×10^{-5} per operation [2] is adopted. It is assumed that such error results in hose coming completely apart, leading to a full-bore release. Small leaks will be rectified instantaneously by the tanker driver or his assistant.

5.3.2 Hose disconnection error (during tanker unloading)

Hose disconnection error refers to inadvertently disconnecting the filling hose during the unloading operation, which requires a complete disregard of normal operating procedures, as well as the failure to re-tightening the coupling immediately upon loosening it. A gross human error of 2×10^{-6} per operation [2] is adopted in the analysis.

5.3.3 Road tanker drive-away error

A drive-away error may occur due to repositioning of the truck during delivery or inadvertent drive-away before completion of replenishment. The outcome of this failure matches those of hose misconnection, i.e. full-bore release. Repositioning during delivery is deemed remote because there is a dedicated unloading bay in the LPG filling station. The driver and his assistant are responsible for monitoring the unloading process during replenishment. Thus, the probability of drive-away error before operation completion is deemed very low and a failure rate of 4×10^{-6} per operation [2] is adopted.

5.3.4 Road tanker impact onto LPG facilities

The road tanker may strike LPG installation during manoeuvring, causing damage to the LPG installation or road tanker. A likelihood of 1.5×10^{-4} per operation [2] is adopted for this

human error. In view of the slow speed of road tanker during manoeuvring to its unloading bay and the side and rear end protection LPG road tanker, a release from the road tanker due to slight impact is considered remote.

The probability of damaging the filling pipework is considered very low as it is protected by a steel framework to minimize the chance and energy of direct tanker impact on the pipework. A release from the damaged pipework may ensue only if the driver neglects his duty to check the pipework integrity and possible leakage before unloading starts.

5.3.5 Road tanker collision by other vehicles during unloading

The LPG road tanker is parked in a designated unloading bay of the LPG filling station. Warning traffic cones should be placed around the LPG road tanker, forming an area with limited access during unloading operation. The collision by other vehicles to an unloading road tanker is considered very unlikely. Nevertheless, a frequency of 1.0×10^{-8} per operation is adopted [2].

5.3.6 Damage due to tanker / vehicle impact

Compared with normal road accidents, inadvertent impact by tanker / vehicle to the LPG facilities is deemed to be a low speed / momentum collision due to provision of speed limit, sufficient lighting, well-maintained concrete floor, warning signage, and supervision of working staff, etc. at the LPG filling station. Mostly it will cause slight damage, which is not potential to result in an uncontrolled LPG release.

As mentioned in **Section 5.3.4**, road tanker and inlet pipework are equipped with side / rear protection and steel framework, preventing impact to the LPG installation from vehicle collision. Thus, vehicle collision to cause tanker / inlet pipework failure are unlikely. The probabilities of vehicle impact to cause LPG facilities failure are estimated from Road Traffic Accident Statistics from the Transport Department [15], as tabulated in **Table 12**.

The statistics reported 12% (take 20% in the after-mentioned calculation) was serious collision and 1% was fatal collision. Assuming fatal accidents would have the potential to cause catastrophic rupture of the tanker or guillotine failure of the LPG pipework, and serious accidents would have the potential to cause leakage of the tanker / pipework, a modification factor of 0.5 is conservatively applied account for the safety provisions at the filling station. In considering the steel frame protection of the liquid-inlet pipework at the LPG filling point, a modification factor of 0.1 is applied.

Table 12 Road Traffic Accidents by Severity (2016 - 2020)

	2016	2017	2018	2019	2020	Sum	% Total
Fatal	129	104	107	107	96	543	1%
Serious	2 379	2 070	1 682	1 831	1 912	9 874	12%
Slight	13 591	13 551	14 146	14 164	13 290	68 742	87%
Total	16 099	15 725	15 935	16 102	15 298	79 159	100%

Table 13 Probabilities of Vehicle Impact to Cause Loss of Containment

Events Related to Vehicle Impact	Base Probability Assumed	Reduction Factor	Probability Adopted
Probability of sufficient vehicle impact energy to cause tanker catastrophic failure	0.01	0.5	0.005

Events Related to Vehicle Impact	Base Probability Assumed	Reduction Factor	Probability Adopted
Probability of sufficient vehicle impact energy to cause tanker partial failure	0.2	0.5	0.1
Probability of sufficient tanker impact energy to cause guillotine failure of the inlet pipeline	0.01	0.1	0.001
Probability of sufficient tanker impact energy to cause partial failure of the inlet pipeline	0.2	0.1	0.02
Probability of sufficient vehicle impact energy to cause dispenser damage	0.2	0.5	0.1
Probability of sufficient vehicle impact energy to cause hose damage	0.2	0.5	0.1

5.3.7 Storage vessel overfilling / over-pressurization

As usual on-site LPG unloading operation, storage vessel will only be filled up to 85% of total capacity. The filling in progress should be monitored by the tanker driver and his assistant through the ullage gauge at all time. The possibility of overfilling is deemed low and is taken to be 2×10^{-2} per operation [2]. Even if an overfilling occurs, an LPG release due to over-pressurization will only happen if the following human error or failure of safety provisions take place:

- Driver and his assistant fail to activate ESD system and close manual shut-off valve;
- Failure of truck pump over-pressurization protection system; and
- Failure of pressure relief valve on the storage vessel

Considering the design pressure of the LPG storage vessel is 17.5 barg (over 3 times of the operating pressure of 5.5 barg), the outcome of storage vessel overfilling / over pressurization is most probably leakages from vessel connections. Nevertheless, catastrophic rupture of the vessel may not be ruled out. An accident review of historical records (1950 – 2006) in the MHIDAS database on vessel overfilling was performed. It was identified that 3 in 123 incidents led to rupture of the storage vessel (records bolded), which accounted for about 2.4% of all incidents. In this assessment, probability of catastrophic rupture is assumed as 2.5%.

5.3.8 Loading pipework over-pressurization

Over-pressurization of loading pipework may occur possibly when the driver forgets to open all valves on LPG filling line to the storage vessel during unloading operation. The potential scenario of over-pressurization of loading pipework is much lower probability than the “misconnection” error event (which will lead to a similar outcome) as it required the simultaneously malfunction of over-pressurization protection system of road tanker, failure of isolation system such as excess flow valve, emergency stop system and closure of manual valve(s). Therefore, this factor is already considered in the misconnection error.

5.3.9 Human Error

In case of accidental failure, it is highly possible that onsite staff cannot rectify the problem before and after any hazard event occurs. Two competent persons (the driver and the assistant) are engaged in the unloading process and stayed in close vicinity to the road tanker and the filling point during the unloading. They are suitably trained in unloading operation, first aid, firefighting and emergency response, and equipped with necessary personal protection equipment (PPE). Nevertheless, they might make errors in a series of operations. The probability is taken as 0.01 for error in a routine operation where care is required from “A Guide to Practical Human Reliability Assessment” [16].

Upon an accidental LPG release, alarm will be raised by the leak detection system, the onsite working staff should activate the ESD system to isolate the LPG installations. The human error to start the ESD system under an emergency situation is taken as 0.1 for failure to act correctly at a stressful emergency situation [16].

Probability of human error becomes much higher under emergency situations when a hazard event occurs. The chance of failure to rectify the problem under extreme stresses is 0.3 for general rate of errors involving very high stress level [16]. Nevertheless, a more conservative probability of 0.5 [2] is adopted in this analysis considering the operators are facing the dangers from an LPG release.

The failure probability of road tanker unloading/vehicle refueling operation are illustrated in **Table 14**.

Table 14 Failure of Road Tanker Unloading / Vehicle Refueling Operation

Item	Failure probability
Hose misconnection error	2.0×10^{-6} per operation
Hose disconnection error	4.0×10^{-6} per operation
LPG road tanker / vehicle drive-away error	4.0×10^{-6} per operation
LPG road tanker impact into LPG facilities	1.5×10^{-4} per operation
LPG road tanker collision by other vehicles during unloading	1.0×10^{-8} per operation
Vessel catastrophic failure due to over-pressurization	2.0×10^{-2} per operation
Human error in a routine operation	0.01 per demand
Human error in a stressful emergency situation	0.1 per demand
Human error involving very high stress levels	0.5 per demand

5.3.10 Failure of safety provisions

Hazards from an accidental LPG release can be prevented or mitigated by the safety provisions at LPG cum Petrol Filling Station. The failure probabilities of safety provisions are shown in **Table 15** based on previous “QRA Methodology for LPG Installations” [2] and Lees [13].

Table 15 Failure of Safety Provisions

Item	Failure probability	Remark
Excess Flow Valve (LPG vessel)	0.13 per demand	

Item	Failure probability	Remark
Excess Flow Valve (LPG road tanker)	0.013 per demand	
Excess Flow Valve (LPG dispenser)	0.013 per demand	Same one-year test interval as the LPG road tanker
Non-Return Valve	0.013 per demand	
ESD Trip System Fails	1×10^{-4} per demand	
Breakaway Coupling	0.013 per demand	
Double-Check Filler Valve	2.6×10^{-3} per demand	
Water Spray System	0.015 per demand	
Chartek Coating under Jet Fire Attack	0.1 per demand	
Fire Service to Prevent BLEVE	0.5 per demand	
Pressure Relief Valve	0.01 per demand	PFD ranges from 1×10^{-2} to 1×10^{-4} per demand from Lees
Truck Pump Over-pressure Protection System (LPG Road Tanker)	1×10^{-4} per demand	Emergency protection

Note:

(1) Unless other specified, the failure probabilities are adopted from QRA Methodology for LPG Installations [2].

5.4 External Events

5.4.1 Earthquake

Hong Kong is situated on the southern coast of China where is not located within the seismic belt. According to the Hong Kong Observatory, earthquake occurs in circum-Pacific seismic belt which passes through Taiwan and Philippines are too far away to affect Hong Kong significantly.

Buildings and infrastructures in Hong Kong are designed to withstand earthquakes up to Modified Mercalli Intensity (MMI) VII. It is estimated that MMI VIII is of sufficient intensity to cause damage to specially designed structures. The chance of earthquake occurrence at MMI VIII or higher in Hong Kong is very low comparing to other regions and is estimated to be 1.0×10^{-5} per year [2]. It is assumed that such earthquake may result in LPG storage vessel leakage and pipework rupture at a probability of 0.01 [17].

5.4.2 Aircraft crash

The LPG cum petrol filling station is located from the Hong Kong International Airport with a distance of over 15 km. The frequency of aircraft crash is estimated using the HSE methodology [18]. The number of flights from 2010 to 2019 is extracted from the Civil Aviation Department [19], and projected to 2027. The calculated impact frequency due to aircraft crash is 1.53×10^{-10} per year which much lower than the other failure frequencies considered in this study.

5.4.3 Helicopter crash

Helicopter accidents during take-off and landings are confined to a small area around the helipad, extending up to 200 m only from the center of the helipad. Since there is no helicopter landing pad within 200 m of the LPG cum petrol filling station, risk due to helicopter crash is not further considered in the assessment.

5.4.4 Car crash

The LPG cum petrol filling station is protected by beam barriers. Speed restriction and warning signage are imposed within the station. It is considered that car crash on the public road impacts negligible threat to LPG cum petrol filling station.

5.4.5 Landslide

According to the site survey, no slope is situated near the LPG cum petrol filling station. Therefore, risk due to landslide on the LPG cum petrol filling station is not considered in this analysis.

5.4.6 Severe environmental events

Loss of containment due to severe environmental events such as typhoon or storm surge (large scale tidal) is considered unlikely. The LPG installations are designed safe to withstand the wind load of typhoon. The site is not threatened by storm surge. Therefore, this risk is deemed unlikely and not further considered in the analysis.

5.4.7 Lightning strike

The frequency of lightning strike on a properly protected building structure is extremely low in Hong Kong. Risk resulting from lightning strike on facilities in the LPG cum petrol filling station is extremely low. It is deemed that the chance of lightning strike is remote and therefore not further considered in this assessment.

5.4.8 Dropped object

The LPG cum petrol filling station is sheltered by roof. Thus, it is considered that the threat from dropped objects to LPG cum petrol filling station is insignificant and not further assessed in this analysis.

5.4.9 Subsidence

Excessive subsidence may lead to failure of structure and ultimately loss of containment scenario. However, subsidence is usually slow in movement and such movement can be observed and remedial action can be taken in time. Besides, ground condition of the LPG cum petrol filling station is stable. Risk from subsidence is therefore deemed remote and not further considered.

5.4.10 External fire

External fire refers to the occurrence of a fire event outside LPG cum petrol filling station which may lead to the failure of the LPG facilities. This might be expected from road accidents on the public road probably involving car crash or engine failures (e.g. overheating during hot summer). The resulting fire is usually small, only affecting a few metres around the car, and could be quickly extinguished using fire extinguishers or by the fire brigade. The key facilities inside are further protected by concrete building structures

(e.g. the LPG storage vessel compartment) and activation of emergency shutdown system for potential external fire threat. The risk of escalation of external fire to the LPG facilities is deemed remote and not further considered in the analysis.

5.5 Base Failure Frequencies

Base failure frequencies of hazardous events are derived by fault tree analysis (attached in **Appendix A**) from the initiating failures. The results are summarized in **Table 16**.

Table 16 Base failure frequencies of hazardous events from Esso LPG cum Petrol Filling Station

Hazardous Event	Inventory	Time Fraction	ESSO		Event Tree
			Original Frequency (per year)	Factored Frequency (per year)	
Cold catastrophic failure of LPG storage vessel (Spontaneous and External Events)	100%	0.2	2.19E-07	3.60E-08	ETA1
	60%	0.8		1.44E-07	
Cold catastrophic failure of LPG storage vessel (Unloading)	100%	1	3.88E-08	3.88E-08	
Cold partial failure of LPG storage vessel (Spontaneous and External Events)	100%	0.2	6.61E-06	1.02E-06	ETA2
	60%	0.8		4.08E-06	
Cold partial failure of LPG storage vessel (Unloading)	100%	1	1.51E-06	1.51E-06	
Cold catastrophic failure of LPG road tanker	100%	0.2	3.93E-07	7.85E-08	ETA3
	50%	0.8		3.14E-07	
Cold partial failure of LPG road tanker	100%	0.2	1.66E-06	3.32E-07	ETA4
	50%	0.8		1.33E-06	
Guillotine failure of liquid-inlet pipework (rupture)	100%	0.2	2.30E-08	4.60E-09	ETA5
	60%	0.8		1.84E-08	
Partial failure of liquid-inlet pipework (leak)	100%	0.2	2.65E-06	5.31E-07	ETA6
	60%	0.8		2.12E-06	
Guillotine failure of liquid supply line to dispenser (rupture)	100%	0.2	2.95E-07	5.90E-08	ETA7
	60%	0.8		2.36E-07	
Partial failure of liquid supply line to dispenser (leak)	100%	0.2	4.95E-06	9.91E-07	ETA8
	60%	0.8		3.96E-06	
Failure of dispenser	100%	0.2	7.31E-06	1.46E-06	ETA9
	50%	0.8		5.85E-06	
Guillotine failure of flexible hose to vessel (rupture)	100%	0.2	1.64E-05	3.28E-06	ETA5
	60%	0.8		1.31E-05	

Hazardous Event	Inventory	Time Fraction	ESSO		Event Tree
			Original Frequency (per year)	Factored Frequency (per year)	
Partial failure of flexible hose to vessel (leak)	100%	0.2	4.61E-05	9.22E-06	ETA6
	60%	0.8		3.69E-05	
Failure of flexible hose to vehicles (rupture)	100%	0.2	1.96E-04	3.91E-05	ETA9
	60%	0.8		1.57E-04	
Submersible Pump Flange (leak)	100%	0.2	5.00E-06	1.00E-06	ETA7
	50%	0.8		4.00E-06	
BLEVE of LPG road tanker (fire escalation)	100%	0.2	1.11E-08	2.22E-09	ETA5
	50%	0.8		8.87E-09	

5.6 Event Tree Analysis

Event tree analysis (ETA) is used to develop the evolution of a failure event from its initial release to the final outcome scenarios, namely jet fire, flash fire, fireball, etc. It depends on various factors such as release type (instantaneous or continuous), ignition sources and probabilities, and degree of congestion. Event trees are used to calculate the frequencies of hazardous outcome scenarios, as included in **Appendix B**.

5.6.1 Catastrophic Failure of LPG Storage Vessel / LPG Road Tanker

Immediate ignition is assumed as a probability of 0.3 for large releases following Cox, Lees and Ang [13], as shown in **Table 17**. The immediate ignition of instantaneous LPG release from LPG road tanker will result in a fireball. Regarding to LPG storage vessel installed underground in a sand-filled concrete compartment, the probability of a fireball is negligible and therefore its effect is not evaluated [7], flash fire is considered under this circumstance instead.

Table 17 Ignition Probabilities from Cox, Lees and Ang

Release Rate	Ignition Probability Rate	
	Gas Release	Liquid Release
Minor (<1 kg/s)	0.01	0.01
Major (1-50 kg/s)	0.07	0.03
Massive (>50 kg/s)	0.3	0.08

A probability of 0.5 is assigned to delayed ignition [13], which may produce a flash fire or VCE. The occurrence of VCE requires ignition of a dispersed gas cloud present in a confined or congested space. Given the relatively open nature of the surroundings of the LPG cum petrol filling station, an explosion probability of 0.2 is assumed in the analysis.

5.6.2 Leak from LPG Storage Vessel / LPG Road Tanker

A low probability of 0.07 is adopted for immediate ignition of partial failure (leak) of LPG storage vessel and road tankers [13]. Immediate ignition of a continuous pressurized release results in a jet fire. A probability of 0.5 is assigned to delayed ignition [13], which may produce a flash fire or VCE. Given the relatively open nature of the surroundings of the LPG cum petrol filling station, an explosion probability of 0.2 is assumed in the analysis.

5.6.3 Failure of Aboveground Pipe / Hose / Dispenser

Lower probabilities of 0.07 and 0.01 are adopted for immediate ignition of guillotine failure and partial failure (leak) of aboveground pipe / hose / dispenser, respectively [13]. Immediate ignition of a continuous pressurized release results in a jet fire. A probability of 0.5 is assigned to delayed ignition [13], which may produce a flash fire or VCE in case of guillotine failure or only flashfire in case of partial failure.

The chance of flame impingement is assumed as 1/6 for liquid inlet pipework and flexible hose of the road tanker [7]. A direction probability of 1/12 is assumed to the dispenser and the flexible filling hose to vehicle based on the layout. The residence time of LPG road tanker is also considered for fire impingement.

LPG road tankers are protected by a layer of Chartek coating, preventing the formation of hot spots. Credit is given to the passive Chartek coating protection on road tanker and water spray system and fire-fighting services in the filling station. The probability of coating

failure is assigned as 0.1 [2]. A failure rate of 1.5×10^{-2} per demand is used for water spray systems [2]. Consideration is also given to failure of fire services which may be ineffective in preventing a BLEVE, and the probability is assumed as 0.5 [2].

The underground LPG storage vessel is free from flame impingement.

5.6.4 Failure of Underground Pipe / Submersible Pump Flange

Ignition probabilities of underground pipe are taken similar to that of aboveground pipes. Ignition probabilities of release from submersible pump flange are taken similar to leak from storage vessel.

Jet release from underground installations is considered as vertical release. BLEVE due to jet fire impingement on the LPG road tanker wall is not considered in the failure scenarios of underground pipes and submersible pump flange.

6 CONSEQUENCE ANALYSIS

6.1 Overview

The consequence assessment is conducted in two steps:

- **Source term modelling** -- to determine the release rate, duration and quantity; and
- **Physical effects modelling** -- to determine the gas dispersion, fire and explosion effect zones based on the output of the source term modelling. The impact of the hazardous outcomes on the surrounding population would be analyzed.

In this study, the simulation software – The simulation software SAFETI 8.6 developed by Det Norske Veritas (DNV) was employed to calculate the hazardous release and the effects zones.

6.2 Source Term Modelling

LPG is modelled as a mixture of 30% propane and 70% butane. LPG stored in a tank is pressurized to medium pressure to reach an equilibrium state between the liquid and vapour phases, depending on the ambient temperature.

The maximum capacity of the LPG storage vessel is about 31.5kL (equivalent to 17.6 tonnes LPG) in ESSO LPG cum Petrol Filling Station. The vessel is assumed nominally at full load inventory (i.e. 85% of maximum capacity, equivalent to 15 tonnes) for 20% of the time and at low inventory level with 60% of full load inventory (equivalent to 9 tonnes) for the rest of the time.

Road tankers are assumed to have a maximum capacity of 9 tonnes. The road tanker is modelled to have full inventory for 20% of the time and 50% of inventory for the remaining 80% of time. Instantaneous release of the whole inventory is assumed for catastrophic rupture of LPG tanks.

Instantaneous release of the whole inventory is assumed for the cases of catastrophic failure / rupture. Partial failure / leak will lead to a continuous release, in which, discharge rate is calculated by SAFETI based on the leak size, release temperature, release pressure and fluid phase. Duration of discharge is determined by discharge rate and total inventory.

6.3 Physical Effect Modelling

6.3.1 Gas Dispersion

LPG vaporizes rapidly and forms a vapour cloud upon release. Fire scenarios of different kinds may be developed in the presence of ignition sources in the proximity of an LPG release. If no ignition source exists, the vapour cloud will disperse downwind and will then be diluted to a concentration below its Lower Flammable Limit (LFL). In this case, the vapour cloud will become too lean to be ignited and will have no harmful effect.

The dispersion characteristics of the vapour cloud are influenced by meteorological conditions and material properties, such as density. The built-in UDM model in SAFETI 8.4 is used for the dispersion of vapour cloud following an accidental LPG release. The model takes various transition phases into account, from dense cloud dispersion to buoyant passive gas dispersion in both instantaneous and continuous releases.

6.3.2 Jet Fire

When flammable fluid stored under pressure releases from an orifice, it will lead to a flame jet (i.e. jet fire) if it is ignited immediately. The flame length is determined from the momentum of the release. If a jet fire impinges on another pressurized LPG storage container, thermal intrusion and heat radiation could boil liquid and induce over-pressurization and subsequent rupture of the container, causing a BLEVE.

6.3.3 Fireball and BLEVE

Immediate ignition of an instantaneous release of massive inventory inside a pressurized vessel will result in a fireball. A fireball is characterized by its high thermal radiation intensity and short duration time. The principal hazard of fireball arises from thermal radiation, which is not significantly influenced by weather, wind direction or source of ignition.

A BLEVE occurs as fire escalation event upon integrity failure from fire impingement. It has similar characteristics to a fireball and its physical effects are calculated as a fireball.

6.3.4 Thermal Radiation of Fires

The major hazard of a jet fire, pool fire or fireball is the flame and the thermal radiation. Persons caught in the flame zone are considered be fatally injured. Persons outside the flame zone are determined by lethal probability using the following Probit equation [9]:

$$Pr = -36.38 + 2.56 \ln Q^{4/3t}$$

where Q is the thermal radiation intensity in W/m² and t is the exposure time in seconds.

A building is assumed to offer protection to its occupants against hazards from fires. The protection factor is assumed to be 50% for indoor population within fireball radius [2].

6.3.5 Flash Fire

An LPG release will vaporize and form a vapour cloud. This cloud, if not ignited immediately, will move in the downwind direction, entraining air as it disperses and becomes diluted. A flash fire will occur if the vapour cloud is ignited at a concentration above its LFL.

Major hazards from flash fire are thermal radiation and direct flame contact. Because of the short duration of the flash combustion, the thermal radiation effect on persons is limited. Humans who are encompassed outdoor by the flash fire is considered be fatally injured. A fatality rate of unity is assumed for outdoor population, and 90% protection factor is assumed for indoor occupants.

6.3.6 Vapor Cloud Explosion

If the vapour cloud passes through a congested area (e.g. cluster of pipe racks, a confined space) and be ignited, the confinement will limit the expansion of the burning cloud, causing an explosion and damage to the surroundings by the resulting overpressure. In SAFETI, the hazardous effects are modelled by two concentric circular areas corresponding to heavy and light building damage, respectively. Fatality rates for persons outdoors and indoors are determined from the HSE method [19], CIA guidelines [20] and TNO Purple Book.

6.4 Hazard Impacts on Offsite Population

6.4.1 Worst Consequence Distance

Population in the vicinity of the LPG cum petrol filling station can be potentially affected by the hazardous events depending on the consequence distances. The affected distances of different hazardous events are simulated in SAFETI and the worst impact distances are summarized in **Table 18**.

Table 18 Summary of Worst Consequence Distances

Hazardous Event	Failure Scenario	Characteristics	Distance (m)
			ESSO
Fireball	Cold Catastrophic Failure of LPG storage vessel	Fireball radius	64.4
		Lift off height	128.7
BLEVE	BLEVE of LPG Road Tanker	Fireball radius	60.3
		Lift off height	120.6
Jet fire	Guillotine Failure of Liquid-Inlet Pipework	Flame length	31.9
		Thermal Radiation at 12.5kW/m ²	46.0
Flash fire	Cold Catastrophic Failure of LPG Road Tanker	Flash fire envelop at 100% LFL	156.1
	Cold catastrophic failure of LPG storage vessel (Unloading)	Flash fire envelop at 100% LFL	193.5

The worst consequence of flammable vapour cloud resulting from cold catastrophic failure of LPG vessel (unloading) may drift downwind up to 194m at high wind speeds though the vapour cloud is very likely to be ignited during its migration across ignition sources such as moving vehicles and various human activities. The LPG vapour cloud can reach up to 26m high in close proximity to the LPG Compound and gradually decrease when the vapour cloud drift downwind.

7 RISK ASSESSMENT

7.1 Risk Summation

Risk summation combines the estimation of the likelihood and consequence of hazardous event, as well as meteorological data and production in the hazard effect zones, to give a numerical measure of risks around the LPG cum petrol filling station. The risk analysis is conducted by the simulation software – SAFETI 8.6 developed by DNV and the outcome results are presented in terms of individual risk (as individual risk contours) and societal risk (as F-N curves or PLL). The risk outcomes are compared to the criteria set out in the risk guidelines, as specified in **Section 1.3**.

7.2 Results of Individual Risk

The individual risk contours of the LPG cum Petrol Filling Station are presented in **Figure 10**. Risk to the offsite population is lower than 1×10^{-5} per year and decreases at distances further away from the LPG cum Petrol Filling Station. Individual risk contours of the LPG cum petrol filling station are presented in **Figure 10**.

The individual risk at the Project Site is below 1×10^{-6} per year and therefore, in terms of individual risk, the criteria set in the Hong Kong Risk Guidelines are satisfied.

7.3 Results of Societal Risk

Societal risks in terms of F-N curves of the LPG cum petrol filling station is presented in **Figure 11**. Case 1 denotes the future year 2027 without the proposed development, while Case 2 denotes the future year 2027 with the proposed development. The F-N data are presented in **Table 19**.

The overall societal risks for both Case 1 and Case 2 lie within the ACCEPTABLE region, which meet with the criterion stipulated in the HKPSG. With an increase in population brought by the proposed development, the societal risks of the LPG cum petrol filling station increases slightly.

Table 19 F-N Data

No. of Fatality (N)	Frequency (per year)	
	Case 1 – Year 2027 without the proposed development	Case 2 – Year 2027 with the proposed development
1	5.80E-07	5.81E-07
2	2.58E-07	2.59E-07
3	2.30E-07	2.31E-07
4	2.24E-07	2.25E-07
5	2.22E-07	2.23E-07
6	1.93E-07	1.95E-07
8	1.65E-07	1.66E-07
10	1.58E-07	1.59E-07
12	1.10E-07	1.11E-07
15	9.20E-08	9.34E-08
20	7.56E-08	7.71E-08
25	5.90E-08	6.08E-08
30	5.06E-08	5.29E-08
40	4.25E-08	4.66E-08
50	3.65E-08	4.08E-08
60	2.94E-08	3.55E-08
80	1.80E-08	2.74E-08
90	1.57E-08	2.33E-08
100	1.27E-08	2.17E-08
120	7.77E-09	1.80E-08
150	3.65E-09	1.35E-08
200	6.90E-10	7.89E-09

No. of Fatality (N)	Frequency (per year)	
	Case 1 – Year 2027 without the proposed development	Case 2 – Year 2027 with the proposed development
250	2.07E-10	3.64E-09
300	2.74E-11	2.37E-09

Notes:

Values less than 1×10^{-9} per year are not shown in the figure of F-N curve

Societal risk can also be represented in the form of Potential Loss of Life (PLL). It expresses the risk to the population as a whole and for each scenario and its location. The PLL is an integrated measure of societal risk obtained by summing the product of each F-N pair:

$$PLL = f_1 N_1 + f_2 N_2 + \dots + f_n N_n$$

PLL values of the top 4 most significant contributors are shown in **Table 20**. With the additional population brought by the Proposed Development, the total PLL of ESSO LPG cum Petrol Filling Station is increased by 33.4%, from 6.19×10^{-6} no. of fatality per year to 8.26×10^{-6} no. of fatality per year.

Table 20 PLL Breakdown of Esso cum Petrol Filling Station

Case 1 – Year 2027 without the proposed development			Case 2 – Year 2027 with the proposed development		
Event	PLL (per year)	% of total PLL	Event	PLL (per year)	% of total PLL
Catastrophic Failure of Vessel	2.77E-06	44.7%	Catastrophic Failure of Vessel	3.98E-06	48.2%
Catastrophic Failure of Tanker	1.95E-06	31.5%	Catastrophic Failure of Tanker	2.04E-06	24.7%
Failure of Vessel during Unloading	1.19E-06	19.2%	Failure of Vessel during Unloading	1.95E-06	23.6%
Catastrophic Failure of AG Pipe	2.84E-07	4.6%	Catastrophic Failure of AG Pipe	2.84E-07	3.4%
Others	8.58E-10	0.0%	Others	8.58E-10	0.0%
Total PLL	6.19E-06	100%	Total PLL	8.26E-06	100%

8 Conclusion

This QRA has studied the risk impact of an LPG cum petrol filling station to the nearby proposed development at Lots 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, and 525 S.B RP in D.D. 122 and its surrounding population in the future year of 2027.

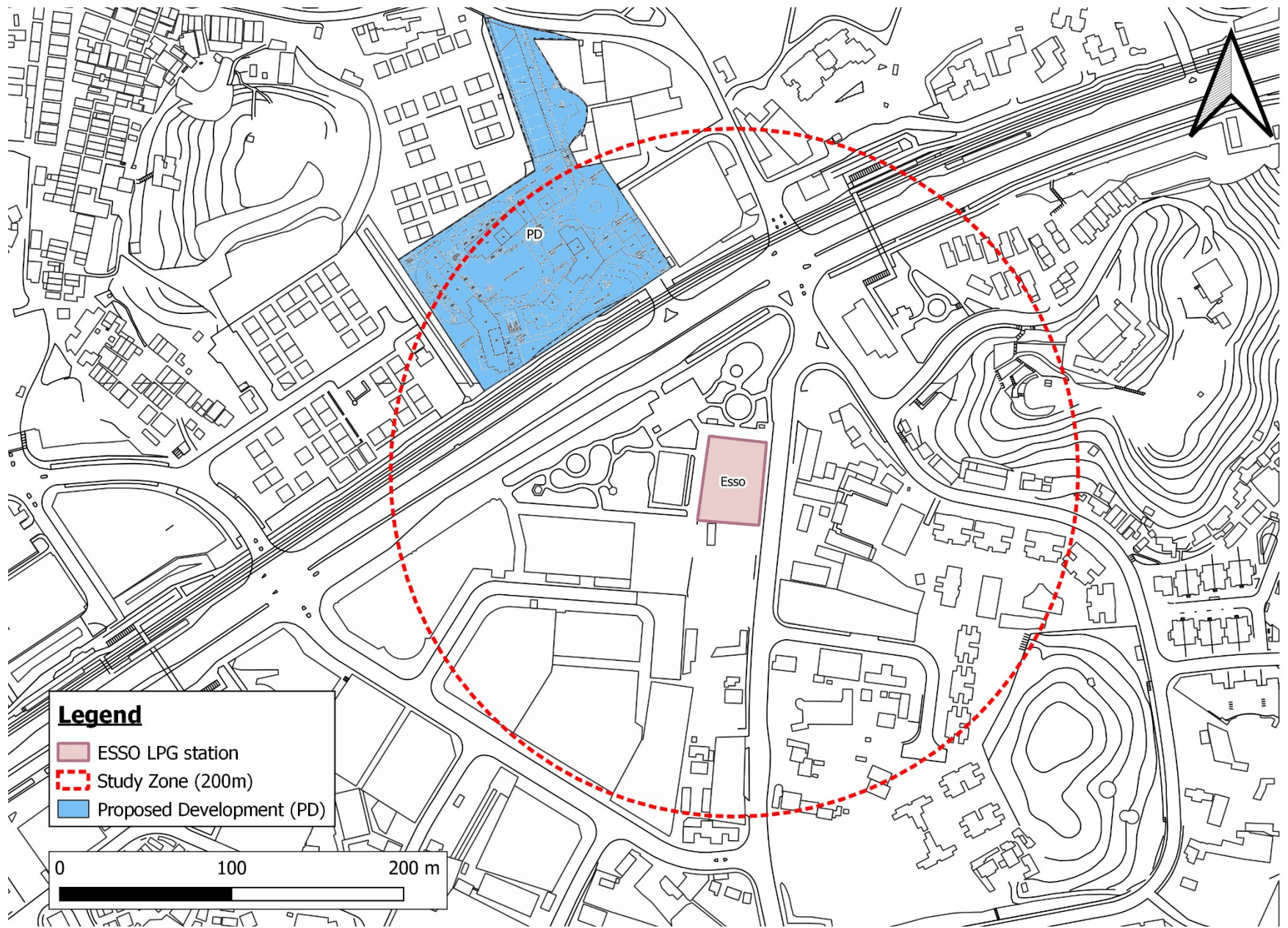
The results show that the proposed development would contribute slightly increased risk posed by the LPG cum Petrol Filling Station. The overall risk in terms of individual risk and societal risk by the increase of population due to the proposed development is in the ACCEPTABLE region. The criteria as set out in the Hong Kong Planning Standard and Guidelines have been satisfied. No limitation or constraint would be required to be imposed on the proposed development in related to the operation of the LPG cum petrol filling station.

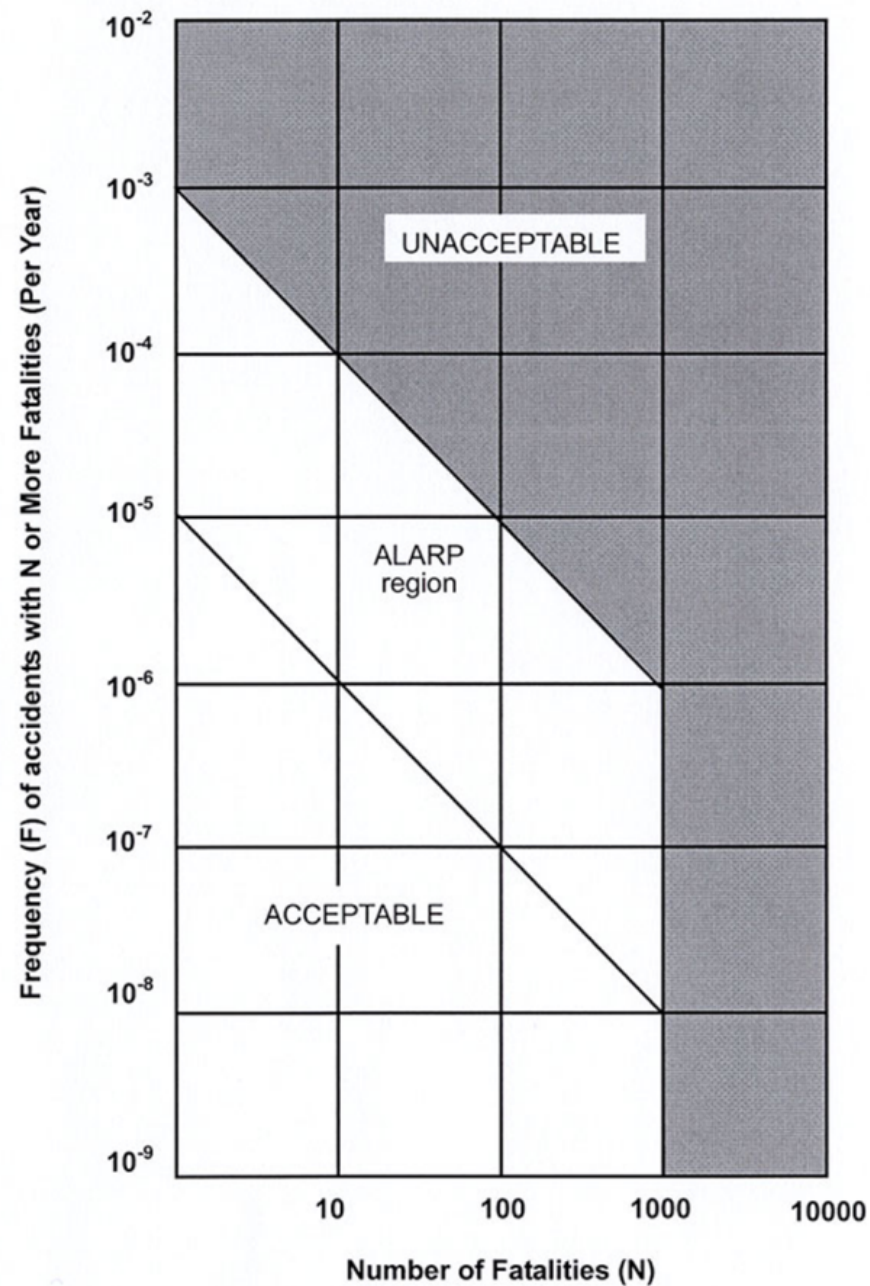
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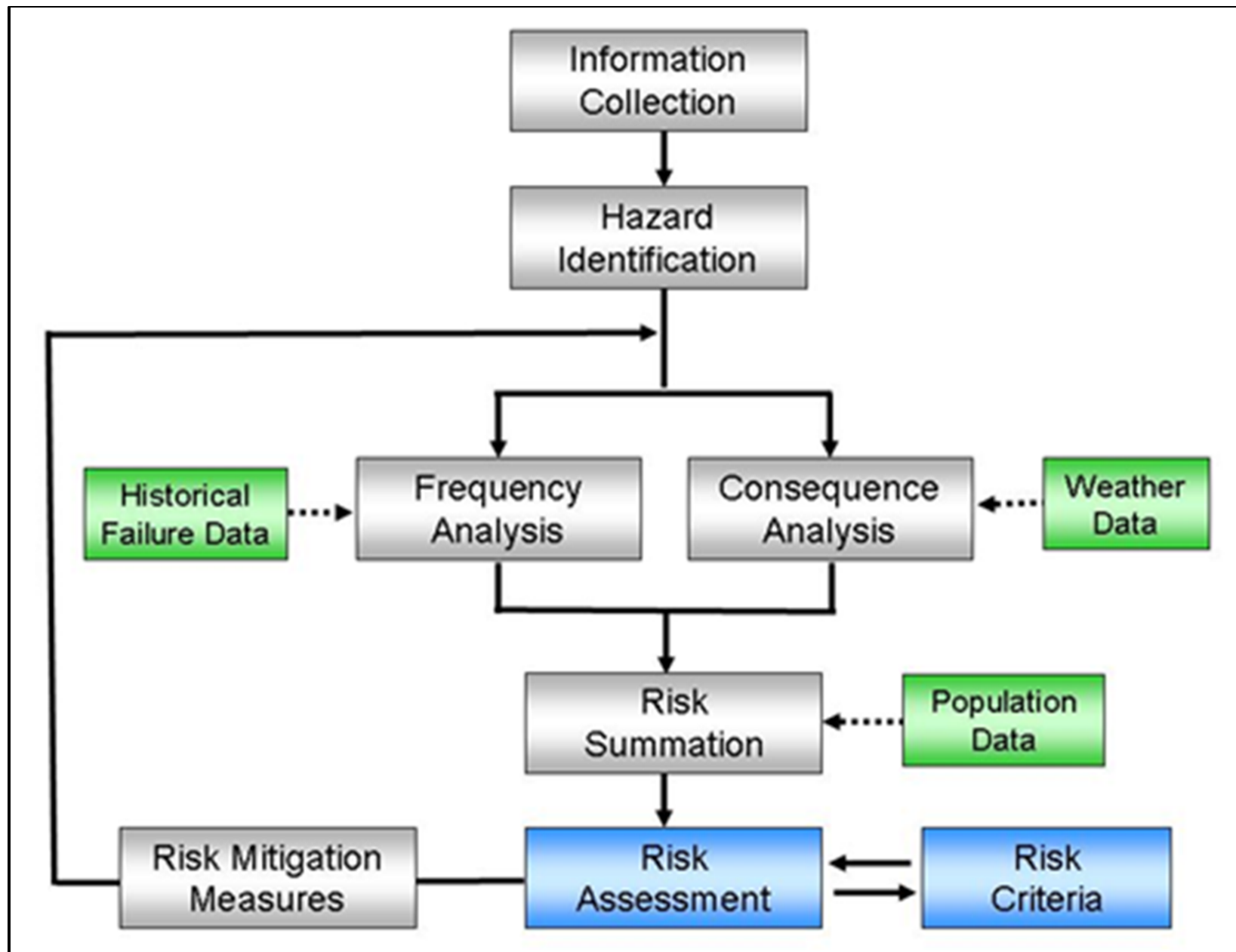
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Figures

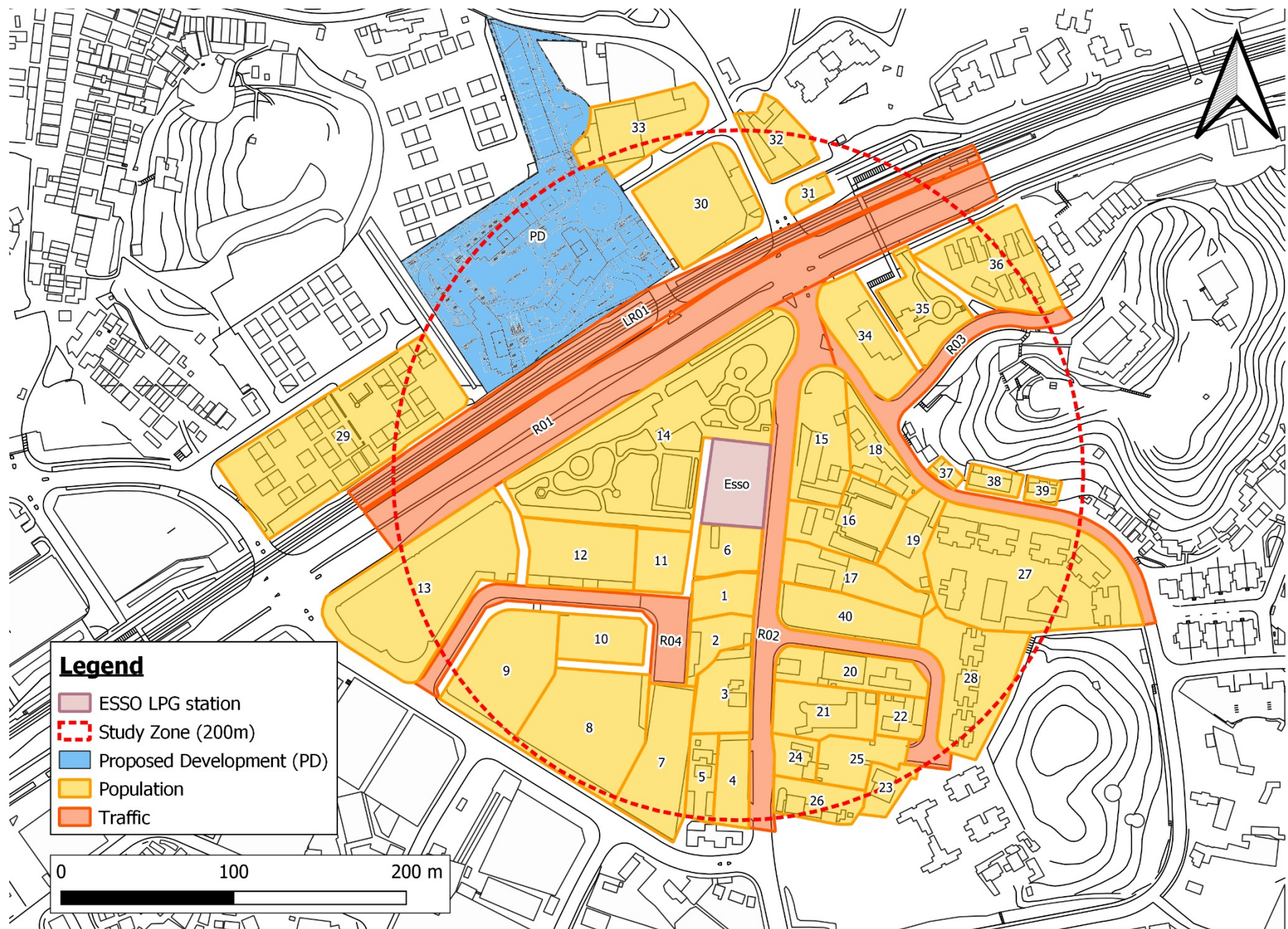


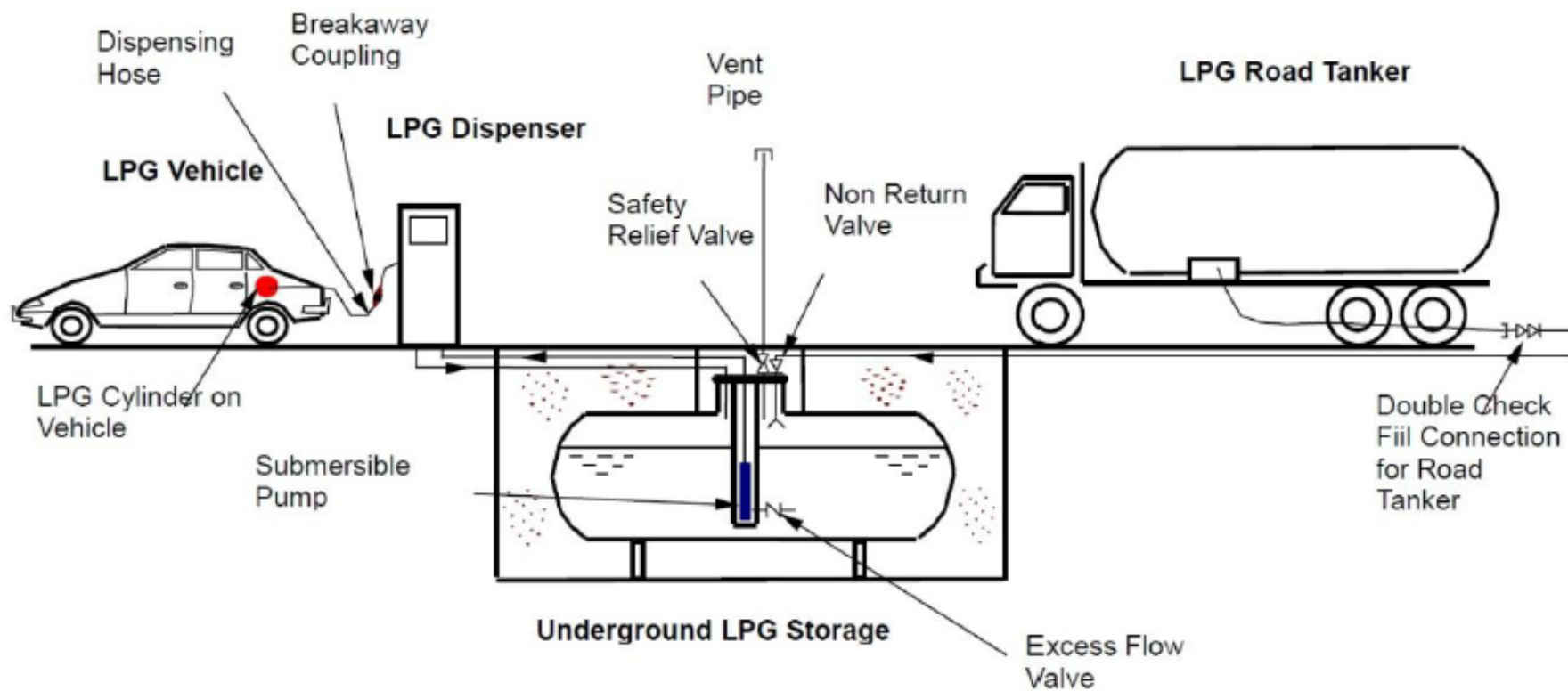






Esso LPG cum Petrol Filling Station



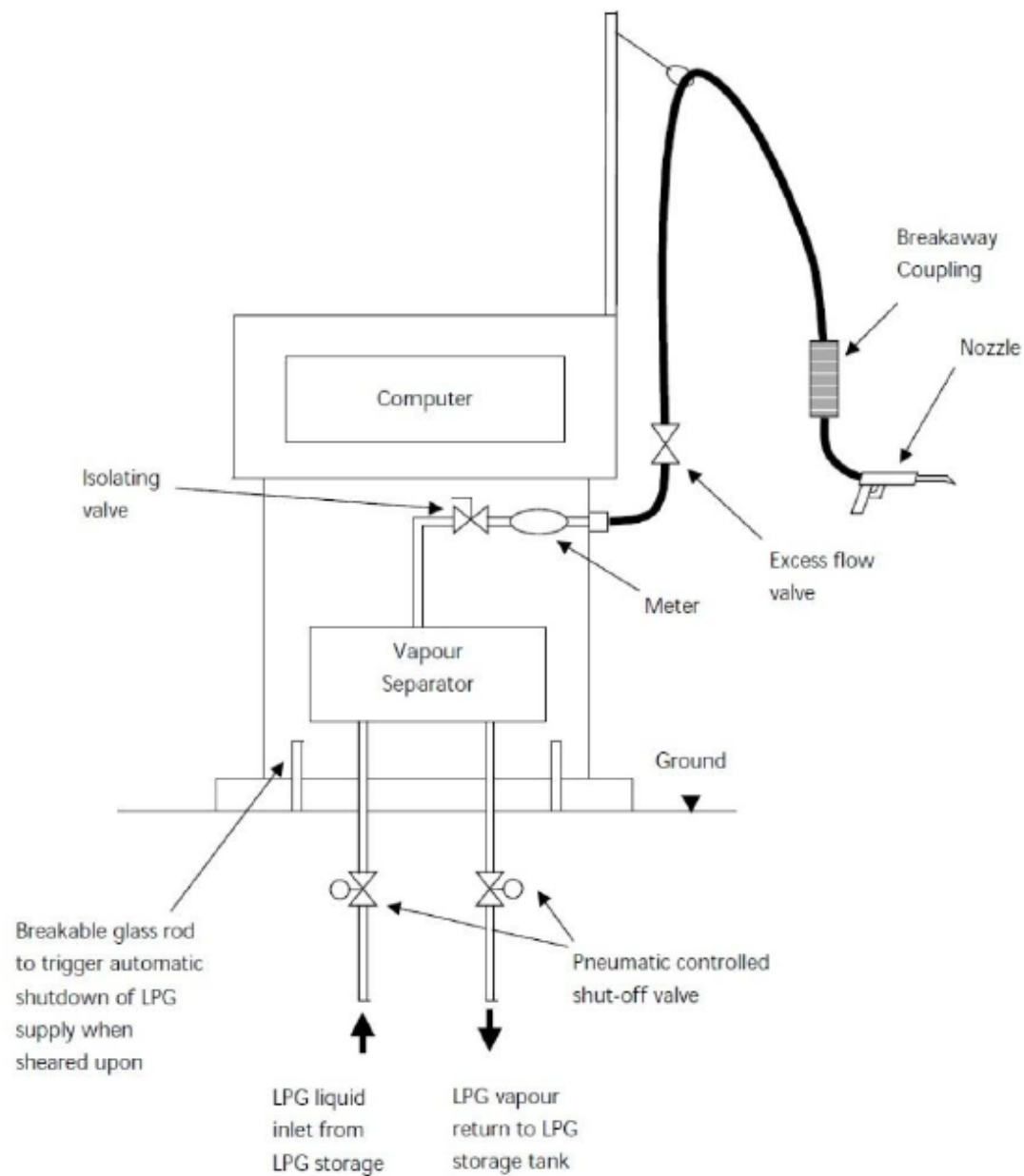


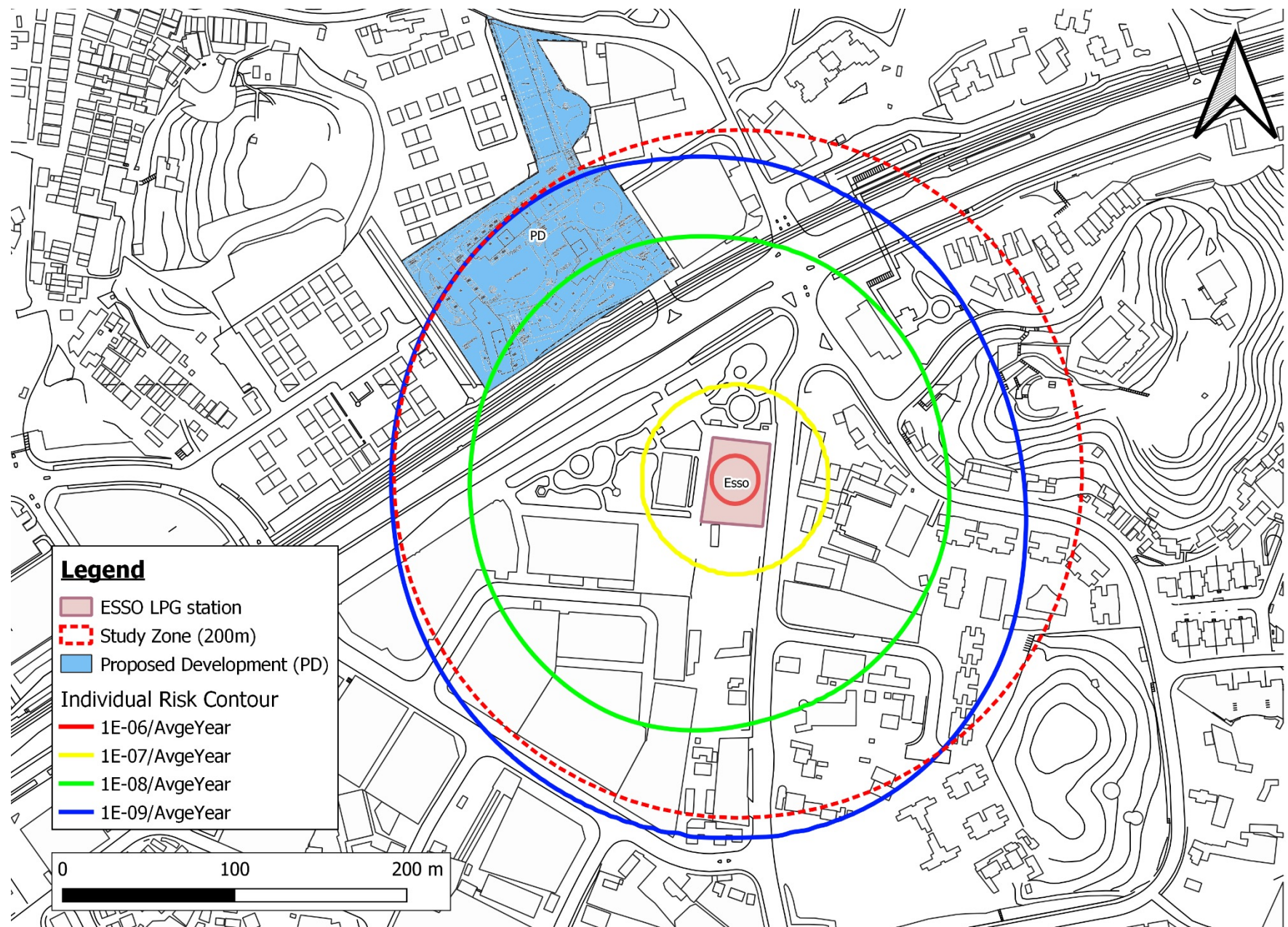


Typical unloading operation

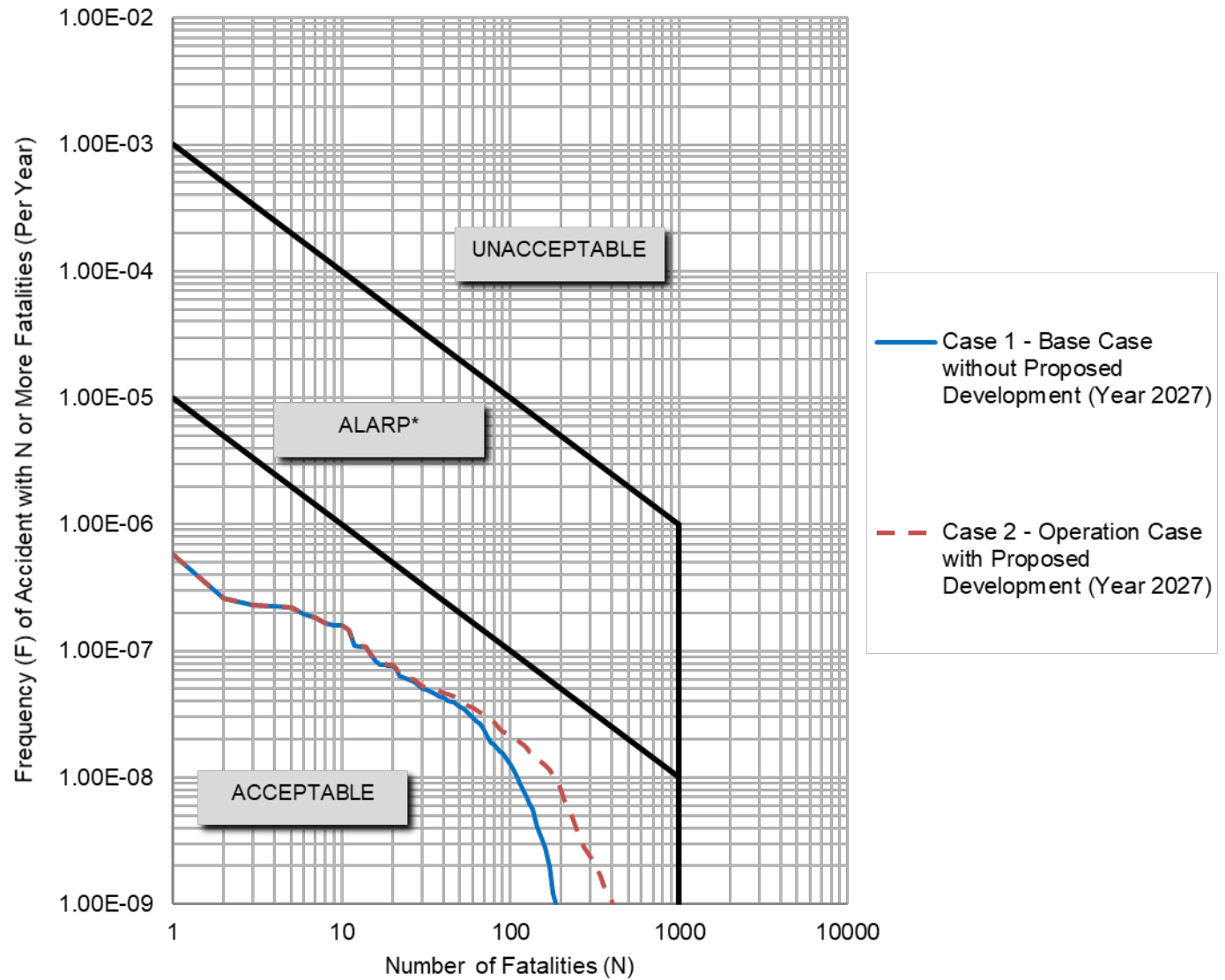


ESD button and shut-off valves on the LPG road tanker





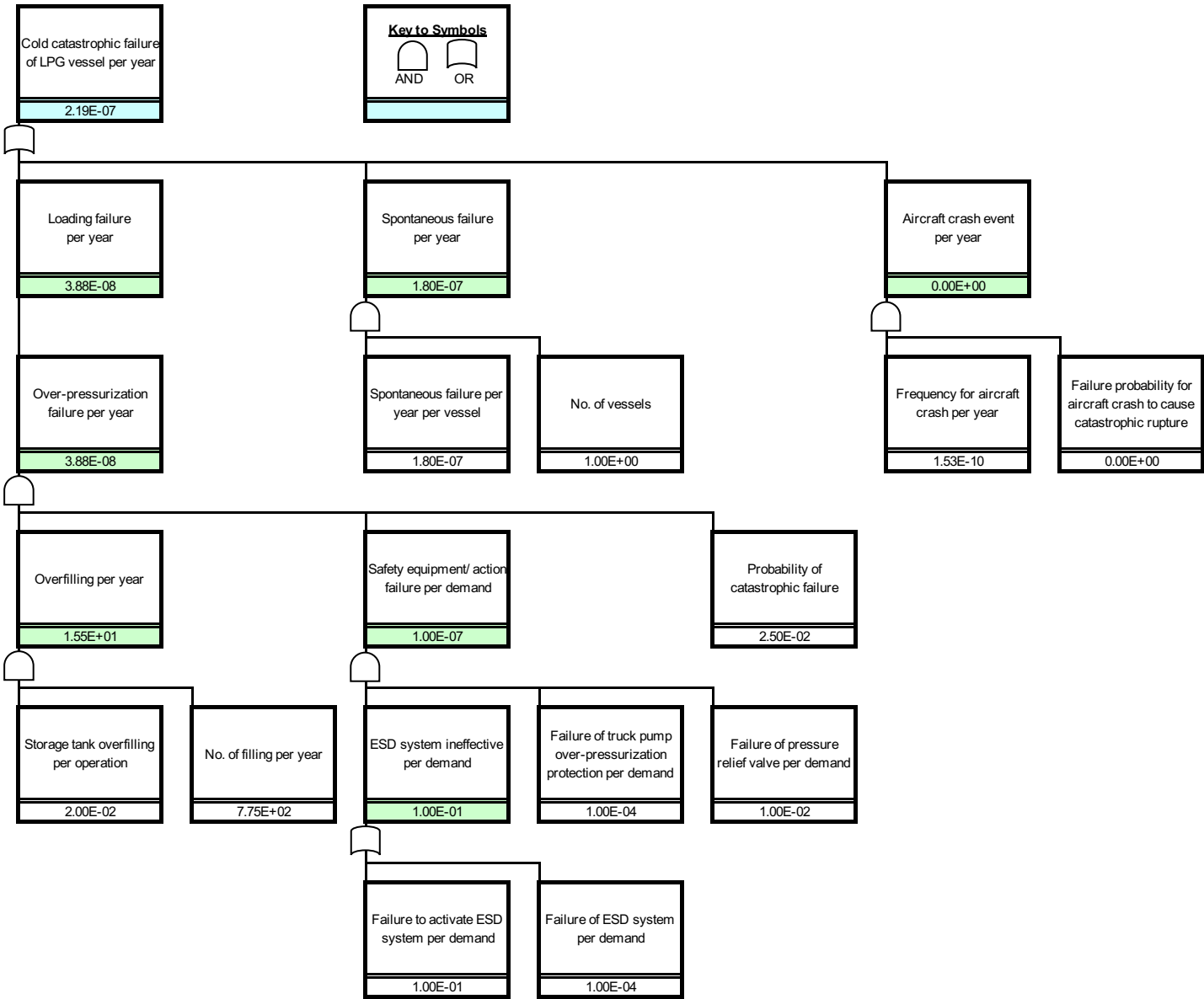
Societal Risk



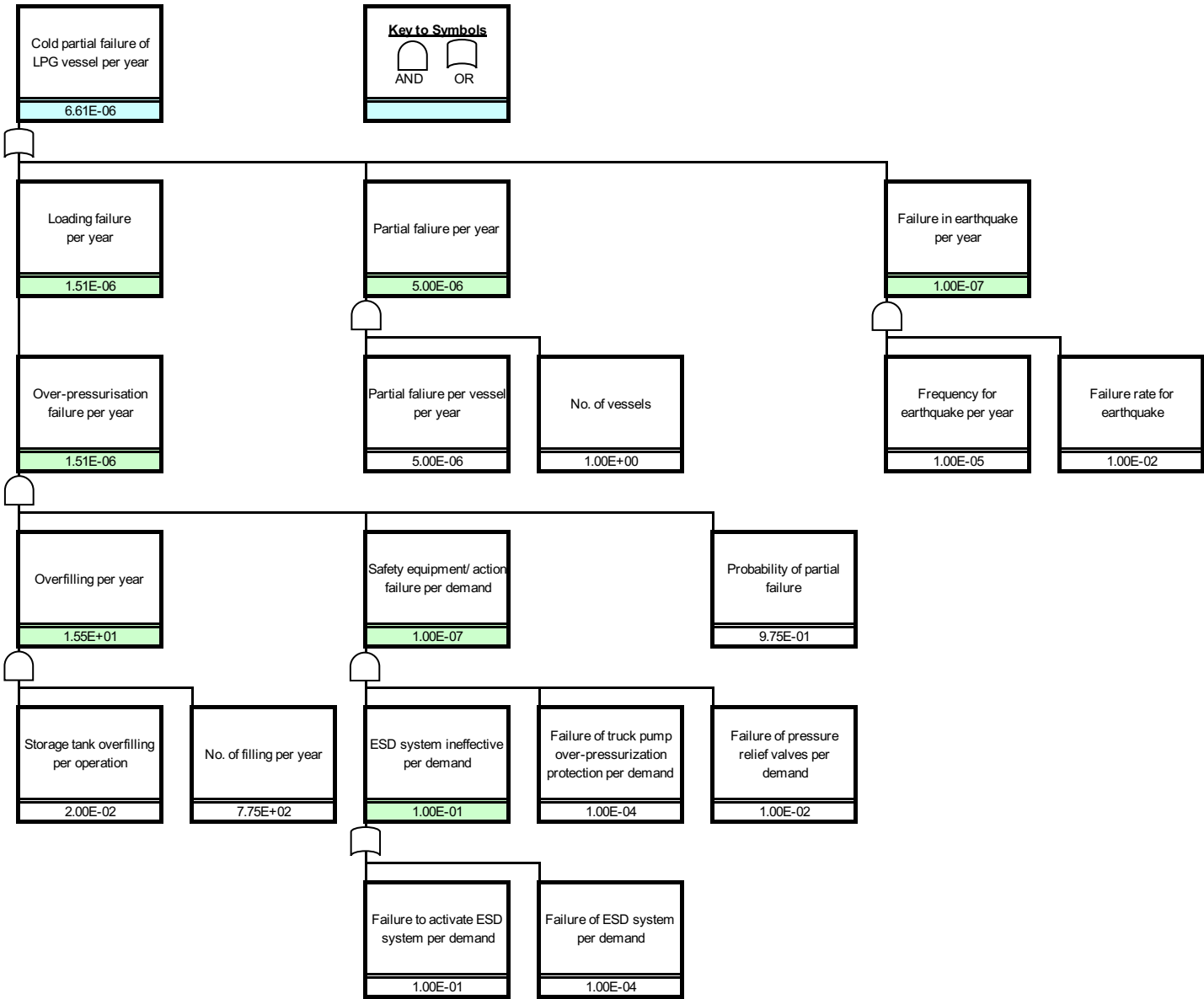
Appendix A

Fault Tree Analysis of ESSO LPG cum Petrol Filling Station

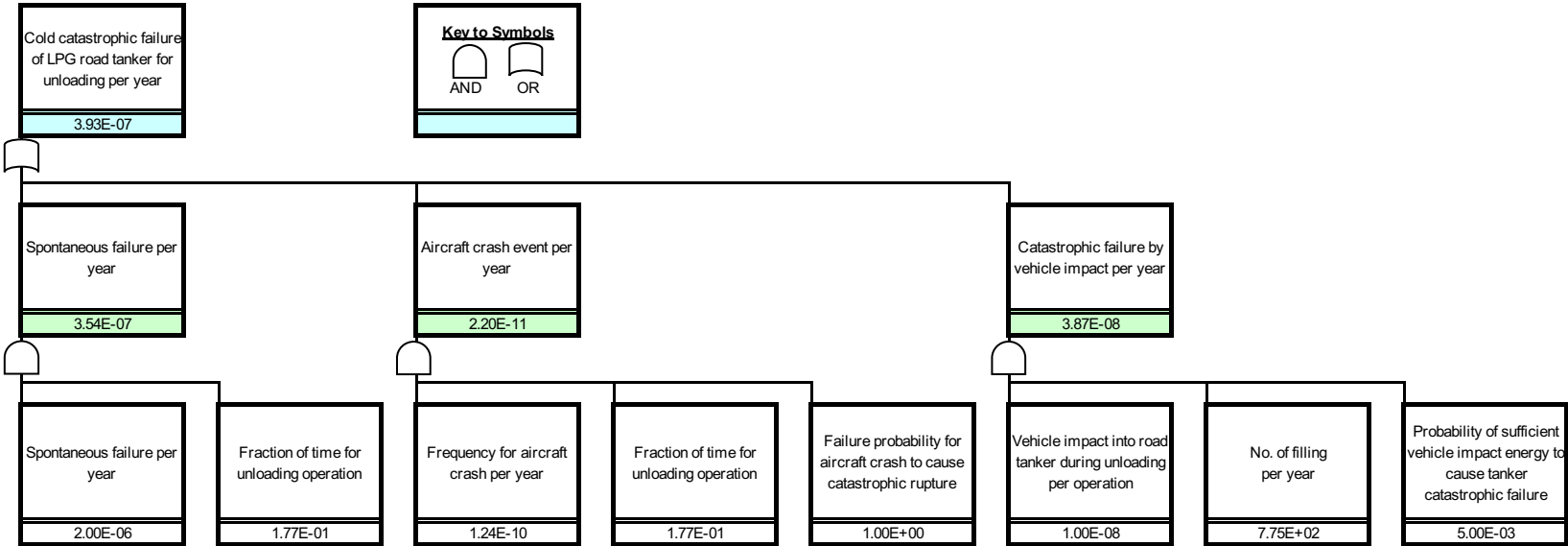
Fault Tree 1 - Cold Catastrophic Failure of LPG Vessel (LPG Filling Station)



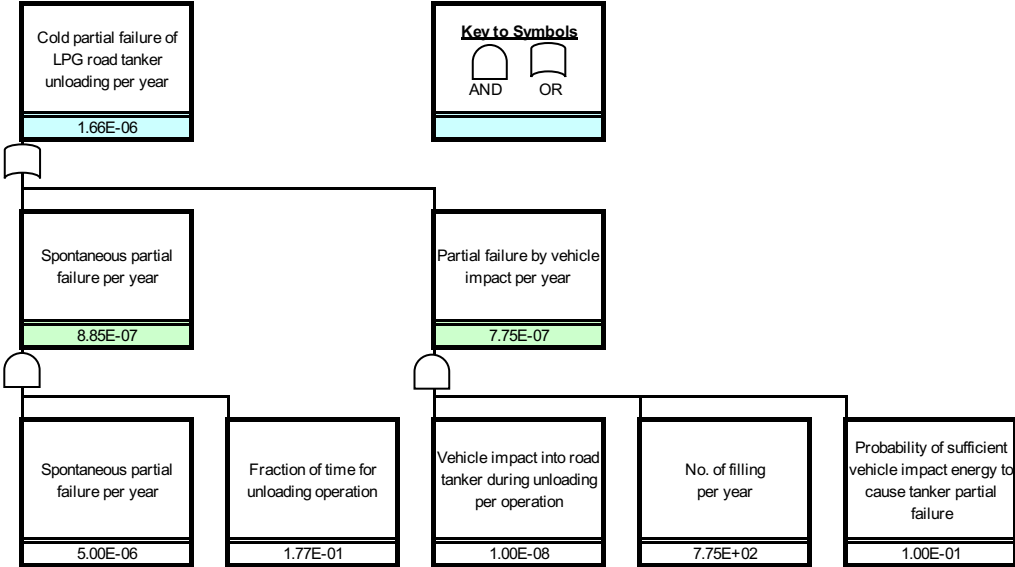
Fault Tree 2 - Partial Failure of LPG Vessel (LPG Filling Station)



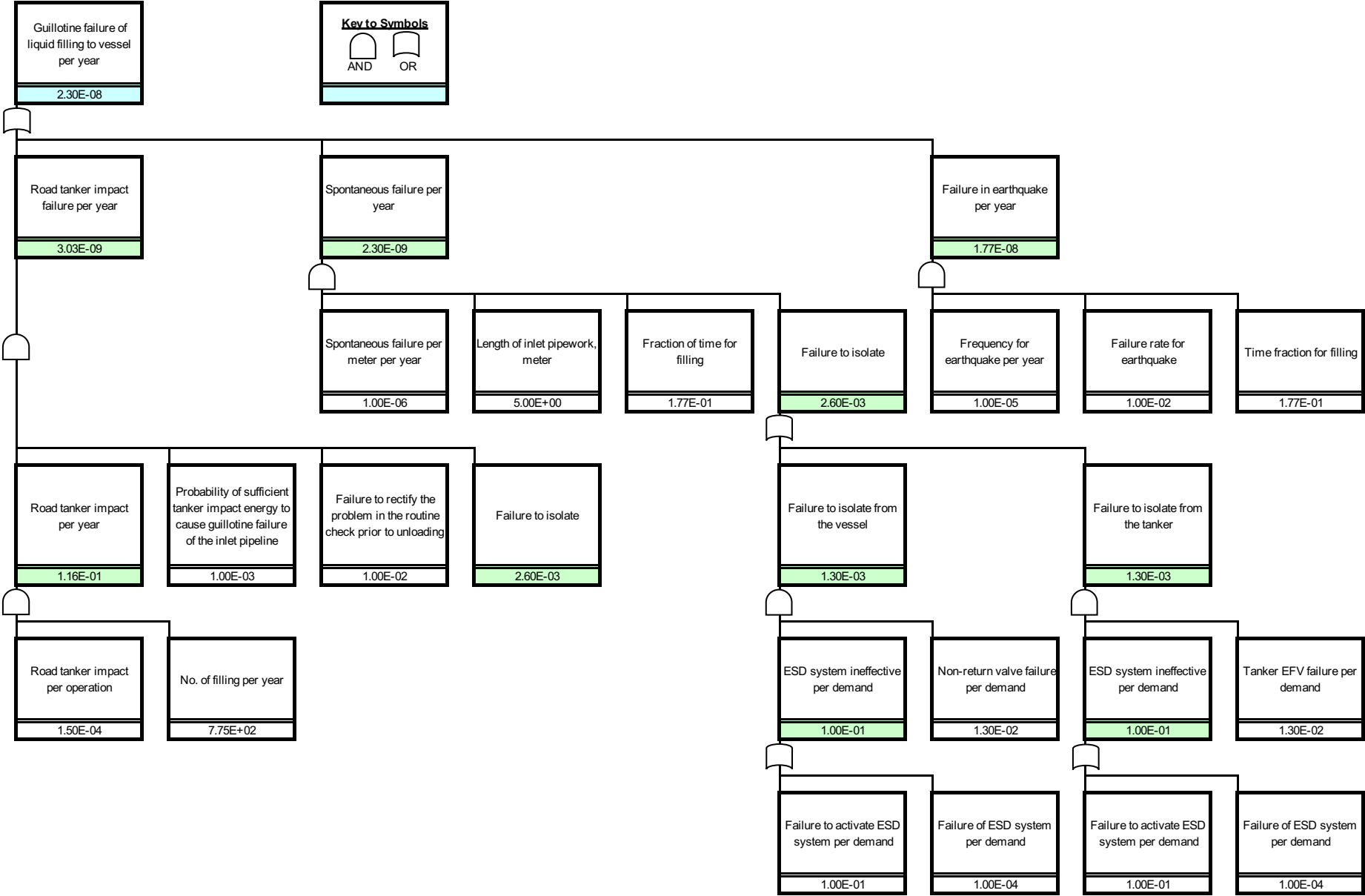
Fault Tree 3 - Cold Catastrophic failure of Road Tanker (LPG Filling Station)



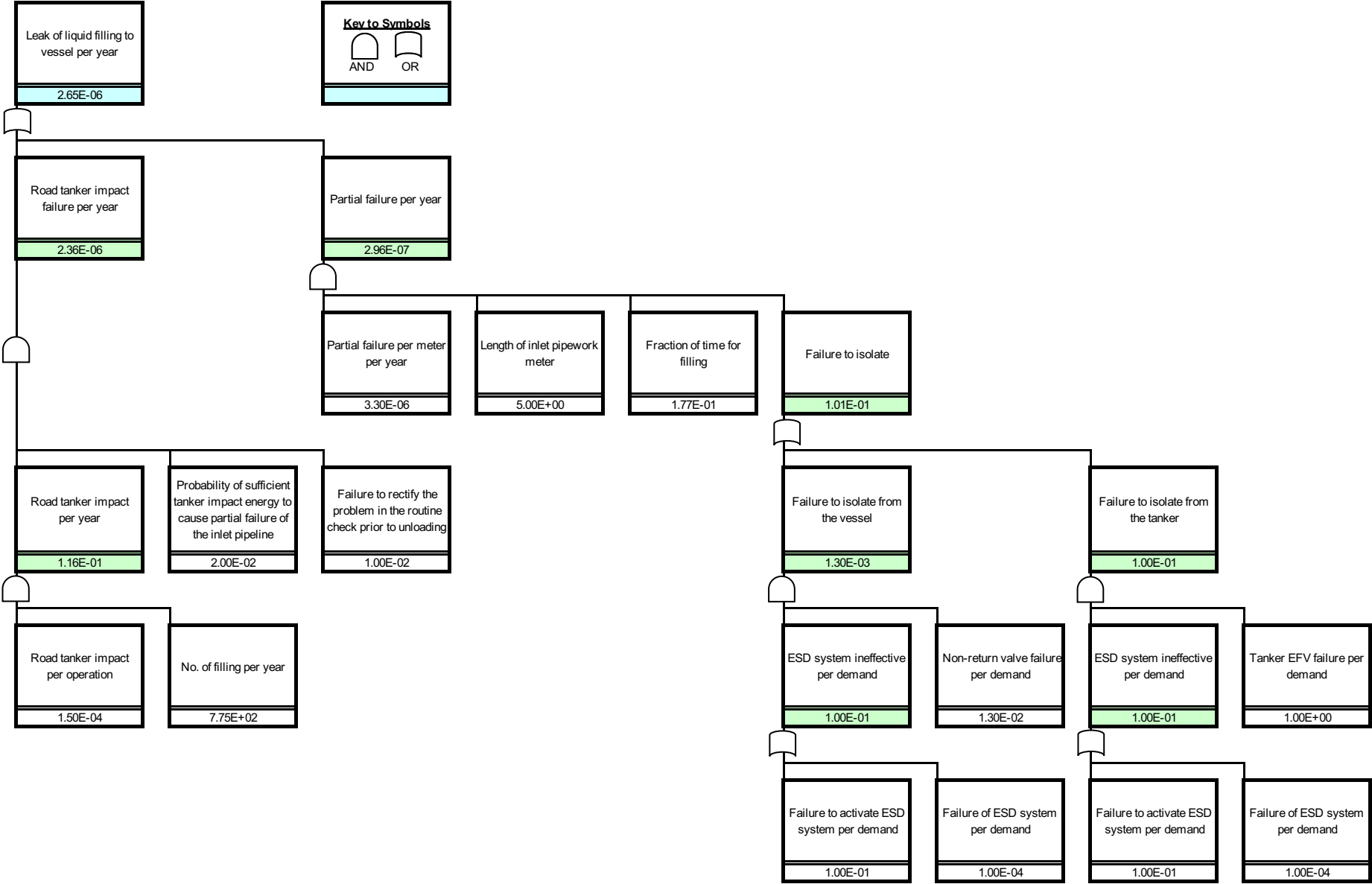
Fault Tree 4 - Partial failure of Road Tanker (LPG Filling Station)



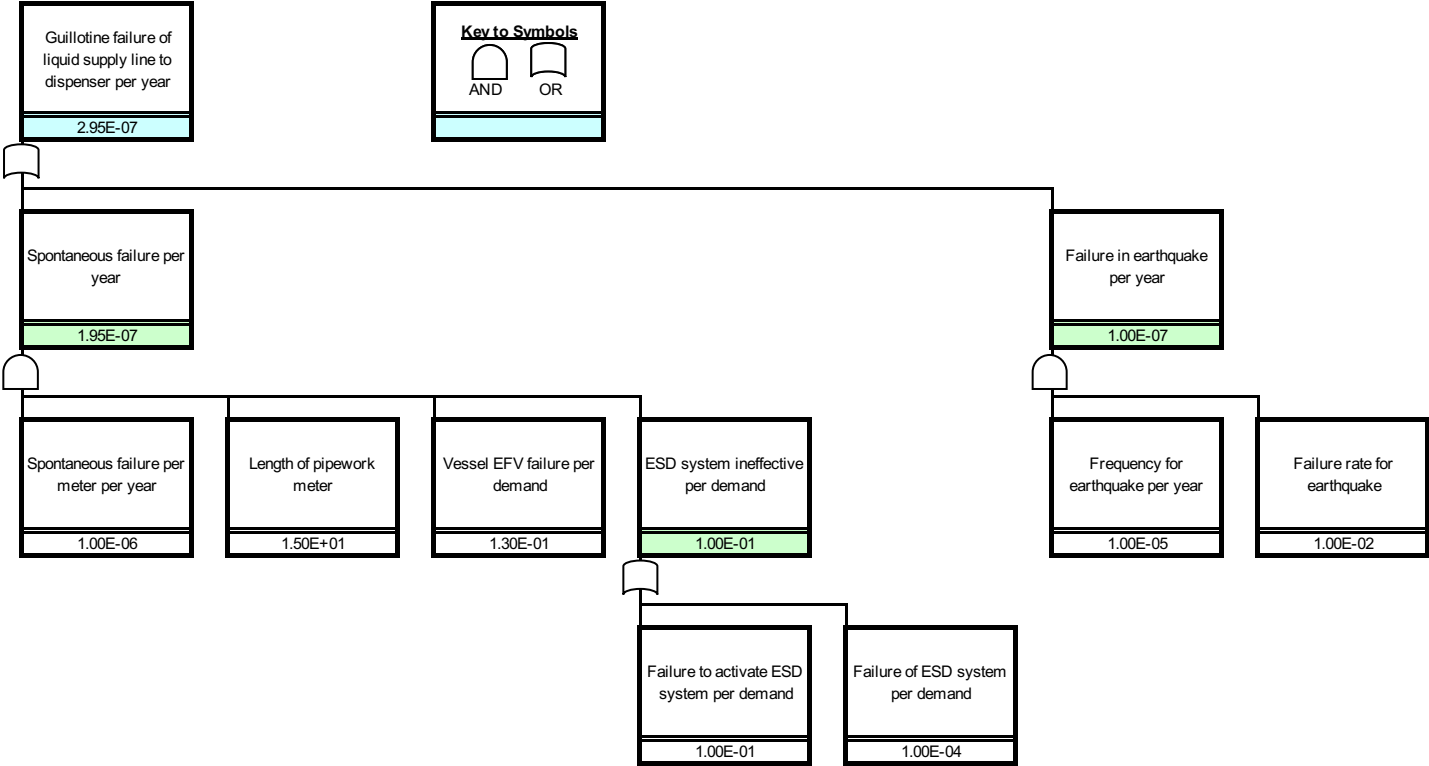
Fault Tree 5 - Guillotine failure of Inlet Pipeline (LPG Filling Station)



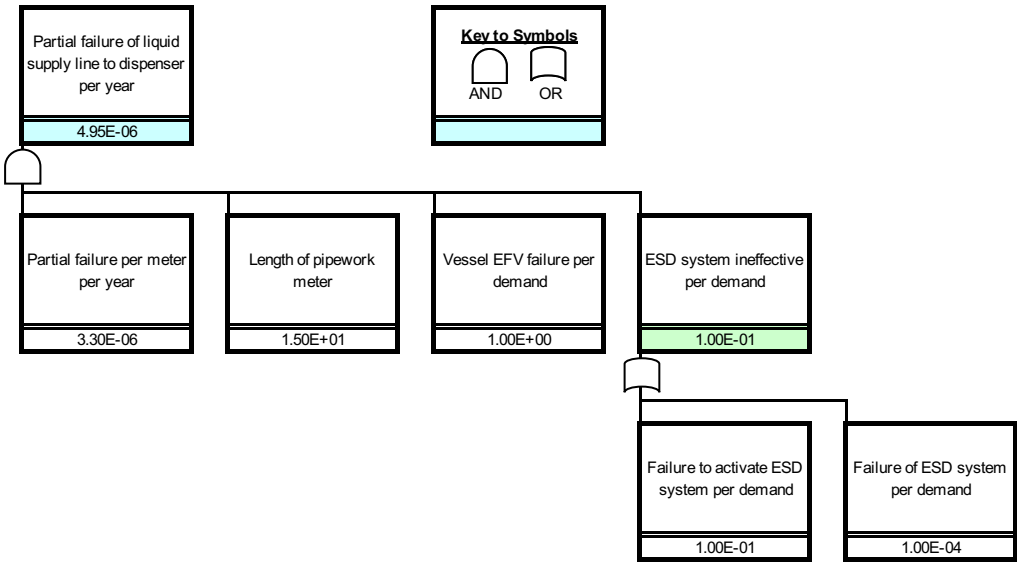
Fault Tree 6 - Partial failure of Inlet Pipeline (LPG Filling Station)



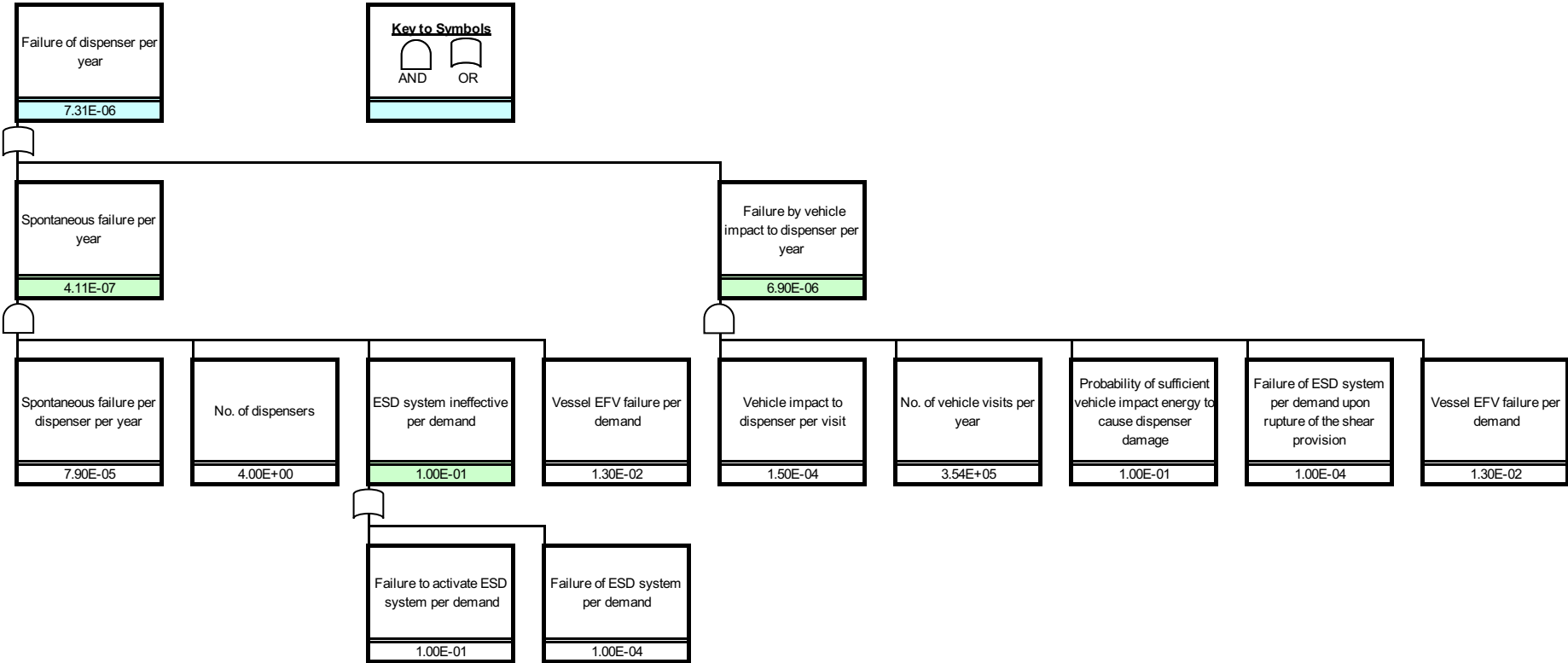
Fault Tree 7 - Guillotine failure of the Liquid Supply Pipeline to the Dispenser (LPG Filling Station)



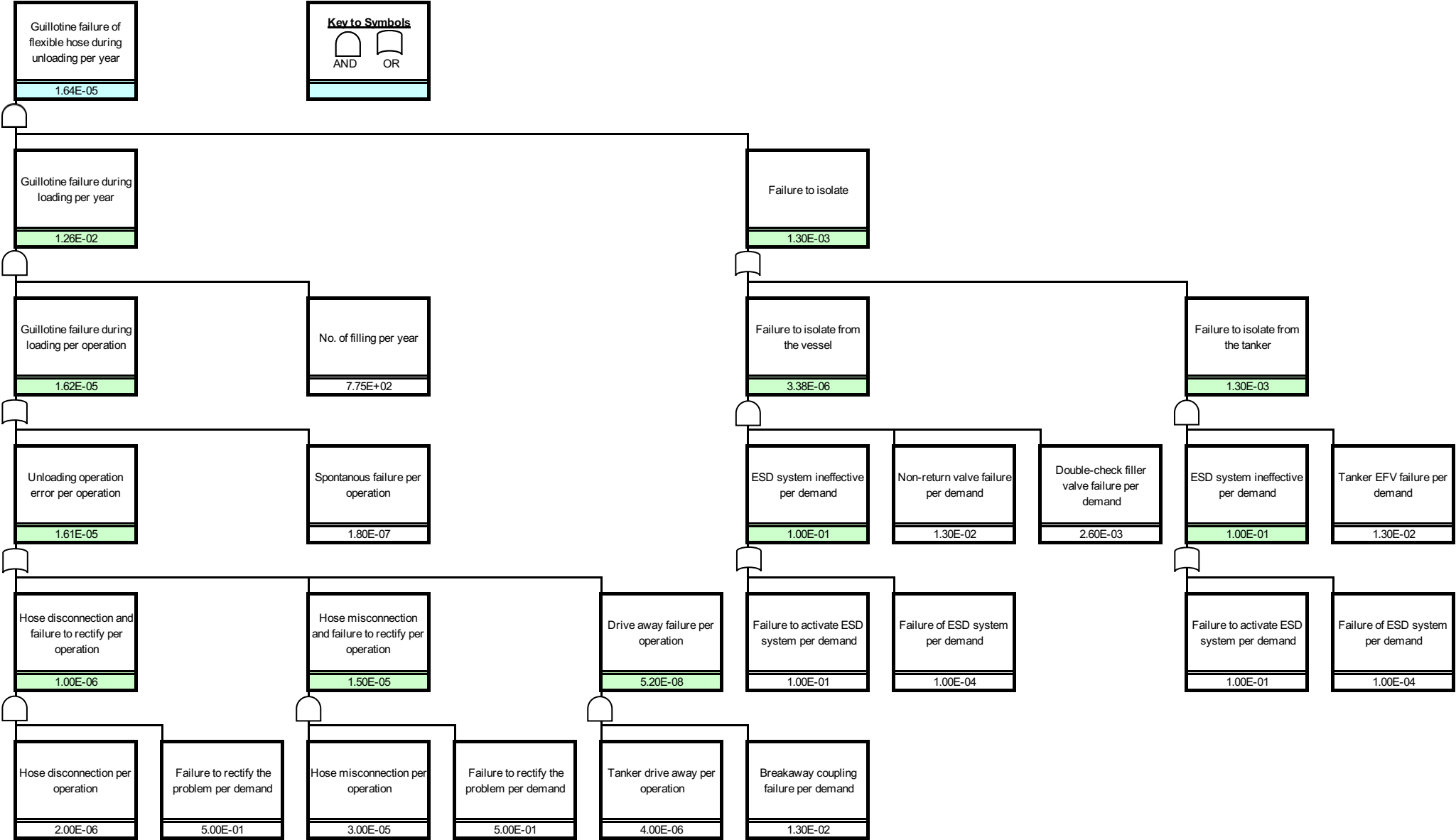
Fault Tree 8 - Partial failure of the Liquid Supply Pipeline to the Dispenser (LPG Filling Station)



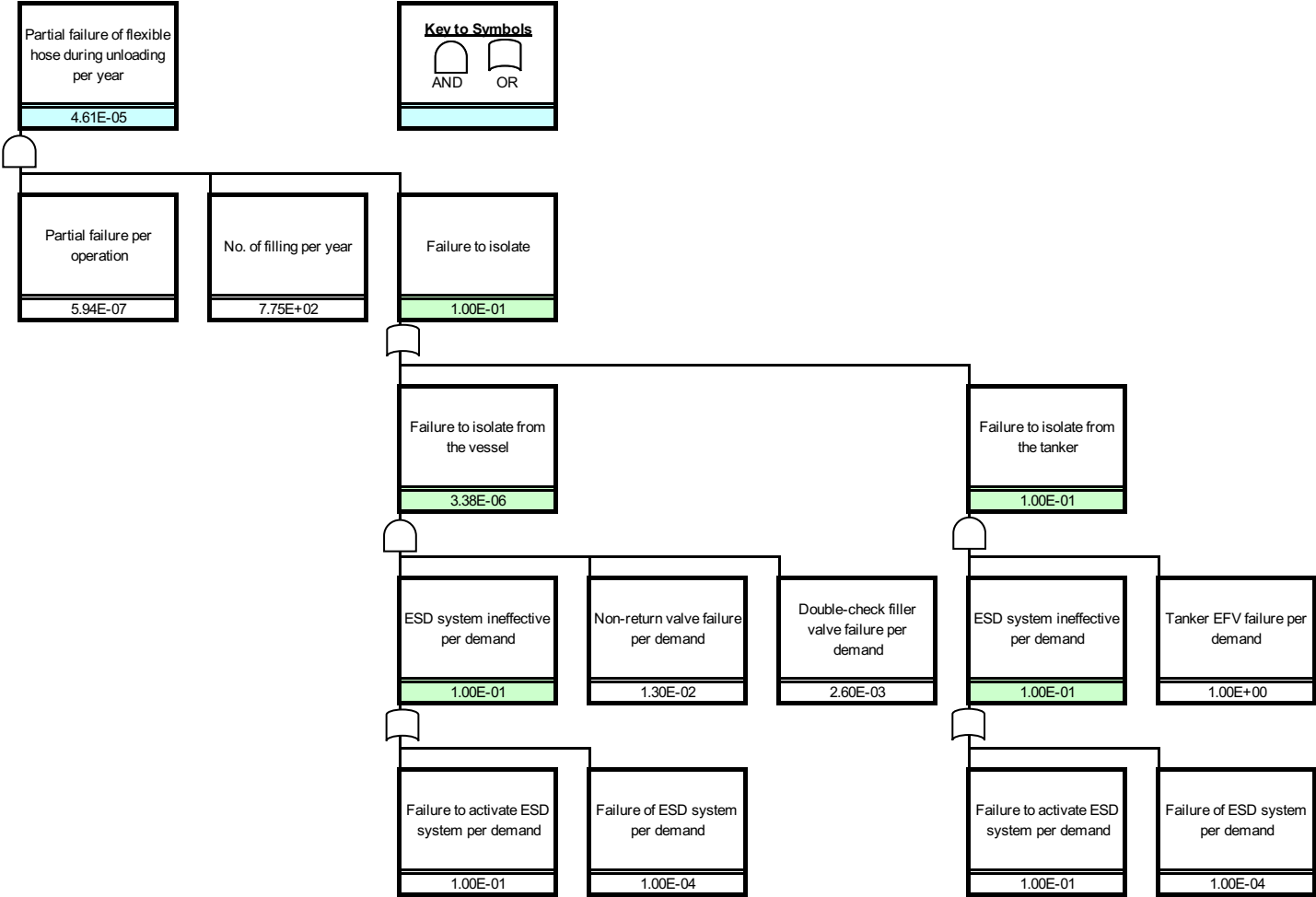
Fault Tree 9 - Failure of the Dispenser (LPG Filling Station)



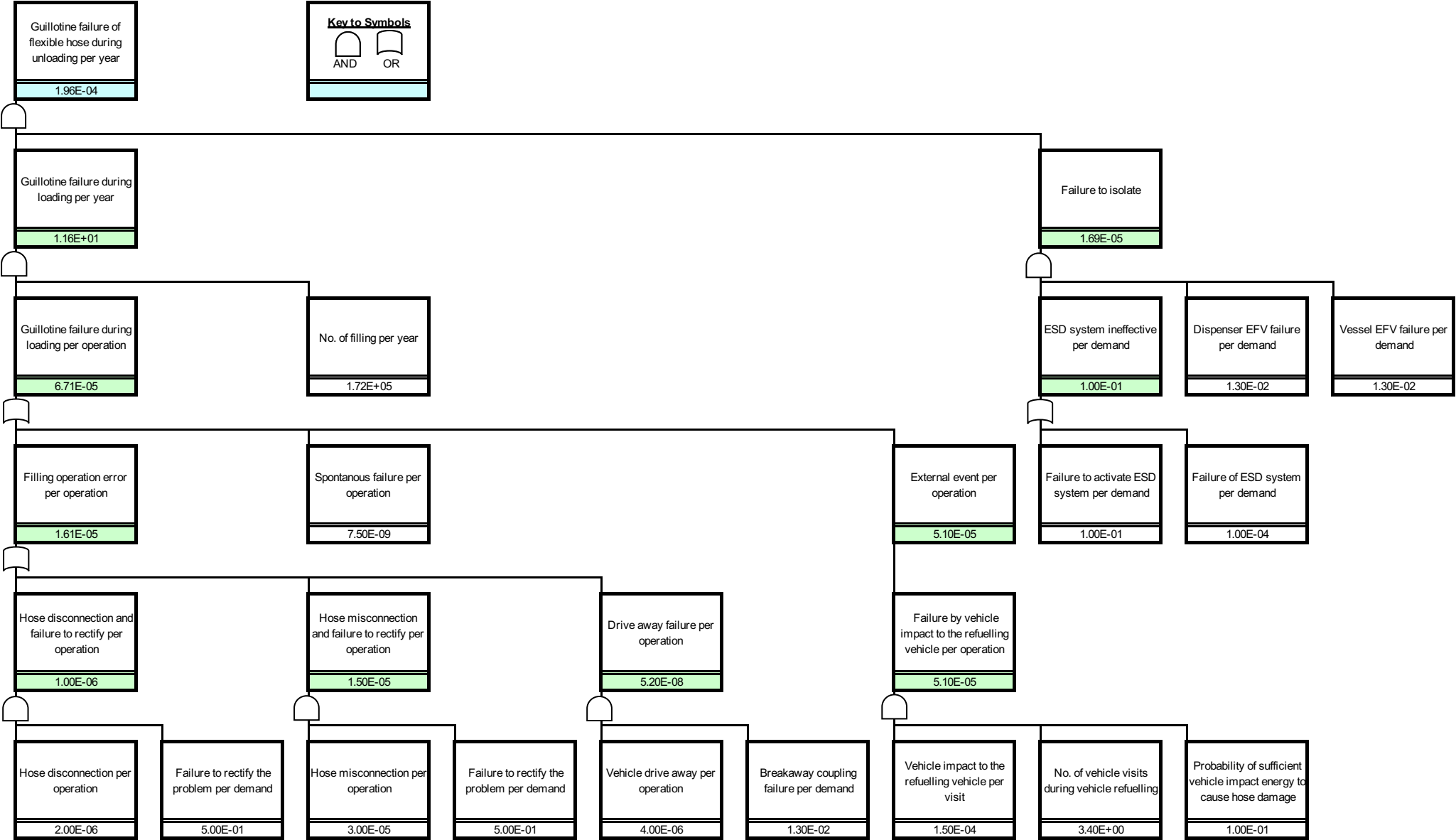
Fault Tree 10 - Guillotine failure of Flexible Hose during Unloading to the LPG vessel (LPG Filling Station)



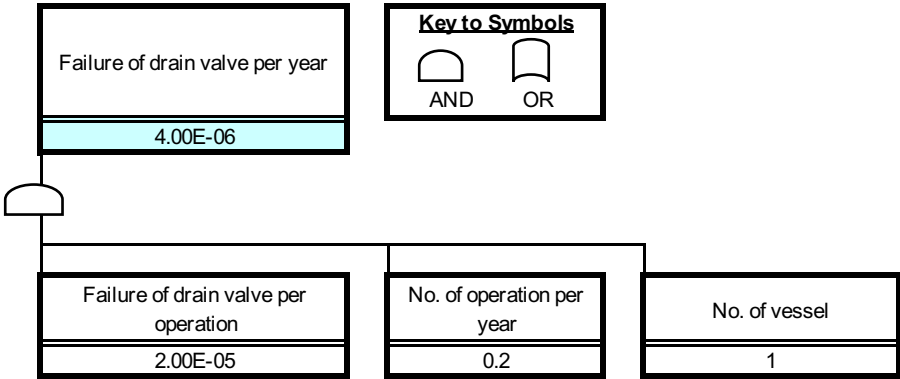
Fault Tree 11 - Partial failure of Flexible Hose during Unloading to the LPG vessel (LPG Filling Station)



Fault Tree 12 - Guillotine failure of Flexible Hose during Filling to the LPG Vehicle (LPG Filling Station)



Fault Tree - Failure of LPG Vessel Drain Valve



Appendix B

Event Tree Analysis of LPG cum Petrol Filling Station

ETA 1 - Catastrophic Failure of LPG Vessel

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes 0.3			Fireball / Flash fire*	3.00E-1
	no 0.7				
		yes 0.5	yes 0.2	VCE	7.00E-2
		no 0.5	no 0.8	Flash fire	2.80E-1
				Unignited Release	3.50E-1
					1.00

*Fireball effects are negligible for the underground storage tank. Instead Flash Fire is considered.

ETA 2 - Partial Failure of LPG Vessel

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes 0.07			Jetfire*	7.00E-2
	no 0.93				
		yes 0.5	yes 0.2	VCE	9.30E-2
		no 0.5	no 0.8	Flash fire	3.72E-1
				Unignited Release	4.65E-1
					1.00

* Vertical Jetfire is considered for partial failure of the underground storage tank.

ETA 3 - Catastrophic Failure of LPG Tanker

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes 0.3			Fireball	3.00E-1
	no 0.7				
		yes 0.5	yes 0.2	VCE	7.00E-2
		no 0.5	no 0.8	Flash fire	2.80E-1
				Unignited Release	3.50E-1
					1.00

ETA 4 - Partial Failure of LPG Tanker

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes	0.07		Jetfire	7.00E-2
	no	0.93			
		yes	0.5	VCE	9.30E-2
		no	0.5		
			yes	0.2	
			no	0.8	
				Flash fire	3.72E-1
				Unignited Release	4.65E-1
					1.00

ETA 5 - Guillotine Failure of Aboveground Pipe (Liquid-Inlet Pipework, Flexible Hose to Vessel)

	Immediate Ignition		Delayed Ignition		VCE		Flame Jet Impingement		Ineffective Fire Protection/ Fighting		Event Outcome	Outcome Probability	
LPG Release	yes	0.07					yes	0.167		yes	0.05	Jetfire & BLEVE	5.83E-4
	no	0.93					no	0.833		no	0.95	Jetfire	1.11E-2
												Jetfire	5.83E-2
			yes	0.5	yes	0.2						VCE	9.30E-2
			no	0.5	no	0.8						Flash fire	3.72E-1
												Unignited Release	4.65E-1
													1.00

ETA 6 - Leak of Aboveground Pipe (Liquid-Inlet Pipework, Flexible Hose to Vessel)

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes	0.01		Jetfire	1.00E-2
	no	0.99			
		yes	0.5	VCE*	0.00E+0
		no	0.5		
			yes	0	
			no	1	
				Flash fire	4.95E-1
				Unignited Release	4.95E-1
					1.00

* VCE is not considered for a small release.

ETA 7 - Guillotine Failure of Underground Liquid Supply Line to Dispenser, Failure of Submersible Pump Flange

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes 0.07			Jetfire*	7.00E-2
	no 0.93				
		yes 0.5	yes 0.2	VCE	9.30E-2
		no 0.5	no 0.8	Flash fire	3.72E-1
				Unignited Release	4.65E-1
					1.00

* Vertical Jetfire is considered for failure of the underground pipe.

ETA 8 - Leak of Underground Liquid Supply Line to Dispenser

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
LPG Release	yes 0.01			Jetfire*	1.00E-2
	no 0.99				
		yes 0.5	yes 0	VCE#	0.00E+0
		no 0.5	no 1	Flash fire	4.95E-1
				Unignited Release	4.95E-1
					1.00

* Vertical Jetfire is considered for failure of the underground pipe.

VCE is not considered for a small release.

ETA 9 - Failure of Dispenser, Flexible Filling Hose to Vehicle for Esso LPG cum Petrol Filling Station

	<i>Immediate Ignition</i>	<i>Delayed Ignition</i>	<i>VCE</i>	<i>Flame Jet Impingement</i>	<i>Ineffective Fire Protection/ Fighting</i>	<i>Event Outcome</i>	<i>Outcome Probability</i>
<i>LPG Release</i>	yes 0.01			yes 1.5E-02	yes 0.05	Jetfire & BLEVE	7.37E-6
	no 0.99			no 9.9E-01	no 0.95	Jetfire	1.40E-4
						Jetfire	9.85E-3
		yes 0.5	yes 0			VCE*	0.00E+0
		no 0.5	no 1			Flash fire	4.95E-1
						Unignited Release	4.95E-1
							1.00

* VCE is not considered for a small release.

Appendix C

Atmospheric Stability Class-Wind Speed Frequencies

Day Time Atmospheric Stability Class-Wind Speed Frequencies at Hong Kong Wetland Park Weather Station (Year 2020)

Wind Speed	Stability Class						Total
	A	B	C	D	E	F	
1	18.7%	7.9%	0.0%	11.1%	0.0%	13.8%	51.5%
3	8.2%	18.0%	7.4%	8.3%	3.0%	0.5%	45.4%
5	0.0%	1.8%	0.5%	0.8%	0.0%	0.0%	3.1%
7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
>8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	26.9%	27.8%	7.8%	20.2%	3.1%	14.3%	100.0%

Night Time Atmospheric Stability Class-Wind Speed Frequencies at Hong Kong Wetland Park Weather Station (Year 2020)

Wind Speed	Stability Class						Total
	A	B	C	D	E	F	
1	0.0%	0.0%	0.0%	1.8%	0.0%	76.5%	78.3%
3	0.0%	0.0%	0.0%	3.4%	15.6%	2.2%	21.2%
5	0.0%	0.0%	0.0%	0.3%	0.1%	0.0%	0.4%
7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
>8	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	0.0%	0.0%	0.0%	5.6%	15.7%	78.7%	100.0%



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Appendix IX

Water Supply Impact Assessment



D03 Water Supply Impact Assessment

Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Residential Development at Ping Shan, Yuen Long, N.T., Hong Kong

Reference No. 7076822
Prepared for Applicant
1 March 2022

Document Control

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Project Number:	7076822 D03/01
Revision Number:	1

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REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED BY
0	21 January 2022	Tommy KONG	Kitty LEE	Antony WONG
1	1 March 2022	Tommy KONG	Kitty LEE	Antony WONG

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This report is confidential and is provided solely for the purposes of supporting Section 12A Rezoning Application from “Village Type Development” (“V”) zone and “Comprehensive Development Area” (“CDA”) zone to “Residential (Group B)2” (“R(B)2”) zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside. This report is provided pursuant to a Consultancy Agreement between SMEC Asia Limited (“SMEC”) and Applicant, under which SMEC undertook to perform specific and limited tasks for Applicant. This report is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

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1 INTRODUCTION

1.1 Project Background

- 1.1.1 With reference to the Policy Addresses in recent years including the latest one, Policy Address 2020, the key concerns include housing supply and elderly care service which is one of the improvements of people's livelihood. In order to address the aforementioned needs, it is planned to redevelop a land with an area of approximately 14,080m² comprising four lots in D.D. 121 and D.D. 122, and the adjoining government land of about 1,925m², Ping Shan, Yuen Long, New Territories, into Residential Care Home for the Elderly ("RCHE") and Residential Development ("the Site" or "the Proposed Development").
- 1.1.2 The Site is currently zoned "Village" ("V") and "Comprehensive Development Area" ("CDA") under the Draft Ping Shan Outline Zoning Plan ("OZP") No. S/YL-PS/19. For the Proposed Development comprising RCHE and Residential Development with three residential blocks, a rezoning application under Section 12A of the *Town Planning Ordinance* ("TPO") is required to rezone the Site from "V" and "CDA" zones to "Residential (Group B)2" ("R(B)2") zone under Column 1.
- 1.1.3 SMEC Asia Ltd ("SMEC") has been commissioned by the Applicant to conduct this Water Supply Impact Assessment ("WSIA") to support the application.

1.2 Site Description

- 1.2.1 The Site is located in urban area at Ping Shan, Yuen Long, which is an existing logistic plant mainly used for storage and its northern part are open car park. As shown on **Figure 1-1**, Castle Peak Road (Ping Shan) section is located to the immediate south of the Site that runs along the east-west direction. Light Rail Transit ("LRT") is also located to south of the Site running along the Castle Peak Road (Ping Shan) section. Across the opposite site of Castle Peak Road (Ping Shan) Section, there are mainly residential blocks, playground and gardens. In addition, Ping Ha Road originates to the east of the Site. It runs along south-north direction. It further turns around and is connected to the north of the Site, and it subsequently runs along the east-west direction and connected to the Ping Shan Heritage Trail to the northwest of the Site. The Site is mainly surrounded by warehouse for storages, factories, and scattered residential premises to the east and north, and to the west of the Site. An abandoned Former Tat Tak Public School is located to the northeast of the Site.

1.3 Project Description

- 1.3.1 The Proposed Development will tentatively comprise a RCHE as a Social Welfare Facility and a residential development with the following components:
- Three Residential Buildings
 - One Club house
 - One Swimming Pool

1.4 Objective of the Report

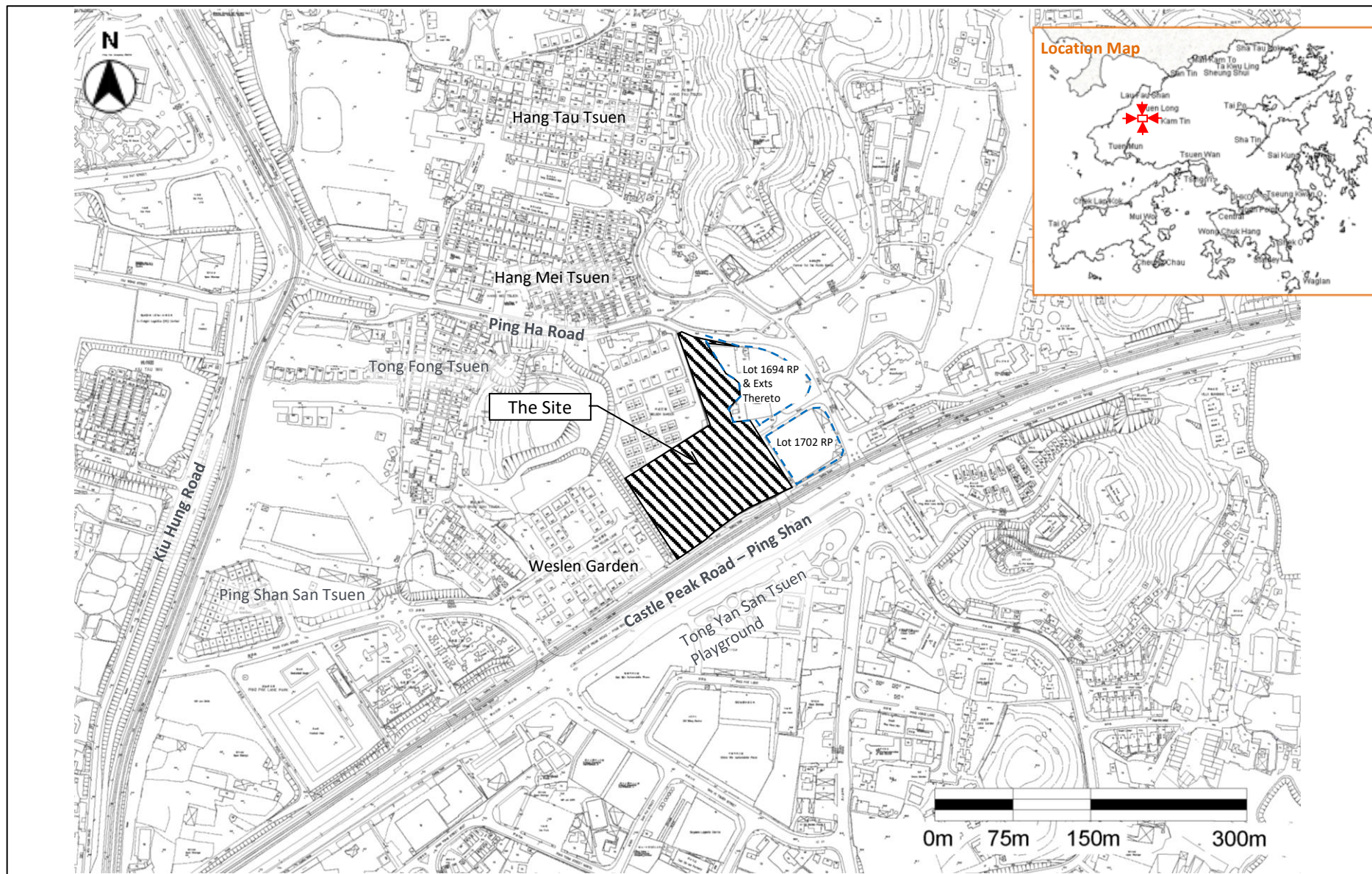
- 1.4.1 The objectives of this WSIA are to:
- Assess the potential impacts of the Proposed Development on the Water Supplies Department ("WSD") installations and water mains; and
 - Recommend the necessary mitigation measures to alleviate the impacts.

1.5 Reference Materials

1.5.1 In evaluating the water supply impact arising from the Proposed Development, the following documents have been referred to:

- The website of WSD, <http://www.wsd.gov.hk/en/home/index.html>;
- Freshwater Mains Record Plans (W67880/06-NW-08C, 06-NW-08D, 06-NW-09C, 06-NW-13A, 06-NW-13B and 06-NW-14A) and Salt Water Mains Record Plans (W67881/06-NW-08C, 06-NW-08D, 06-NW-09C, 06-NW-13A, 06-NW-13B and 06-NW-14A) provided by WSD on 17 January 2022;
- Departmental Instruction No. 1309 (DI No. 1309) issued by WSD;
- *Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0* ("GESF"), published by the Environmental Protection Department ("EPD"), March 2005.

Figure 1-1 Site Location and its Environs

**D03 WATER SUPPLY IMPACT ASSESSMENT**

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

SMEC Internal Ref. 7076822 |

D03/01

1 March 2022

2 DESCRIPTION OF EXISTING CONDITIONS

2.1 Existing Water Supply

- 2.1.1 Copies of Freshwater Mains Record Plans (W67880/06-NW-08C, 06-NW-08D, 06-NW-09C, 06-NW-13A, 06-NW-13B and 06-NW-14A) and Salt Water Mains Record Plans (W67881/06-NW-08C, 06-NW-08D, 06-NW-09C, 06-NW-13A, 06-NW-13B and 06-NW-14A) were obtained from WSD. The relevant drawings related to the Site are in **Appendix A**.
- 2.1.2 The plans indicate that existing freshwater mains and saltwater mains are located **to the South and Northeast of the Site, running along Castle Peak Road and Ping Ha Road**.
- 2.1.3 Details of existing freshwater and saltwater mains connections to the Site that are maintained by WSD are summarised below:
- **Freshwater Mains.** To the south of the Site, there is a freshwater supply main of 750mm diameter ductile iron pipe running along Castle Peak Road, which includes several connection points branching off to connect with ductile iron pipes of 300mm diameter. To the northeast of the Site, there are two freshwater supply ductile iron pipes running along Ping Ha Road, 300mm diameter and 150mm diameter respectively. The design supply pressure for the freshwater supply pipeline is 15 to 30m head ^[Ref.#1]; and
 - **Saltwater Mains.** To the south of the Site across the Castle Peak Road there is a saltwater supply main of 700mm diameter steel pipe. It branches off to 150mm diameter polyethylene pipes running along Ping Ha Road that is located at the Northeast of the Site. The design supply pressure for the saltwater supply pipeline is 15m head. ^[Ref.#2]

¹. WSD Performance Pledge 2021-2022, <https://www.wsd.gov.hk/en/about-us/performance-targets-and-achievements/index.html>

². WSD Performance Pledge 2021-2022, <https://www.wsd.gov.hk/en/about-us/performance-targets-and-achievements/index.html>

3 WATER SUPPLY ANALYSIS

3.1 Assumptions and Methodology

- 3.1.1 Potential fresh water supply impact during the construction stage of the Proposed Development is not addressed in this assessment as water usage for construction purpose would be negligible.
- 3.1.2 In order to assess the acceptability of impacts arising from the operation of the Proposed Development upon the existing water supply system, demands for freshwater and salt water for Proposed Development were estimated.

3.2 Water Demand Estimation

- 3.2.1 The estimation of water demand and peaking factors adopted in this assessment are referenced from the Departmental Instruction No. 1309 (DI No. 1309) issued by WSD and GESF issued by EPD. **Table 3.1** below shows the unit demand for the key freshwater and flushing water uses of the Proposed Development.

Table 3.1 Water Demand Estimation

POPULATION TYPE	FRESHWATER UNIT DEMAND (L/PERSON/DAY)	FLUSHING WATER UNIT DEMAND (L/PERSON/DAY)	REFERENCE
Resident	230	70	WSD DI No. 1309
General Employee	280	50	EPD GESF

- 3.2.2 The peaking factor adopted for proposed freshwater and flushing water in distribution mains is 3.0 and 2.0 respectively.
- 3.2.3 Estimation for peak fresh water and salt water consumption for the Proposed Development is presented in **Table 3.2** and **Appendix B**.

Table 3.2 Estimated Fresh Water and Salt Water Demand from the Proposed Development

DESCRIPTION	DAILY WATER DEMAND OF PROPOSED DEVELOPMENT (m ³ /DAY)	PEAKING FACTOR	PEAK DEMAND (m ³ /DAY)
Freshwater	687.5	3	2062.6
Flushing Water	204.2	2	408.4

3.3 Water Supply Estimation

- 3.3.1 As described in **Section 2**, there are existing freshwater main and salt water main at on the Northeast and South of the Site. Assuming the freshwater for the Site will be sourced from the DN750 located at the South of the Site and the saltwater will be sourced from the DN150 located at the Northeast of the Site, assume velocity is ranging 1-3m/s, the capacity and utilization ratio of each is estimated in **Table 3.3** below:

Table 3.3 Water Supply Estimation

DESCRIPTION	PEAK DEMAND (m ³ /DAY)	PEAK DEMAND (m ³ /S)	FRESHWATER SUPPLY MAIN NOMINAL DIAMETER (mm)	ASSUME VELOCITY (m/s)	PIPE CAPACITY (m ³ /s)	UTILISATION RATIO
Freshwater	2062.6	0.0239	750	3	1.325	2%
				1	0.442	5%
Flushing Water	408.4	0.0047	150	3	0.053	9%
				1	0.0177	27%

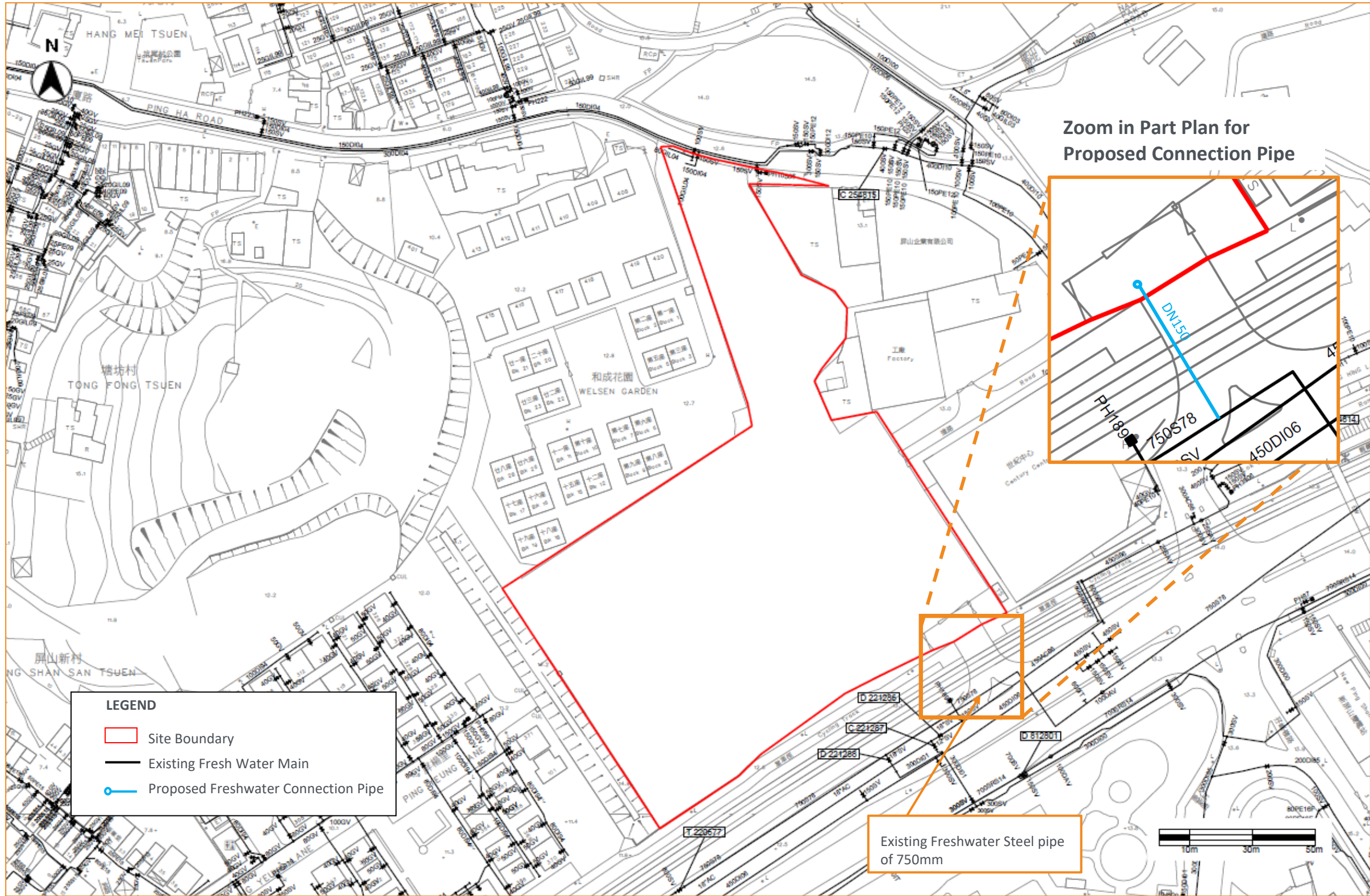
3.4 Impact Assessment

- 3.4.1 As indicated in **Table 3.3**, the estimated peak freshwater and saltwater demand is about 2-5% of the Freshwater main capacity and 9-27% of the Salt water main capacity. It is noted water mains from WSD have been designed with pressure of 15 to 30m for freshwater pipelines and 15m head for saltwater pipelines, this means the actual capacity available in the water main will be more than enough. No adverse impact is anticipated due to the Proposed Development.
- 3.4.2 Water supply for the Proposed Development is proposed to be provided via a connection pipe of **DN150** sourcing from the existing DN750 for freshwater and a connection pipe of **DN80** sourcing from the DN150 for salt water. Existing fresh water supply and salt water supply and the proposed connection are indicated in **Figure 3-1** and **Figure 3-2**. The utilization ratio is about **90%** for **DN150** freshwater pipe and **63%** for **DN80** salt water pipe, see **Table 3.4** below. Therefore, No adverse impact is anticipated due to the Proposed Development.

Table 3.4 Capacity Check for Impact Assessment

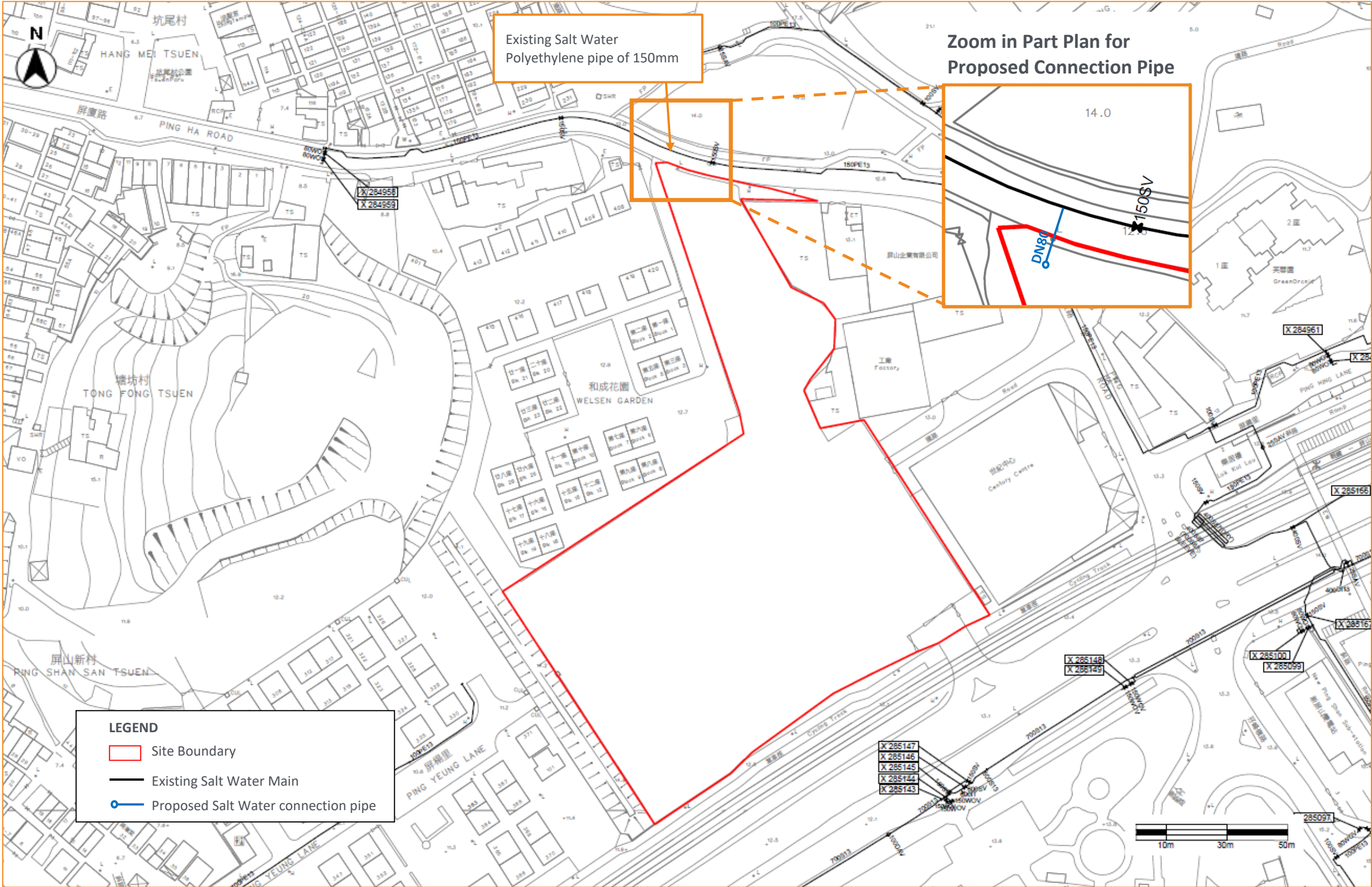
DESCRIPTION	PEAK DEMAND (m ³ /DAY)	PEAK DEMAND (m ³ /s)	FRESHWATER SUPPLY CONNECTION NOMINAL DIAMETER (mm)	ASSUME MAX. VELOCITY (m/s)	PIPE CAPACITY (m ³ /s)	UTILISATION RATIO
Freshwater	2062.6	0.0239	150	1.5	0.0265	90%
Flushing Water	408.4	0.0047	80	1.5	0.0075	63%

Figure 3-1 Existing Freshwater Mains and Proposed Freshwater Connection Pipe for the Site



Source: WSD Drawing no. : W67880-06-NW-08D and 06-NW-13B

Figure 3-2 Existing Salt Water Main and Proposed Salt Water Connection Pipe for the Site



4 CONCLUSION

- 4.1.1 A Water Supply Impact Assessment ("WSIA") has been conducted to evaluate the possible impacts on the existing freshwater and saltwater mains supply during the operation of the Project.
- 4.1.2 The peak estimated freshwater and salt water demand from the Proposed Development are about 2,062.6 m³/day and 408.4m³/day respectively. The estimated peak freshwater and saltwater demand is about 2-5% of the Freshwater main capacity and 9-27% of the salt water main capacity. The results indicate that the capacity of the existing water supply system would be sufficient to handle the water demand from the operation of the Site and from the nearby residential uses. Therefore, there should be no adverse impact on the existing water supply system due to the Proposed Development.
- 4.1.3 Water supply for the Proposed Development is proposed to be provided via a connection pipe of DN150 sourcing from the existing DN750 for freshwater and a connection pipe of DN80 sourcing from the DN150 for salt water. The utilisation ratio is about 90% for DN150 freshwater pipe and 63% for DN80 salt water pipe. No adverse impact on water supply is anticipated due to the Proposed Development.

Appendix A **FRESH WATER AND SALT WATER MAIN RECORDS FROM WSD**


D03 WATER SUPPLY IMPACT ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D03/01
1 March 2022

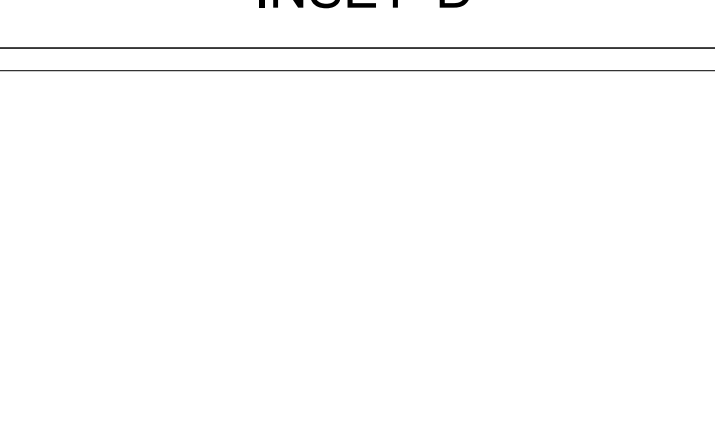
INSET 'A'	

INSET 'B'



[illegible]

INSET 'D'



INSET 'E'

This figure consists of a large, empty rectangular box with a thin black border, occupying the majority of the page area below the title. The box is intended for a detailed view or inset of a specific region from the main figure.

INSET 'F'

This is a detailed topographic map of a residential area in Hong Kong, showing streets, buildings, and green spaces. The map includes labels for various locations such as 'HANG TAU TSUEN', 'HANG MEI TSUEN', 'TONG FONG TSUEN', and 'PING SHAN SAN TSUEN'. It also features a grid system with coordinates and a scale bar. The map is oriented with North at the top.

The map shows a dense residential area with numerous buildings and streets. Key features include:

- Streets:** PING HA ROAD, PING SHAN LANE, CASTLE PEAK ROAD, and PING SHAN.
- Buildings:** Various residential buildings, including 'HANG TAU TSUEN', 'HANG MEI TSUEN', 'TONG FONG TSUEN', and 'PING SHAN SAN TSUEN'.
- Green Spaces:** 'WELSH GARDEN' and 'PING SHAN LANE'.
- Infrastructure:** 'Former Tat Tak Public School' and 'Ping Shan Tsim Tsai Tong'.
- Grid System:** A coordinate grid with labels like 'K 284951', 'K 284952', 'K 285151', 'K 285152', 'K 285153', 'K 285154', 'K 285155', 'K 285156', 'K 285157', 'K 285158', 'K 285159', 'K 285160', 'K 285161', 'K 285162', 'K 285163', 'K 285164', 'K 285165', 'K 285166', 'K 285167', 'K 285168', 'K 285169', 'K 285170', 'K 285171', 'K 285172', 'K 285173', 'K 285174', 'K 285175', 'K 285176', 'K 285177', 'K 285178', 'K 285179', 'K 285180', 'K 285181', 'K 285182', 'K 285183', 'K 285184', 'K 285185', 'K 285186', 'K 285187', 'K 285188', 'K 285189', 'K 285190', 'K 285191', 'K 285192', 'K 285193', 'K 285194', 'K 285195', 'K 285196', 'K 285197', 'K 285198', 'K 285199', 'K 285200'.
- Scale Bar:** A scale bar indicating distances in meters and feet.
- Orientation:** North is indicated by an arrow pointing towards the top of the map.

1. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO.3988.
2. DIMENSIONS OF MAINS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.


HANG TAU TSUEN, PING SHAN

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DATE REVISED : 17/03/2020

W67881/ 6-NW-8D

DATE: 09/08/1999



Water Supplies Department
HONG KONG

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Basemap Date Updated Orc: 30/04/2019

SCALE 1:1 000

A horizontal number line representing a 100-metre race track. The line is marked from 0 to 100 in increments of 20. The first 20 metres are divided into four equal segments, each containing a small figure of a person running. The remaining 80 metres are marked with larger numbers at 20, 40, 60, and 80.

INSET 'A'

INSET 'B'

INSET 'C'

INSET 'D'

INSET 'E'

INSET 'F'



NOTES:

1. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO.3988.

2. DIMENSIONS OF MAINS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

3. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.

6-NW-13D

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DATE REVISED : 16/12/2020

SIGNED
W.K. KAM
CE/NTW
DATE: 06/10/2015

DRAWING NO.
W67881/ 6-NW-13B

Water Supplies Department
HONG KONG

SCALE
1:1 000

METRES 20 10 0 20 40 60 80 100

SALT WATER MAINS RECORD PLAN

SAN HEI TSUEN, PING SHAN

Appendix B **CALCULATION OF WATER DEMAND FROM THE PROPOSED DEVELOPMENT**

D03 WATER SUPPLY IMPACT ASSESSMENT

Section 12A Rezoning Application from "Village Type Development" ("V") zone and "Comprehensive Development Area" ("CDA") zone to "Residential (Group B)2" ("R(B)2") zone for Proposed Social Welfare Facility (Residential Care Home for the Elderly) and Reside
Prepared for Applicant

SMEC Internal Ref. 7076822 |
D03/01
1 March 2022

Appendix B - Calculation of Water Demand

1a Estimated Freshwater Demand from the Proposed Development		
Freshwater Demand from Residents of Residential Care Home for Elderly (RCHE)		
Maximum Number of Residents	294 persons	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.23 m³/day/person	
Freshwater Demand	67.62 m³/day	
Freshwater Demand from Staff of RCHE		
Total No. of Staff	54 staff	As advised by the Applicant EPD guidelines , DI1309
Unit Flow Factor (UFF)	0.28 m³/day/staff	
Freshwater Demand	15 m³/day	
Freshwater Demand from the Residential Development		
Total No. of Staff	90 staff	As advised by the Applicant EPD guidelines , DI1309
Unit Flow Factor (UFF)	0.28 m³/day/staff	
Freshwater Demand	25 m³/day	
Freshwater Demand from the Residents of the Proposed Residential Development		
Total No. of residents	2,520 persons	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.23 m³/day/person	
Freshwater Demand	580 m³/day	
1b Estimated Salt Water Demand from the Proposed Development		
Salt Water Demand from Residents of Residential Care Home for Elderly (RCHE)		
Maximum Number of Residents	294 persons	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.07 m³/day/person	
Flushing Water Demand	20.58 m³/day	
Salt Water Demand from Staff of RCHE		
Total No. of Staff	54 staff	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.05 m³/day/staff	
Flushing Water Demand	3 m³/day	
Salt Water Demand from the Residential Development		
Total No. of Staff	90 staff	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.05 m³/day/staff	
Flushing Water Demand	5 m³/day	
Salt Water Demand from the Residents of the Proposed Residential Development		
Total No. of residents	2,520 persons	As advised by the Applicant DI1309
Unit Flow Factor (UFF)	0.07 m³/day/person	
Flushing Water Demand	176 m³/day	
Total Freshwater Demand from Proposed Development		
	687.54 m³/day	
Total Flushing Water Demand from Proposed Development		
	204.18 m³/day	
Peaking Factor for Freshwater Demand	3	DI 1309
Peaking Factor for Flushing water Demand	2	DI 1309
1c Peak Estimated Demand for Freshwater Consumption for the Proposed Development		
Total estimated max. daily freshwater consumption	2,062.6 m³/day	
1d Peak Estimated Demand Salt Water Consumption for the Proposed Development		
Total estimated max. daily salt water consumption	408.4 m³/day	

Reference

- 1 Departmental Instruction No. 1309 Design criteria (DI 1309) , Water Supplies Department
- 2 Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0, Environmental Protection Department of HK Government, March 2005

local people
global experience

SMEC is recognised for providing technical excellence and consultancy expertise in urban, infrastructure and management advisory. From concept to completion, our core service offering covers the life-cycle of a project and maximises value to our clients and communities. We align global expertise with local knowledge and state-of-the-art processes and systems to deliver innovative solutions to a range of industry sectors.



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RESIDENTIAL (GROUP B)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat	Ambulance Depot
Government Use (Police Reporting Centre, Post Office only)	Eating Place
House	Educational Institution
Library	Government Refuse Collection Point
Residential Institution	Government Use (not elsewhere specified)
School (in free-standing purpose-designed building only) #	Hospital
<u>Shop and Services</u> <u>(on land designated "R(B)2" only)</u>	Hotel
<u>Social Welfare Facility</u> <u>(on land designated "R(B)2" only)</u>	Institutional Use (not elsewhere specified)
Utility Installation for Private Project	Off-course Betting Centre
	Office
	Petrol Filling Station
	Place of Entertainment
	Place of Recreation, Sports or Culture
	Private Club
	Public Clinic
	Public Convenience
	Public Transport Terminus or Station
	Public Utility Installation
	Public Vehicle Park (excluding container vehicle)
	Recyclable Collection Centre
	Religious Institution
	Rural Committee/Village Office
	School (not elsewhere specified)
	Shop and Services
	Social Welfare Facility
	Training Centre

Planning Intention

This zone is intended primarily for sub-urban medium-density residential developments in rural areas where commercial uses serving the residential neighborhood may be permitted on application to the Town Planning Board.

(Please see next page)

Remarks

- (a) On land designated "Residential (Group B) 1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 1, a maximum site coverage of 40% and a maximum building height of 5 storeys (15m) including 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 draft development permission area plan, whichever is the greater.
- (b) *On land designated "Residential (Group B) 2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to the use annotated with #) shall result in a total development and/or redevelopment in excess of a maximum domestic plot ratio of 3, a maximum non-domestic plot ratio of 0.39, a maximum site coverage of 31.66% and a maximum building height of 20 storeys (65.85m) including 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 draft development permission area plan, whichever is the greater.*
- (c) In determining the maximum plot ratio and site coverage for the purposes of paragraphs (a) and (b) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and 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.
- (d) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions stated in paragraphs (a) and (b) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

Detailed Departmental Comments

Comments of the Director of Environmental Protection (DEP):

In preparing the future NIA report, the applicant should carry out on-site train speed survey to verify the speed of LRT in front of the Site, and consider to carry out measurement to obtain updated noise source term for LRT in the future NIA report. Based on the assessment results in the future NIA report, appropriate mitigation measures should be adopted.

Comments of the Chief Architect/Central Management Division 2, Architectural Services Department (CA/CMD2, ArchSD):

- (a) It is noted that some of the façade area at Tower 1 are facing west, solar control devices should be considered to reduce solar heat gain and avoid glare as far as practicable.
- (b) It is suggested to provide 20% greenery in accordance with PNAP APP-152.

Comments of the Chief Building Surveyor/New Territories West (CBS/NTW), Buildings Department:

- (a) As there is no record of approval granted by the Building Authority (BA) for the existing structures at the Site, he is not in a position to comment on the suitability for the use proposed in the application.
- (b) If the existing structures (not being a New Territories Exempted House) are erected on leased land without the approval of BA, they are unauthorised building works (UBW) under the Building Ordinance (BO) and should not be designated for any proposed use under the application.
- (c) For UBW erected on leased land, enforcement action may be taken by BD to effect their removal in accordance with the prevailing enforcement policy against UBW as and when necessary. The granting of any planning approval should not be construed as an acceptance of any existing building works or UBW on the Site under BO.
- (d) Before any new building works (including containers/open sheds as temporary buildings, demolition and land filling, etc.) are to be carried out on the Site, prior approval and consent of BA should be obtained, otherwise they are UBW. An Authorised Person should be appointed as the co-ordinator for the proposed building works in accordance with BO.
- (e) The Site shall be provided with means of obtaining access thereto from a street and emergency vehicular access in accordance with Regulations 5 and 41D of the Building (Planning) Regulations (B(P)R) respectively.
- (f) The Site abuts on a specified street (Castle Peak Road – Ping Shan) of not less than 4.5m wide. Its permitted development intensity shall be determined under the First Schedule of B(P)R at the building plan submission stage.
- (g) For features applied to be excluded from the calculation of the total GFA, it shall be

subject to compliance with the requirements laid down in the relevant Joint Practice Notes and Practice Notes for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP), including but not limited to, the requirements of building set back, building separation and site coverage of greenery as stipulated in PNAP APP-152 if applicable.

- (h) For any car parking spaces to be disregarded from GFA calculation under Regulation 23(3)(b) of the B(P)R, the applicant shall comply with PNAP APP-2.
- (i) The proposed RCHE may be subject to the issuance of a license. The applicant is 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.
- (j) RCHE for habitation is considered as a domestic use under BO. The modification of Regulations 20, 21 and 25 of the B(P)R for treating RCHE as a non-domestic building for the purpose of site coverage, plot ratio and open space is required for his consideration at building plan submission stage.
- (k) Based on the information submitted by the applicant, sky gardens are propose in residential towers. If the applicant is going to apply for exemption of communal sky gardens for residential building from GFA calculation, Joint Practice Note No. 1 should be complied with.

城市規劃委員會秘書處

香港北角渣華道 333 號

北角政府合署 15 樓

敬啟者：

規劃申請編號 Y/YL-PS/4

本人支持規劃申請編號 Y/YL-PS/4。香港土地資源匱乏，而申請地點雖然劃作鄉村式發展，但現時只用作儲物倉和停車場，未能充分利用土地資源。而且此地點鄰近大路及輕鐵，如果只用作興建「鄉村式發展」實為浪費土地資源，應該增加「鄉村式發展」地帶的發展密度及加快完善基建配套設施。加上此申請會提供長者設施，幫助解決人口老化問題，有非常大優點。因此，本人非常支持此項規劃申請。

此致

城規會



屏山坑尾村村代表：鄧志學

9 / 11 / 2021

城市規劃委員會秘書處
香港北角渣華道 333 號
北角政府合署 15 樓



敬啟者：

規劃申請編號 Y/YL-PS/4

本人支持規劃申請編號 Y/YL-PS/4。香港土地資源匱乏，而申請地點雖然劃作鄉村式發展，但現時只用作儲物倉和停車場，未能充分利用土地資源。而且此地點鄰近大路及輕鐵，如果只用作興建「鄉村式發展」實為浪費土地資源，應該增加「鄉村式發展」地帶的發展密度及加快完善基建配套設施。加上此申請會提供長者設施，幫助解決人口老化問題，有非常大優點。因此，本人非常支持此項規劃申請。

此致

城規會

屏山坑尾村村代表：鄧志學

9 / 11 / 2021

香港北角渣華道 333 號

北角政府合署 15 樓

城市規劃委員會秘書處



敬啟者：

規劃申請編號 Y/YL-PS/4

「鄉村式發展」地帶及「綜合發展區」地帶改劃為「住宅(乙類)2」地帶

本人居於屏山一帶多年，現特來函 貴會以表達對該規劃申請之意見。本人同意

是項申請，理由如下：

1. 香港土地供應持續緊張，在避免過份填海及發展綠化地帶的原則下，應優先善用其他閒置用地。申請地點位處元朗新市鎮邊緣，現時主要用作貨倉，未被充分利用。對比用作興建新界小型房屋，本人認為非鄉村式發展及中低密度住宅更能釋放土地發展潛力以回應社會對住宅單位的殷切需求，為不同階層的市民提供更多房屋選擇。
2. 透過新建築物的圍景設計及綠化，該申請項目能大幅改善鄰近範圍的景觀及環境質素，提昇鄰近土地價值。而該發展項目中的安老院舍不但能舒緩緊張

的安老設施需求，相比市中心的設施，更能令長者受惠於該處附近的中低密度發展，提供更多綠化和空間作戶外活動和社交，有利長者身心健康。

3. 該發展附近的基建設施齊全，能應付項目的交通需求。現時該段青山公路甚少擠塞，該中低密度住宅產生的交通不會對青山公路造成明顯影響。此外，鄰近的輕鐵及巴士服務能為居民提供便捷途徑來往元朗、天水圍及屯門，減少對汽車依賴。
4. 該處附近並未過度發展，發展項目的密度並非太高，透過適當樓宇間距，其對附近的景觀及通風影響可以接受。

綜合上述原因，在房屋供應愈趨短缺下，該規劃申請能有效快捷地提供房屋用地，同時能令長者受惠，值得支持。

此致

城市規劃委員會秘書處

元朗屏山康園路
永寧村居民代表

陳愛金

僅啟

2021年 11月15日

香港北角渣華道 333 號

北角政府合署 15 樓

城市規劃委員會秘書處



敬啟者：

規劃申請編號 Y/YL-PS/4

「鄉村式發展」地帶及「綜合發展區」地帶改劃為「住宅(乙類)2」地帶

本人居於屏山一帶多年，現特來函 貴會以表達對該規劃申請之意見。本人同意是項申請，理由如下：

1. 香港土地供應持續緊張，在避免過份填海及發展綠化地帶的原則下，應優先善用其他閒置用地。申請地點位處元朗新市鎮邊緣，現時主要用作貨倉，未被充分利用。對比用作興建新界小型房屋，本人認為非鄉村式發展及中低密度住宅更能釋放土地發展潛力以回應社會對住宅單位的殷切需求，為不同階層的市民提供更多房屋選擇。
2. 透過新建築物的圍景設計及綠化，該申請項目能大幅改善鄰近範圍的景觀及環境質素，提昇鄰近土地價值。而該發展項目中的安老院舍不但能舒緩緊張

的安老設施需求，相比市中心的設施，更能令長者受惠於該處附近的中低密度發展，提供更多綠化和空間作戶外活動和社交，有利長者身心健康。

3. 該發展附近的基建設施齊全，能應付項目的交通需求。現時該段青山公路甚少擠塞，該中低密度住宅產生的交通不會對青山公路造成明顯影響。此外，鄰近的輕鐵及巴士服務能為居民提供便捷途徑來往元朗、天水圍及屯門，減少對汽車依賴。
4. 該處附近並未過度發展，發展項目的密度並非太高，透過適當樓宇間距，其對附近的景觀及通風影響可以接受。

綜合上述原因，在房屋供應愈趨短缺下，該規劃申請能有效快捷地提供房屋用地，同時能令長者受惠，值得支持。

此致

城市規劃委員會秘書處

唐人新村村代表
周錦明

僅啟



2021年11月12日

城市規劃委員會秘書處
香港北角渣華道 333 號
北角政府合處 15 樓



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關於：規劃申請編號 Y/YL-PS/4

敬啟者：

本人不反對規劃申請編號 Y/YL-PS/4，原因如下：

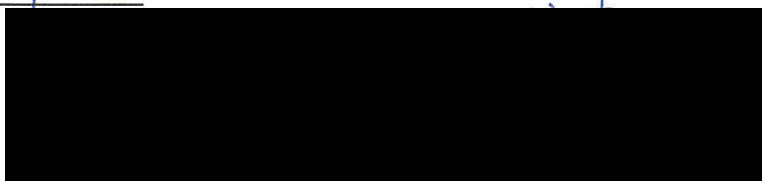
- 1) 本人樂見位於新界的大量土地終於有機會被有效利用。比起填海和發展郊野公園邊陲地帶，善用新界土地更加能夠保護香港珍貴的自然資源。一直以來丁屋式發展只可以興建三層，而且缺乏有系統的規劃。此規劃申請位於主要道路及輕鐵附近，十分有利於進行較高密度發展，讓非原居民人士亦能使用土地，釋放珍貴的土地資源盡早解決香港房屋供應短缺的問題；
- 2) 這個申請一舉兩得，既能夠增加房屋供應，又能夠提供安老設施。安老院舍同新建住宅能建立一個多元融洽的社區，在地少人多的香港實現一地多用，有很多好處，而且附近地方已經有住宅發展，新發展不會對附近景觀造成太大影響。在香港以經濟發展為重心的社會，這種兼顧不同階層和使用者的發展項目實屬難得。

因此，希望各位委員能批准是項申請。

此致

城市規劃委員會各委員





香港北角渣華道 333 號

312

北角政府合署 15 樓

城市規劃委員會秘書



秘書：

我支持規劃申請(Y/YL-PS/4)將鄉村式發展及綜合發展區地帶改劃為乙類住宅。香港山多平地少，應該向高空發展，但一直以來丁屋式發展只可以興建三層，而且缺乏有系統的規劃，浪費大量土地資源。尤其是這個申請位於主要道路及輕鐵附近，十分有利於進行較高密度發展。因此，我認為應該增加鄉村式發展地帶的發展密度，讓非原居民人士亦能使用土地，同時釋放珍貴的土地資源盡早解決香港房屋供應短缺的問題，住宅用地找到一塊得一塊。所以本人支持這次改劃。

屏山永寧村市民

陳展欣



就規劃申請/覆核提出意見 Making Comment on Planning Application / Review

參考編號
Reference Number: 211119-171316-57457

提交限期
Deadline for submission: 19/11/2021

提交日期及時間
Date and time of submission: 19/11/2021 17:13:16

有關的規劃申請編號
The application no. to which the comment relates: Y/YL-PS/4

「提意見人」姓名/名稱
Name of person making this comment: 先生 Mr. 黃

意見詳情
Details of the Comment :

香港起住宅的速度太慢了，很多時又要等整個區域一起發展，新界這麼多地卻白白浪費。既然現在有計劃先發展部分範圍應該盡快落實，以免錯失發展機會到時就後悔太遲了，希望城規會批准這個項目。

就規劃申請/覆核提出意見 Making Comment on Planning Application / Review

參考編號

Reference Number:

211119-171401-26748

提交限期

Deadline for submission:

19/11/2021

提交日期及時間

Date and time of submission:

19/11/2021 17:14:01

有關的規劃申請編號

The application no. to which the comment relates:

Y/YL-PS/4

「提意見人」姓名/名稱

Name of person making this comment:

先生 Mr. Leung

意見詳情

Details of the Comment :

Instead of being a comprehensive development area which requires a long period of time for the land assembly, housing supply can be more efficiently and quickly provided in this case by utilizing every piece of land available when the demand for housing is so urgent. It is clear that sometimes comprehensive development area slows down the development process. Therefore I would like this application to be approved.

就規劃申請/覆核提出意見 Making Comment on Planning Application / Review

參考編號

Reference Number:

211119-171506-70819

提交限期

Deadline for submission:

19/11/2021

提交日期及時間

Date and time of submission:

19/11/2021 17:15:06

有關的規劃申請編號

The application no. to which the comment relates:

Y/YL-PS/4

「提意見人」姓名/名稱

Name of person making this comment:

夫人 Mrs. Sze

意見詳情

Details of the Comment :

I support this proposal. Aging population is a prominent problem now and many elderly people have to wait so long to be allocated a place in home care. The location of elderly facilities is important and this application's location is very good, with lower density profiles compared to town centre with proper public transport coverage.

就規劃申請/覆核提出意見 Making Comment on Planning Application / Review

參考編號
Reference Number: 211119-171556-41249

提交限期
Deadline for submission: 19/11/2021

提交日期及時間
Date and time of submission: 19/11/2021 17:15:56

有關的規劃申請編號
The application no. to which the comment relates: Y/YL-PS/4

「提意見人」姓名/名稱
Name of person making this comment: 小姐 Miss 何

意見詳情
Details of the Comment :

支持！唔使攞到個海同郊野公園又可以舒緩到住屋同安老問題。



香港北角政府合署十五樓
城規會秘書處收

有關：支持規劃申請編號 Y/YL-PS/4 將「鄉村式發展」地帶及「綜合發展區」地帶改劃為「住宅(乙類)2」地帶

本人已退休，希望入住較佳的老人院舍。屏山這個地方位於市郊但又近市中心，環境寧靜之餘又離其他地方不太遠，非常適合一班老友記做運動和休息。很高興社會發展之餘又附帶社區設施幫助老人。所以本人十分認同這次的規劃申請，希望城規會能夠通過。

Lee Mao Ching

香港北角政府合署 15 樓
城市規劃委員會秘書處



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規劃申請編號 Y/YL-PS/4

各位委員：

本人為元朗居民。香港近年飽受人口老化問題困擾，老人院舍宿位愈來愈供不應求，而且質素參差，未能夠好好為老人提供院舍服務。這個申請位處新市鎮外圍，環境清幽，可以令長者遠離市區繁囂，亦可以提供多些室外用地，長者可以多活動，心曠神怡，同時又鄰近輕鐵站，方便家屬前往探訪，位置方便。所以本人支持這個規劃方案。

僅祝
台安

Lok Hei Wong



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城規會秘書：

關於規劃申請 Y/YL-PS/4

我同意上述的申請項目。就我多年居於青山公路附近的觀察，洪水橋、屏山一帶近年都沒有很多發展，一直都維持這個很荒蕪的狀態。政府經常表示土地不足，更加應該將附近的空地和貨倉轉做住宅。現時人口愈來愈多，若果錯過發展住宅的機會，過多幾年無法承受時則為時已晚。因此盡快在這處發展住宅是配合社會長遠需要。而且幾份專業報告都顯示申請對環境、交通沒有大影響，應該沒有反對的理由。



香港北角渣華道 333 號
北角政府合署 15 樓
城市規劃委員會秘書處



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城規會各位委員：

本人希望城規會支持規劃申請編號 Y/YL-PS/4 的方案。現時無論新市鎮抑或市區的城市密度已經過高，很多住宅項目，特別是重建項目都是「插針式起樓」，完全無視住宅舒適度。因此屯門元朗之間的大量棕地及原工業用地，由於地勢平坦而且遼闊，更能為市民提供較好的居住環境。而將申請地點轉為中低密度住宅不但能令附近更興旺，帶動地段價值，更能提供量、質兼具的房屋，舒緩本港房屋供應的壓力。項目亦明顯有回應社會的需求，提供長者設施，照顧社會各階層的需要，應對人口老化，絕對是一地多用的最佳實踐。因此本人支持這個計畫。



敬啟者：

有關規劃申請編號 Y/YL-PS/4

作為元朗居民，本人同意上述申請，為本港市民提供更多房屋供應和選擇。

首先，申請地點乃元朗新市鎮外圍地帶，適合作中低密度發展。而附近已有多項住宅發展，因此這個申請與周邊的土地用途和環境相容。此外，申請地點位於主要道路及公共交通服務附近，可容納及服務較多人口，因此相比鄉村式發展，該地點更適合作較高密度的發展，以有效善用本港珍貴的土地資源。而現時的儲存倉庫並未有效利用土地，亦與周邊的住宅不協調，因此政府應支持這類土地轉型為住宅。

第二，該申請的發展項目有潛力為周邊提供更佳的环境質素。根據申請人的概念，發展項目提供水池及綠化空間，相比現時工業類型的環境有顯著改善。此外，即使該發展密度較其他鄰近住宅為高，項目中亦不乏充足的綠化和開放空間，舒緩密度增加的壓抑感。再者，項目附帶的長者設施有助建立融洽、和諧及多元化的社區。因此，雖然項目可能會影響部分居民的景觀，發展項目可為社區帶來更多益處。而項目兩邊均沒有高密度發展，對區內通風影響輕微。

最後，過往政府採取多管齊下的方法提高住宅供應，以解決房屋不足的燃眉之急，而最近公佈的北部都會區將為屯門、元朗及天水圍帶來新機遇，包括更多就業和經濟發展。申請地點作為元朗新市鎮和洪水橋新發展區的自然延伸將有利新界西北部地區發展成更多元化及更有活力的都會，亦能使將來居於此項目的居民原區就業。由此可見，政府理應支持此項申請。

總而言之，申請項目會為鄰近社區以至整個新界西北帶來益處，因此本人懇請各委員通過該申請。

此致

城市規劃委員會秘書處



城規會執事先生台鑒：

本人特意來函支持規劃申請(申請編號 Y/YL-PS/4)將鄉村式發展地帶及綜合發展區地帶改劃為住宅(乙類)2 地帶。本人認為最近政府已經宣佈發展新界北部地區，香港發展重心應該向北移，將來屯門元朗一帶應該會出現更多就業機會和經濟發展，所以元朗新市鎮附近地方的大片土地應盡快提高發展密度，以配合將來北部都會區的大規模計劃。綜合發展區經常都不太有效率，所以若部分土地擁有人有意發展住宅，政府應該多加支持以加快房屋供應。

至於景觀問題，由於香港屬於高密度城市，發展時難免會影響附近居民的景觀。但為了可持續發展，香港必需要地盡其用，為下一代提供充足的居住環境。所以本人認為屏山一帶稍為增加建築密度是可以接受的。

希望城規會同意申請計劃，繼續增加可用的房屋土地。

順頌

台祺

陳智康

tpbpd@pland.gov.hk

211

寄件者: [REDACTED]
寄件日期: 2021年11月17日星期三 2:27
收件者: tpbpd
主旨: Y/YL-PS/4 DD 121 and 525 Ping Shan

Y/YL-PS/4

Lots 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, and 525 S.B RP in D.D. 122 and adjoining Government Land, Ping Shan

Site area : About 14,080sq.m Includes Government Land of about 1,925sq.m

Zoning : "VTD" and "Comprehensive Development Area"

Proposed Amendment(s) Rezone to to "Res (Group B) 2" / 3 Blocks / 840 Units / 1 Block - 294 Bed RCHE / Retail store / Club House / PR 3.39 / 80mPD / os 2,835sq.m / 209 Vehicle Parking

Dear TPB Members,

The villagers of Tong Fong and Ping Shan San Tsuen have been flogging their VTD zoned holdings to developers for years. When this goes to OZP stage all the lots used for villa development within the "V Zone" should be rezoned to Res in line with their actual status.

'The rezoning application is for facilitating a proposed flat and social welfare facility (residential care home for the elderly) to utilize the application site to provide a self-contained and desirable residential and social hub particularly targeting elderly and their families in need of independent living space and a social lifestyle.' GIVE OVER – THE RCHE IS THROWN IN TO JUSTIFY THE REZONING OF VTD (55%) AND THE HOLISTIC NATURE OF CDA (45%) THAT INCLUDES THE PROVISION OF COMMUNITY SERVICES.

The concept of CDA zoning is that it should provide a comprehensive living environment that includes a variety of services and facilities.

Object to height and bulk, the visual impact will be substantial

"The visual change to VSRs represent by VP1: Ping Shan Tin Shui Wai Public Library is negligible" RUBBISH THE already dwindling ridge line will be obliterated. The constant erosion of landmarks and background panorama has impoverished both Kowloon and Hong Kong Island residents. This should not be allowed to happen in NT. In view of the numerous development plans there is urgent need for the introduction of protected view corridors on the same lines as those imposed in urban districts.

"VP 4 – Footbridge (to the East of the Site) across Castle Peak Road – Ping Shan Section - Slight to moderate adverse" DEVELOPER IS CLEARLY LIVING IN THE PAST. PEOPLE ARE NOW VERY CONCERNED ABOUT THE ELIMINATION OF RIDGELINES. THIS IS AKIN TO WIPING OUT THE VIEW OF LION ROCK FROM HKI/KOWLOON

The other VPs are also objectionable but those of the mountains are the most audacious and would forever impact the panorama, backdrop and character of the district.

*"Although the application site involves a piece of land zoned "V" on the Current OZP, it should be noted that the application site is **not covered by 'Village Environs' of any recognised village**, and the application site is therefore not subject to any Small House developments"* BUT NO EXPLANATION AS TO WHY IT IS 'V' ZONE – IS IT TSO/TONG LAND?

In view of the government constant bleating about land for public and assisted housing one has to question why it has not taken the initiative to resume the land to build low rise assisted housing.

Mary Mulvihill

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

Our ref: T&ESD/E&IC/ES/EnvE/L1105



Date: 12 NOV 2021

By Post and Fax
(Fax no.: 2877 0245 / 2522 8426)

Dear Sir/Madam,

Comments on the Section 12A Planning Application to rezone the application site from “Village Type Development” and “Comprehensive Development Area” to “Residential (Group B)2” and amend the Notes of the zone applicable to the site at Lots 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, and 525 S.B RP in D.D. 122 and adjoining Government Land, Ping Shan, Yuen Long, New Territories (Application No. Y/YL-PS/4)
Operational Railway Noise Concerns

We refer to the Section 12A Planning Application (Application No. Y/YL-PS/4) seeking to rezone a site located at Ping Shan from “Village Type Development” and “Comprehensive Development Area” to “Residential (Group B)2” at Lots 1341 S.B RP, 1341 S.B ss.1 S.J RP, 1341 S.B ss.1 S.D in D.D. 121, and 525 S.B RP in D.D. 122 and adjoining Government Land, Ping Shan, Yuen Long, New Territories. As the proposed development is situated in close proximity to the MTR Light Rail Transit (LRT), noise from train operations could have a potential impact on any future occupants.

We understand that the applicant has already conducted an Environmental Assessment, including a Railway Noise Impact Assessment (RNIA), which will be reviewed by the Environmental Protection Department (EPD) to ensure full compliance with the statutory requirements. From the RNIA, we noticed that the predicted noise levels at some of the noise sensitive receivers at Tower 1 and Tower 3 would exceed the noise limit. Acoustic windows (baffle type) are the key mitigation measure of railway noise impact, with the assumed noise reduction ranged about 6-7.5dB(A). It should be noted that the noise reduction effectiveness of acoustic windows for mitigating railway noise in this case has yet to be verified and/or confirmed. Like many other property development projects in close proximity to the railway, it is crucial for the development proponent and its consultant to conduct tests for ensuring the proposed mitigation measures are fit-for-purpose so that the potential train noise issue can be satisfactorily addressed. We also recommend that the project proponent conducts noise measurement to collect more updated and specific on-site noise source data for the noise assessment.

Our ref: T&ESD/E&IC/ES/EnvE/L1105

Date: 12 NOV 2021

Should approval be granted to the Section 12A Planning Application, we urge the Town Planning Board to include in the statutory plan and/or Land Grant provisions which require the development proponent to conduct noise assessment to evaluate the noise impacts from the LRT, as well as identify and incorporate all necessary noise mitigation measures at their own cost and to the satisfaction of the Director of Environmental Protection, to ensure that the future residents of the development will not be exposed to noise impacts from railway operations.

Should you have any queries, please feel free to contact our Acting Lead Environmental Manager Ms. Catherine Leung at [REDACTED].

Yours faithfully,



Chan Hing Keung
General Manager – Engineering & Innovation Centre

c.c Mr. TSANG Sai Wing, Terence	-	Assistant Director of EPD (Environmental Assessment)
Mr. LEE Chee Kwan	-	Principal Environmental Protection Officer (Assessment & Noise)